JOPAG
JOURNAL OF POLITICS AND GOVERNANCE

Journal of Politics and Governance
16(1), January – April 2026

Development of a Model to Support Teaching and Learning Management in a Bilateral Participatory System for Workplace Trainers

Boonluea Thongkatkeaw [1*] ✉, **Pairote Stirayakorn** [1] ✉, **Sayam Kamkhuntod** [1] ✉

[1] Faculty of Industrial Education, King Mongkut's University of Technology North Bangkok, Thailand

[*] Corresponding Author, © Authors

Article history:

Received: February 3, 2025

Revised: April 9, 2025

Accepted: April 11, 2025

Keywords:

Dual Vocational Education and Training, Participatory Model, Trainer Management Model

Abstract

This research aimed to: 1) explore the future scenario of managing participatory dual vocational education and training (VET) for enterprise trainers; 2) develop and evaluate a management model; and 3) design and assess the effectiveness of a guidebook to support VET management in enterprises. The study followed a research and development methodology and was conducted in four phases. In Phase 1, the future scenario of VET management was explored. Phase 2, focused on developing and evaluating the management model. Phase 3 assessed the creation and effectiveness of the guidebook. Finally, Phase 4 involved monitoring the application of the guidebook. Data was analyzed using content analysis, including percentages and standard deviations. The findings emphasize the importance of strategic planning, clear management structures, operational systems, and support for the academic and professional development of trainers. The proposed model consisted of three key components: 1) a participatory management committee; 2) a participatory management process; and 3) trainer standards in enterprises. The model was rated as highly suitable in terms of both appropriateness ($\bar{X}$ = 4.57, S.D. = 0.46) and accuracy ($\bar{X}$ = 4.68, S.D. = 0.41). The guidebook was found to be both beneficial and feasible, achieving an effectiveness ratio of 87.31/81.82, which surpassed the 80/80 criteria. Follow-up evaluations showed high trainee satisfaction ($\bar{X}$ = 4.49, S.D. = 0.44). Additionally, the trainees' ability to apply the guidebook's guidelines was rated very highly by the Deputy Director of Academic Affairs and the Head of the Industrial Technical Program ($\bar{X}$ = 4.76, S.D. = 0.48).

Introduction

The management of dual vocational education and training (VET) in Thailand faces ongoing challenges. Despite the country's need for a skilled middle-level workforce to drive economic growth, vocational education is still undervalued and insufficiently popular (Nammahung, 2022). Additionally, businesses are grappling with a shortage of skilled labor, often having to hire workers whose skills do not meet industry

requirements or who lack the necessary skills altogether. This skills mismatch leads to higher operational costs and diminished competitiveness (Raksakiatwong, 2016).

Within vocational institutions, the primary issues include a lack of experts in managing dual VET systems and an insufficient understanding among instructors of the dual VET system and its benefits (Manjanda, 2019). Moreover, workplace training is not systematically organized, and enterprise trainers lack the necessary skills to conduct effective training (Chimkul, 2022). Consequently, the training process fails to fully meet the needs of enterprises.

Addressing these issues requires strengthening the capacity of enterprise trainers to acquire the necessary knowledge and skills to deliver high-quality instruction and support dual VET curricula. Collaboration among public and private stakeholders is also crucial. This collaboration should include the provision of equipment, tools, mentorship, and opportunities for knowledge exchange to enhance the dual VET management system (Phannan et al., 2021).

These challenges underscore the significance of dual VET, which depends largely on workplace training to equip the workforce with practical experience, knowledge, and skills that meet industry demands. Enterprise trainers play a crucial role, since they are responsible for mentoring, training, and assessing students during workplace training in line with established training plans. However, the effectiveness of this training is hindered by weaknesses in planning, evaluation, supervision, and overall management, which prevent it from fully meeting curriculum requirements. This shortfall not only impacts students' professional competencies but also their ethical values, attitudes, and the desired characteristics of vocational graduates.

To ensure the success of student training that aligns with curriculum objectives and prepares graduates to meet the country's future development needs, this study applies systems thinking alongside the 7-S McKinsey Framework, a widely recognized approach for fostering organizational excellence. In the present study, this framework is used to develop a participatory management model that supports the dual VET system, with a particular emphasis on enterprise trainers. The proposed model aims to strengthen the dual VET system, enabling both educational institutions and enterprises to use it for policy formulation, knowledge creation, and practical applications in the future.

