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Developing teacher competencies for vocational skills enhancement in Northern Thai educational welfare schools

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Abstract

Focusing on developing teacher competencies for vocational skills enhancement in Northern Thai educational welfare schools has the objectives to (1) study the actual condition, expected condition, development guidelines, and components of teacher competencies; (2) examine the components of teacher competencies; and (3) develop a teacher competency development model enhancing students' vocational skills in Northern Thai educational welfare schools. The research was carried out in two phases: Phase 1: Investigating the components and the actual condition, employing public hearings among 15 experts from three institutions, a survey of 306 participants, a study of best practices in three educational institutions, and nine expert interviews; Phase 2: Examining the components of teacher competencies through a focus group discussion with nine experts ; and Phase 3: Developing a model for developing teacher competencies through a workshop involving 15 experts. The research findings revealed five key components: principles, objectives, implementation guidelines, measurement and evaluation, and success factors, a model for enhancing teacher competencies. The model proposes six key development guidelines: vocational education curriculum management, vocational skills development of students, technological application in product design, encouraging students' self-awareness, guidance provision, supervision and support of learning resources, and vocational training opportunities. The evaluation of the model's suitability indicated that all components were rated at the highest level. The objectives showed the highest average score (4.82), followed by success factors (4.77), principles (4.75), measurement and evaluation (4.71), and implementation guidelines (4.68), respectively. The model was considered very acceptable with an average score (4.75), and a standard deviation (0.41).

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Introduction

Rationale and Significance

In the 21st century, human resource development has emerged as a key strategy for driving national growth. It is particularly through education that a vital role is played in strengthening populations' potential for adaptation and competition in a world of rapid change. Due to the shift towards a digital economy and knowledge-based society, Thailand has encountered the challenge of raising skills for its workforce. Consequently, the government formulated the 20-Year National Strategy (2018–2037) and the Education for Sustainable Development (ESD) initiative (Office of the National Economic and Social Development Council [NESDC], 2018). All policies stress the urgent need to enhance teachers' skills at all education levels; therefore, they can equip students with professional abilities and long-term self-reliance. The northern Thai educational welfare school group is an educational institution established to support underprivileged children, who often face economic and social problems and lack family care. The northern Thai educational welfare schools have a significant mission to educate and develop vocational skills for underprivileged children, enabling them to become self-reliant after graduation. However, preliminary studies and research on problems revealed that teachers in these educational welfare schools still lack the necessary competencies for managing vocational skills in all aspects, including knowledge, instructional management skills, and attitudes that truly promote learning. These competencies affect the quality of student learning and cannot successfully achieve the goals entirely.

A review of relevant literature revealed that enhancing teachers' competencies in managing vocational education sustainably requires a systematic approach, including concrete needs assessment and the design of authentic learning activities with continuous monitoring, evaluation, and development. Consequently, the researcher emphasizes the necessity of designing a model tailored for Northern Thai educational welfare schools. Implementing such a model would enhance the effectiveness of vocational skill learning management. As an educational administrator with a role in driving teachers' development, the researcher emphasizes the necessity of designing a model suited to Northern Thai educational welfare schools. The objectives are to enhance the quality of education management and provide opportunities for long- term self-reliance for students, in line with policies promoting educational equity and sustainable human resource development.

Objectives of the Research

1. To study the actual condition, expected condition, development guidelines, and components of teacher competencies;
2. To examine the components of teacher competencies;
3. To develop a teacher competency development model to enhance students' vocational skills in Northern Thai educational welfare schools.

Research Questions

1. How do the actual and expected conditions of teacher competencies differ in relation to enhancing students' vocational skills in Northern Thai educational welfare schools?
2. What underlying dimensions and characteristics define effective teacher competencies for vocational skill development in these schools?
3. How effective is the developed teacher competency model in improving students' vocational skills in Northern Thai educational welfare schools?

Conceptual Framework

This research is based on the main concept of a comparative analysis between the actual condition and expected condition of three key components. They are mentioned in the professional standards framework: (1) knowledge, (2) skills, and (3) attitudes. This analysis will enable the identification of a Gap Analysis, which serves as a needs assessment and prioritization for teacher competencies in six areas. It acts as a foundation for designing targeted development strategies based on a framework with six aspects. The development approach consists of five key components according to Figure 1.