Research Objectives

1. To explore future scenarios that could enhance the participatory management of dual vocational education and training (VET) for enterprise trainers.

2. To design and evaluate a model aimed at supporting participatory management in dual VET for enterprise trainers.

3. To create and assess the effectiveness of a guidebook that facilitates the participatory management of dual VET for enterprise trainers, based on the developed model.

Scope of the Research

This research encompasses the following areas:

1. Content

1.1 The participatory management support model for dual vocational education and training (VET) for enterprise trainers incorporates participatory management principles. It involves committees and management frameworks that bring together personnel from state vocational institutions under the Office of Vocational Education Commission, enterprise staff collaborating with educational institutions, and organizations responsible for occupational standard certifications. Systems thinking (Petchngam, 2022) is applied to analyze challenges arising from institutional management. Additionally, the 7-S McKinsey Framework is used to strengthen participatory management for enterprise trainers involved in dual VET administration.

 © Authors

1.2 The model emphasizes the provision of participatory support for dual VET students specializing in industrial technology.

1.3 The evaluation of the guidebook, which supports participatory management in dual VET for enterprise trainers, is based on the developed model. The guidebook's effectiveness is assessed using the E1/E2 criteria for theoretical components and a 75% benchmark for practical components.

2. Population and Sample

The population and sample groups for this study were determined through the following stages:

Stage 1: Studying the future scenario

The target group for data collection consisted of 19 participants, including education scholars, deputy academic directors, dual VET coordinators, supervising teachers, and enterprise trainers. All participants had at least five years of experience in their respective roles. The participants were selected using the Delphi technique (Jensen, 1996).

Stage 2: Evaluating the draft model

The target group for this stage consisted of 11 participants, selected through focus group discussions. This group included three experts, six vocational institution administrators from the Office of Vocational Education Commission, and two enterprise administrators.

Stage 3: Testing the guidebook

For the testing phase, the target group comprised seven stakeholders involved in dual VET at Nakhon Nayok Technical College. The participants included dual VET coordinators, supervising teachers, and industrial technology experts.

Stage 4: Collecting real-world data on the guidebook

The target group for this stage included seven stakeholders from Prachinburi Technical College, all of whom were engaged in dual VET. This group consisted of dual VET coordinators, supervising teachers, and industrial technology experts.

3. Research period

The research was conducted over the course of the 2023–2024 academic years

Research Methodology

Table 1 outlines the research framework for this study to develop a participatory management support model for dual vocational education and training (VET) for enterprise trainers.

Table 1

Development of a participatory support model for the management of dual vocational education and training for workplace trainers.

Research Stages	Procedures	Outcomes
Phase 1: Exploring potential future scenarios for participatory management support in dual vocational education and training (VET) for enterprise trainers.	Step 1: Study the existing dual vocational education and training (VET) system and the management models used within it. Step 2: Analyze future scenarios for participatory management support in dual VET, specifically for enterprise trainers.	A detailed future scenario for participatory management support in dual VET for enterprise trainers
Phase 2: Developing and assessing a participatory management support model for dual VET.	Step 1: Draft a participatory management support model for dual VET aimed at enterprise trainers. Step 2: Evaluate the quality of the participatory management support model for enterprise trainers.	2.1: Draft version of the participatory management support model for dual VET enterprise trainers 2.2: Finalized participatory management support model for dual VET enterprise trainers after quality evaluation

 © Authors

Research Stages	Procedures	Outcomes
Phase 3: Creating and evaluating a manual for participatory dual education management support for workplace trainers, based on the developed model.	Step 1: Develop a participatory management support manual for workplace trainers in dual education. Step 2: Create a training program focused on writing professional training plans. Step 3: Conduct pilot tests and refine the manual based on feedback. Step 4: Implement the manual in practice.	- A well-designed manual that is clear and easy to follow. - An effective training program for developing professional training plans. - A practical manual that is able to address real-world needs. - A manual that can efficiently deliver information and support the training process.
Phase 4: Monitoring the implementation of the participatory support manual for workplace trainers in dual vocational education.	Step 1: Assess trainee satisfaction. Step 2: Monitor the process of writing professional training plans.	- Trainee satisfaction. - Ability to write professional training plans.

Research Results

The development of a participatory support model to manage dual education teaching systems for workplace trainers led to the following conclusions:

1. Future prospects of the participatory support model for dual education management.

The findings showed a general consensus among experts regarding the critical need to improve both the management structure and operational systems. This improvement is essential for providing comprehensive and collaborative support to develop workplace trainers within the dual education system. The main conclusions are as follows:

1) Strategic and Tactical Planning:

Experts stressed the importance of focusing on the management of assessments and evaluations, as well as curriculum and teaching materials (Md = 5.00, IR = 0.00). Attention was also directed toward teaching management and personnel administration (Md = 4.00, IR = 0.00).

2) Support Structure and Components:

Establishing participatory management committees and clearly defining their responsibilities was deemed to be highly important alongside setting policy goals and strategies for managing educational institutions (Md = 5.00, IR = 0.00). Additionally, the processes of planning, task delegation, and implementation were emphasized (Md = 4.00, IR = 0.00).

3) Operational Systems:

Administrative support and the effective use of information and communication systems were given the highest priority (Md = 5.00, IR = 0.00). This was followed by efforts to promote academic advancement and foster collaboration with both domestic and international workplaces (Md = 4.00, IR = 0.00).

4) Management Models:

Experts highlighted the significance of participatory management, establishing operational support systems, and adhering to vocational education management standards (Md = 5.00, IR = 0.00). They also stressed the importance of developing support processes and activities that reinforce workplace values (Md = 4.00, IR = 0.00).

5) Support for Workplace Trainers:

Experts emphasized the high priority of determining fair compensation and benefits (Md = 5.00, IR = 0.00), along with providing opportunities for further education and career development (Md = 4.00, IR = 0.00).

6) Academic Support:

The highest priority was placed on training and the provision of teaching materials

 © Authors

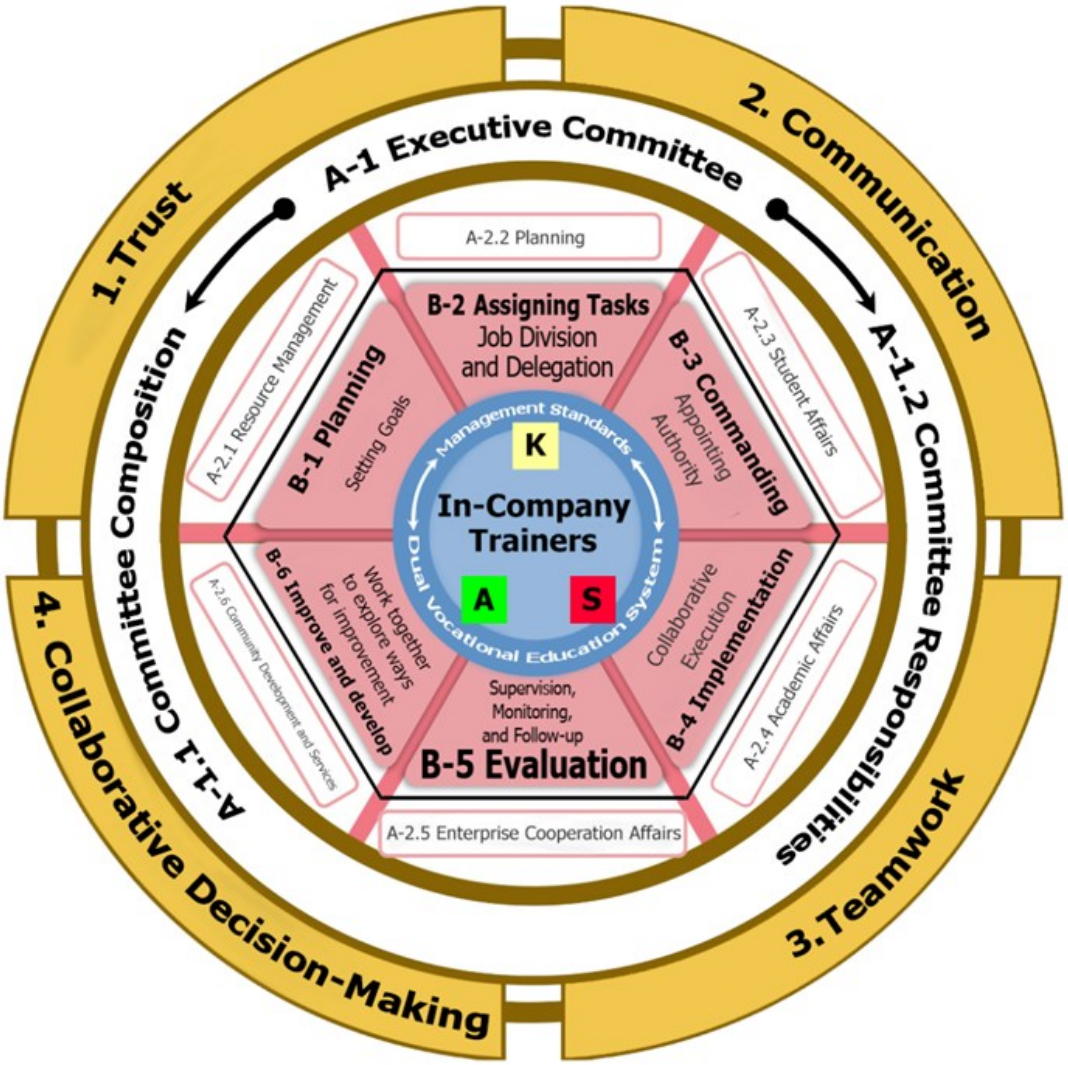
(Md = 5.00, IR = 0.00). Academic collaboration for trainer development was also underscored (Md = 4.00, IR = 0.00).

2. Results of the development and evaluation of the participatory support model for managing dual education teaching systems for workplace trainers

The model, illustrated in Figure 1, was developed based on the findings from Phase 1.

Figure 1

Draft model for participatory support to manage dual education teaching systems for workplace training.



This model is grounded in the principles of participatory management and comprises the following key components:

- Component 1: The participatory management committee, along with its roles and responsibilities.

- Component 2: The participatory management process.

- Component 3: Standards for workplace trainers.

The quality of the model was evaluated by a panel of experts (n = 11), with the results summarized in Table 2.

 © Authors

Table 2

Evaluation results on the model's suitability and accuracy in supporting the management of the dual vocational education system through participatory management for workplace trainers

Evaluation items	$\bar{X}$	S.D.	Suitability level	$\bar{X}$	S.D.	Accuracy level
Principles for supporting the management of the dual vocational education system through participatory management.	4.73	.43	Highest	4.66	.46	Highest
Component 1: Participatory management committee and the scope of participatory management.	4.68	.46	Highest	4.47	.50	High
Component 2: Supporting the management of the dual vocational education system through participatory management	4.70	.41	Highest	4.59	.45	Highest
Component 3: Standards for managing the dual vocational education system (B.E. 2020), as outlined by the Vocational Education Commission.	4.60	.34	Highest	4.57	.44	Highest
Overall average	4.68	.41	Highest	4.57	.46	Highest

As shown in Table 2, the overall suitability was rated at the highest level ($\bar{X}$ = 4.57, S.D. = .46), with accuracy also receiving a similarly high rating ($\bar{X}$ = 4.68, S.D. = .41). A closer examination of each aspect reveals that the principles supporting the management of the dual vocational education system through participatory management received the highest suitability score ($\bar{X}$ = 4.73, S.D. = .43). This was followed by Component 2: The process of supporting the management of the dual vocational education system through participatory management ($\bar{X}$ = 4.70, S.D. = .41); Component 1: The participatory management committee and the scope of participatory management ($\bar{X}$ = 4.68, S.D. = .46); and Component 3: The standards for managing the dual vocational education system (B.E. 2020), as announced by the Vocational Education Commission ($\bar{X}$ = 4.60, S.D. = .34).

When evaluating the accuracy of each component of the model, the principle supporting the management of the dual vocational education system through participatory management demonstrated the highest level of accuracy ($\bar{X}$ = 4.66, S.D. = .46). This was followed by Component 2, which focuses on the process of supporting the management of the dual vocational education system through participatory management ($\bar{X}$ = 4.59, S.D. = .45), Component 3, which outlines the standards for managing the dual vocational education system (B.E. 2563) as stated in the announcement by the Vocational Education Commission ($\bar{X}$ = 4.57, S.D. = .44), and Component 1, which pertains to the participatory management committee and the scope of participatory management ($\bar{X}$ = 4.47, S.D. = .50).

3. The results of the development and evaluation of the handbook designed to support the management of the dual vocational education system with participatory management for workplace trainers based on the developed model, are presented in Tables 3-4.

 © Authors

Table 3

Evaluation results conducted by seven experts (n=7) on the usefulness and feasibility of the handbook in supporting the management of the dual vocational education system, with an emphasis on participatory management for workplace trainers.

Evaluation items	$\bar{X}$	S.D	Usefulness level	$\bar{X}$	S.D	Feasibility level
Principles for supporting the management of the dual vocational education system through participatory management.	4.54	.39	Highest	4.57	.39	Highest
Component 1: Participatory management committee and the scope of participatory management.	4.43	.50	High	4.44	.50	High
Component 2: Supporting the management of the dual vocational education system through participatory management	4.53	.42	Highest	4.46	.42	High
Component 3: Standards for managing the dual vocational education system (B.E. 2020), as outlined by the Vocational Education Commission.	4.48	.29	High	4.47	.47	High
Overall average	4.50	.40	High	4.49	.44	High

The results in Table 3 indicate that both the overall usefulness ($\bar{X}$ = 4.50, S.D. = 0.40) and feasibility ($\bar{X}$ = 4.49, S.D. = 0.44) were rated at the highest levels. When examining the usefulness of each component of the model, the principle of supporting the management of the dual vocational education system through participatory management received the highest rating ($\bar{X}$ = 4.54, S.D. = 0.39). This was followed by Component 2, which focuses on the process of supporting the management of the dual vocational education system through participatory management ($\bar{X}$ = 4.53, S.D. = 0.42), Component 3, which addresses the standards for managing the dual vocational education system (B.E. 2020) as outlined in the Vocational Education Commission's announcement ($\bar{X}$ = 4.48, S.D. = 0.29), and finally Component 1, which covers the participatory management committee and the scope of participatory management ($\bar{X}$ = 4.43, S.D. = 0.50).

When evaluating the feasibility of each aspect, the principle of supporting the management of the dual vocational education system through participatory management was found to be the most feasible ($\bar{X}$ = 4.57, S.D. = 0.39). This was followed by Component 3, which pertains to the standards for managing the dual vocational education system (B.E. 2020), as outlined by the Vocational Education Commission ($\bar{X}$ = 4.47, S.D. = 0.47). Next was Component 2, focusing on the process of supporting the management through participatory management ($\bar{X}$ = 4.46, S.D. = 0.42), and then Component 1, which addresses the participatory management committee and the scope of participatory management ($\bar{X}$ = 4.44, S.D. = 0.50), were also evaluated.

 © Authors

Table 4

Demonstration of how effectively the handbook supports the management of the dual vocational education system by promoting participatory management among workplace trainers (n = 13).

No.	Pre-test to measure achievement before using the handbook (30 points)	In-course assessment, 4 units (60 points) (E1)	Post-test to measure achievement after using the handbook (30 points) (E2)
1	15	52	23
2	16	51	24
3	17	53	24
4	19	55	24
5	14	56	25
6	17	54	24
7	16	52	24
8	15	51	26
9	13	52	24
10	12	51	25
11	11	52	24
12	13	51	25
13	14	51	25
Total	192	681	317
Average	14.76	52.38	24.83
Average percentage	49.24	87.31	81.82
S.D	2.24	.66	.77
E_1/E_2	$87.31_{/81.82}$		

As shown in Table 4, the average score for in-course activities in Learning Units 1-4 was 87.31% (E1), while the post-test achievement score after using the handbook was 81.82% (E2). The effectiveness of the handbook in supporting management was calculated by dividing the in-course score (87.31%) by the post-test score (81.82%), which meets the 80/80 criteria.

4. Results of monitoring the use of the participatory support handbook for workplace trainers in managing the dual vocational education system

The researcher conducted the monitoring process in two phases, as detailed in Tables 5 and 6.

Table 5

The average trainee satisfaction ratings (n = 13).

Item (s)	$\bar{X}$	S.D	Satisfaction level
1. Clarity of the training content.	4.38	.51	High
2. Relevance of the content to writing vocational training plans.	4.77	.44	Highest
3. Variety of techniques and methods used in the training.	4.69	.48	Highest
4. Trainer's knowledge and ability to deliver the content.	4.38	.51	High

 © Authors

Item (s)	$\bar{X}$	S.D	Satisfaction level
5. Response to questions and provision of advice by the trainer.	4.31	.48	High
6. Trainer's communication skills and ease of understanding.	4.46	.52	High
7. Convenience of registration and training management.	4.69	.48	Highest
8. Comfort and facilities at the training location.	4.46	.52	High
9. Time management and duration of the training.	4.31	.48	High
Total	4.49	.44	High

As shown in Table 5, the overall satisfaction of the trainees was high ($\bar{X}$ = 4.49, S.D. = .44). Among the individual items, the highest satisfaction was recorded for the relevance of the content to writing vocational training plans ($\bar{X}$ = 4.77, S.D. = .44). This was followed by the variety of techniques and methods used in the training, as well as the convenience of registration and training management, both of which received an average score of 4.69 ($\bar{X}$ = 4.69, S.D. = .48).

Table 6

Average trainee performance, as assessed by the Deputy Director of the Academic Affairs Department and the Head of the Industrial Technology Program.

Procedures	$\bar{X}$	**S.D**	**Ability level**
1. Prepare a vocational training plan for the entire course.	4.83	.39	Highest
2. Prepare a curriculum analysis chart by subject, profession, and job position.	4.75	.45	Highest
3. Study and gather information:	4.69	.59	Highest
Analyze tasks	4.58	.67	Highest
Write objectives or behavioral objectives	4.65	.66	Highest
Set the desired competency levels	4.67	.65	Highest
Define topics	4.67	.65	Highest
Determine teaching methods	4.67	.65	Highest
Select tools and teaching materials	4.83	.39	Highest
Determine assessment methods	4.75	.45	Highest
Total	4.76	.48	Highest

Table 6 indicates that the trainees' overall work performance, as assessed by the Deputy Director of Academic Affairs and the Head of the Industrial Technology Program, was rated at the highest level ($\bar{X}$ = 4.76, S.D = .48). When examining individual performance aspects, all areas were similarly rated at the highest level. These included preparing a vocational training plan for the entire course ($\bar{X}$ = 4.83, S.D = .39), creating a curriculum analysis chart based on subject, profession, and job position ($\bar{X}$ = 4.75, S.D = .45), and conducting research and gathering information ($\bar{X}$= 4.69, S.D = .59).

Summary and Discussion

This research focused on developing a collaborative support model for managing dual vocational education for workplace trainers. The study had three main objectives: 1) to explore the future vision of collaborative support in managing

 © Authors

dual vocational education for workplace trainers; 2) to develop and evaluate the collaborative support model; and 3) to create and assess the effectiveness of a support manual based on the developed model. The key findings of the research are summarized as follows:

1) Results of the study on the future vision for collaborative support in managing dual vocational education for workplace trainers

The study findings highlighted several key areas requiring development and support. These include strategic planning, the establishment of a clear administrative structure, enhancement of operational systems, and the provision of academic and career advancement opportunities for workplace trainers. Addressing these areas is essential to ensure that dual vocational education meets the needs of both the educational and industrial sectors.

Dual vocational education bridges theoretical learning with practical workplace application, requiring strong coordination to align trainers' knowledge and skills with the evolving demands of the labor market and industry. The distinct needs of these two sectors necessitate ongoing adaptation and collaboration, ensuring that trainers are continuously equipped to meet these changing requirements.

These findings are consistent with Dawreong et al. (2017), which identified key factors shaping the future of dual vocational education, including government policies, professional qualification standards, budgets, and personnel. The study also highlighted important trends in educational management, such as organizational structure, collaboration in education delivery, training methods, evaluation systems, and the alignment of education with workforce needs.

The differences in ratings for various components of the participatory dual-training management model reflect the specific contextual factors that influence the management of dual vocational education and training (VET) in workplaces. For instance, components such as the participatory management processes received higher ratings because they align with participatory management approaches, which emphasize collaboration and the active involvement of all stakeholders in decision-making, implementation, and evaluation. By prioritizing participatory management, the model fosters transparency, accountability, and shared responsibility, leading to more effective and inclusive management practices.

2) Results of the creation and quality assessment of the participatory dual-training management model for workplace trainers

Data collected from key informants was analyzed to identify common characteristics and draw conclusions. The findings from this section are outlined in the following components:

Component 1: A participatory management committee and its scope of work

Component 2: Participatory management processes

Component 3: Standards for workplace trainers

The overall quality of the draft model was assessed to be at the highest level in terms of both appropriateness ($\bar{X}$ = 4.57, S.D. = 0.46) and accuracy ($\bar{X}$ = 4.68, S.D. = 0.41). This high rating reflects the model's alignment with the participatory management approach, which emphasizes the involvement of all stakeholders in decision-making, implementation, and evaluation. Moreover, the model was designed to be applicable to both workplace settings and the dual education system. The model was also thoroughly reviewed and refined to ensure its accuracy and relevance to the standards and needs of both the education and industrial sectors.

This finding aligns with Panjamawat (2020), which developed a collaborative vocational education management model for the dual system. This model was implemented between

 © Authors

educational institutions under the Office of Vocational Education Commission and the Amata Nakorn Industrial Estate. Panjamawat's (2020) study on the opinions regarding the collaborative vocational education model found that the overall implementation of the collaboration was highly appropriate and carried out effectively. Key elements of the collaboration included sharing benefits, conducting collaborative activities, evaluating progress, and planning. Among these, sharing benefits was considered the most important, followed by the execution of activities and performance evaluation.

3) Results of the development and efficiency assessment of the participatory dual-training management guide for workplace trainers

The guide was found to be highly useful and feasible. Its efficiency was measured at 87.31/81.82, surpassing the established threshold of 80/80. This success was attributed to the alignment of the developed model with the project's issues and objectives, as well as its adherence to the standards of the dual vocational education system. As a result, the involved parties performed effectively, focusing on enhancing students' knowledge, skills, and ethical standards.

These findings were consistent with those of Srikhamnuan et al. (2017), which examined the factors influencing the success of dual vocational education management in Lamphang Province under the Office of Vocational Education Commission. The study identified that curriculum and teaching management were the most significant factors contributing to the success of dual vocational education, followed by factors related to students, workplaces, and the community. Meanwhile, leadership and teaching staff were found to have a secondary impact. Regarding overall success in the dual vocational education system, professional competence was rated the highest, followed by core competencies, general competencies, and lastly, students' desirable attributes.

Further follow-up assessments on the use of the participatory guide for workplace trainers in the dual vocational education system showed that trainee satisfaction was high ($\bar{X}$ = 4.49, S.D. = 0.44). Trainees' performance ability, as assessed by the deputy academic director and the head of the industrial vocational department, was also rated at the highest level ($\bar{X}$ = 4.76, S.D. = 0.48). This success was attributed to the high-quality training design and effective implementation, including the selection of expert trainers and the use of modern teaching materials, which allowed trainees to learn thoroughly and achieve high satisfaction.

These findings were consistent with Boonsri (2019), which developed a training curriculum to prepare competencies for workplace training in the dual system. The study was conducted in three phases, competency analysis based on workplace expectations, curriculum development, and curriculum testing, and found that the developed curriculum was appropriate and aligned with workplace needs. It effectively enhanced students' knowledge, skills, and professional attributes, with students showing improvement after training and receiving high satisfaction from stakeholders.

Recommendations and suggestions

Suggestions for the development of the participatory management model for dual vocational education for workplace trainers:

1. Suggestions for applying research results:

1.1. The Office of Vocational Education Commission (OVEC) should use the findings of this research as a foundation for policy development aimed at promoting and expanding dual vocational education in affiliated institutions.

1.2. OVEC should encourage and support educational institutions under its jurisdiction to adopt the research findings in order to address current challenges in managing dual vocational education, particularly for the Higher Vocational Certificate (HVC).

 © Authors

2. Suggestions for future research: Future studies should focus on developing a collaborative academic network for managing dual vocational education, with an emphasis on the Higher Vocational Certificate.

Human Research Ethics

This research did not require ethical approval because it was an educational study conducted within an educational institution under the same organization in which the researcher holds an administrative position. The researcher was responsible for the management and development of the dual vocational education management system project as part of their administrative duties. In addition, the research involved general data collection that did not affect the rights, privacy, or well-being of the participants. The study required teachers to attend training sessions in order to apply the knowledge gained to enhance the effectiveness of their teaching and learning management. However, the researcher strictly adhered to research ethics throughout the research process and obtained permission and informed consent from all relevant stakeholders appropriately.

Use of AI in this research

In this research, the researcher utilized artificial intelligence (AI) technologies as supportive tools to assist in verifying the accuracy of research content, enhancing the quality of language use, and organizing the research presentation in an academically appropriate manner. Specifically, the researcher employed the "Aksorn Wisut" program for checking Thai language accuracy, including spelling, grammar, and proper writing format, and used ChatGPT as a supplementary tool to support content verification, content organization, and partial language refinement in the research writing process.

However, the use of AI tools in this study was limited to supporting purposes only. The researcher primarily conducted data analysis, content creation, and writing independently based on academic principles. All AI-generated suggestions were carefully reviewed, verified for accuracy, and appropriately adapted by the researcher. Furthermore, all relevant sources of information were cited properly in accordance with academic standards and ethical research practices. This approach was undertaken to ensure the integrity, accuracy, and academic credibility of the research work presented.

References

Boonsri, S. (2019). *The development of training curriculum for preparing occupational competencies in enterprise of dual vocational training students* (Doctoral dissertation, Doctor of Education in Industrial Education [Curriculum Research and Development]). King Mongkut's Institute of Technology Ladkrabang.

Chimkul, T. (2022). *A creative leadership development model of school administrators in the Northeast under the Office of the Basic Education Commission* (Doctoral dissertation, Educational Administration). Faculty of Education, Srinakharinwirot University. http://ir-ithesis.swu.ac.th/dspace/bitstream/123456789/2539/1/gs611150083.pdf

Dawreong, J., Kulnaphadol, T., Prajongsak, S., & Dilokwuttisit, P. (2017). A scenario of dual vocational education in the colleges under the Office of Vocational Education Commission in the next decade. *Journal of Humanities and Social Sciences Valaya Alongkorn, 12*(1), 289–300. https://so06.tci-thaijo.org/index.php/vrurdihsjournal/article/view/85228/68948

Jensen, C. (1996). *Delphi in depth: Power techniques from the experts*. McGraw-Hill.

Manjanda, W. (2019). *The dual vocational training program management for colleges in Phayao under the Office of Vocational Education Commission* (Master's thesis, Educational Administration). University of Phayao. https://updc.up.ac.th/server/api/core/bitstreams/00f04cfb-7941-4938-b866-bb4d6f95d632/content

 © Authors

Nammahung, P. (2022). School administration in the 21st century. *Journal of Academic for Educational Administration Innovation, 1*(2), 31–43. https://so09.tci-thaijo.org/index.php/EAIJ/article/view/920/383

Panjamawat, W. (2020). *Development of a cooperative model for vocational education management in the dual system between schools under the Office of the Vocational Education Commission and Amata Nakorn Industrial Estate*. Institute for the Development of Teachers, Faculty, and Educational Personnel.

Petchngam, B. (2022). The development of writing analysis and creative communication for Grade 12 students of Suan Sunandha Rajabhat University Demonstration School. *Journal of Roi Kaensarn Academi, 7*(5), 292–304. https://so02.tci-thaijo.org/index.php/JRKSA/article/view/253295/172301

Phannan, P., Pattaranukrom, P., & Thongglin, D. (2021). Reinforcement process for community -based research in urban areas, Bangkok. *Journal of Social Development and Management Strategy, 23*(2), 21–41. https://so04.tci-thaijo.org/index.php/jsd/article/view/249039/172860

Raksakietwong, N. (2016). *The reform of vocational education in Thailand*. Thailand Development Research Institute. https://tdri.or.th/wp-content/uploads/2016/08/nuthasid-vocational-educationv02_2.pdf

Srikhamnuan, B., Thongnil, P., & Boonsong, K. (2017). Factors affecting success of dual vocational training in educational institutes in Lampang province under the Office of Vocational Education Commission. *Veridian E-Journal, Silpakorn University, 10*(2), 2352–2548. https://he02.tci-thaijo.org/index.php/Veridian-E-Journal/article/view/105590/83798

 © Authors