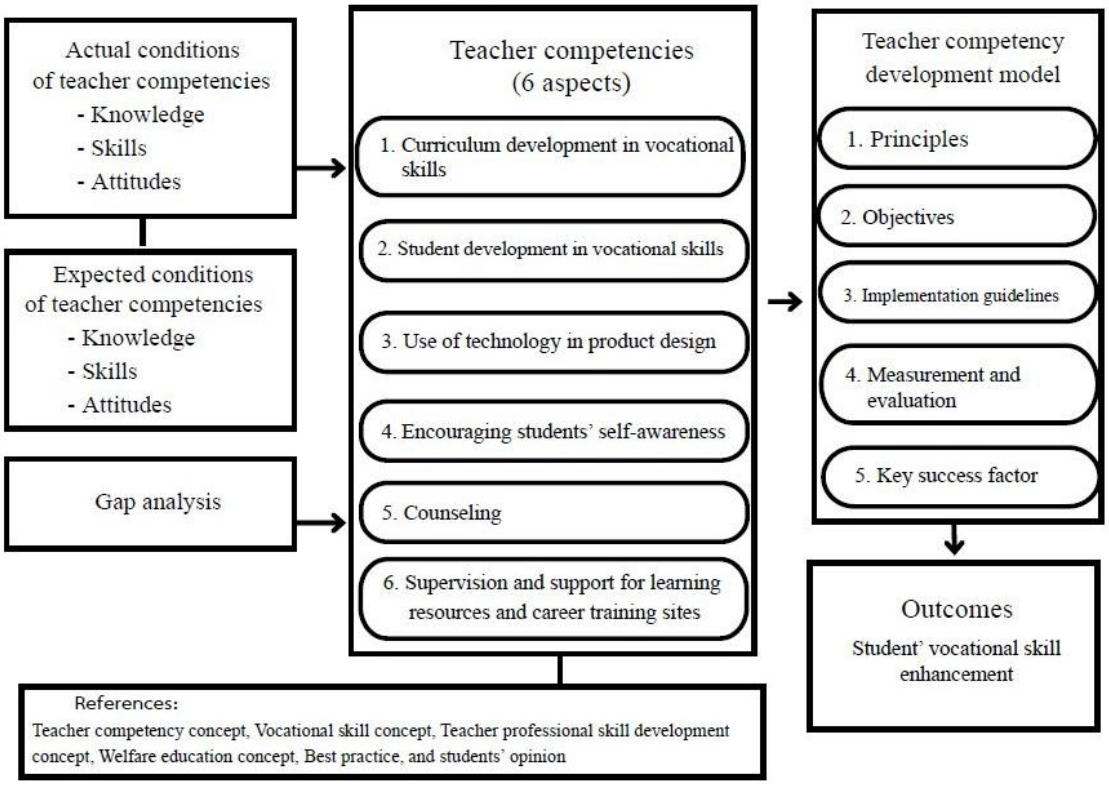


Figure 1 Conceptual framework

The regard for the development model has been considered through a process of expert review for its suitability to serve the context of welfare schools and to be applied practically in educational settings. The expected outcome of the research is to strengthen teachers' competencies in effective vocational skills instructional management. This will result in the improvement of students' vocational skills. It serves the welfare schools' mission to enhance the students' quality of life in the long term.

Literature Review

Concept of Teacher Competencies

Teacher competency is defined as behavioral characteristics that show effectively professional work. It enables teachers to attain outstanding performance achievement. Nguyen and Wong (2024) categorized the components of teacher competencies into three main aspects: (1) Knowledge covers subject-specific knowledge being taught and pedagogical knowledge being taught. (2) Skills are the abilities to manage learning and support developing students. (3) Attributes are attitudes, values, and professional ethics that are key factors influencing sustainable job creation and teaching success.

For teacher competencies in professional skill development, it requires specialized expertise and a special comprehension of students' contexts. In addition, Wang and Chen (2022) introduced a 21st century teacher competency framework focused on the significance of technological and innovative competencies. It includes the integration of technology into teaching practices, which is known as Technological Pedagogical Content Knowledge (TPACK) and is vital in the context of digital-era education.

Theory of Teacher Professional Development

Teacher professional development is a continuous process with the emphasis of competency enhancement through experimental learning. Johnson et al. (2022) propose the integrated teacher professional development concept involved with (1) Practice-Based Learning that strengthens practical knowledge and skills, (2) Reflective Practice and Collaborative

Learning that improve and develop critical thinking, (3) Coaching and Mentoring that enhance learning and solve immediate problems, and (4) Continuous Professional Development that emphasizes connecting theory with practice and establishing a professional learning community. The professional development of teachers in welfare schools should highlight building collaborative networks and support from various sectors. These can enable teachers to adapt and develop their skills sustainably within a specialized environment.

Concept of Vocational Skills Development

Vocational skills development is a process of enhancing the knowledge, skills, and attitudes essential for professional practice. Vocational skills in modern digital world are essential for professional practice. The World Economic Forum (2023) identifies core skills for the 21st century. They include digital literacy, analytical thinking, creativity, problem-solving, and collaboration. Therefore, the management of vocational skill learning must integrate these skills with the specialized knowledge and technical skills of each profession. As the welfare schools, the vocational skills development does not emphasize only knowledge, but it also improves adjustment and technological implementation into the classroom. It enhances teachers' competencies to provide opportunities and support students to develop these vocational skills completely. With regard to vocational skill development, it is necessary for teachers to have specialized expertise and understand students' contexts deeply.

According to Sulaiman and Ismail (2022), teachers with high vocational skills usually have hands-on experience in that particular field. Therefore, it enables them to link theoretical instruction with practice effectively. Moreover, these teachers can build strong networks with businesses and industry sectors for providing students' opportunities.

In the digital age, vocational skills are essential for achieving career success. Thongprasert and Wattanapanit (2022) carried out a study on vocational skill development for Thai youth. The findings revealed several core factors leading to success: consistency with demands of labor market, experiential learning, and teachers with direct experiences in the relevant vocational fields. Rittikul and Chompuming (2024) presented a conceptual framework for vocational skills development among underprivileged students with four key principles: (1) assessment of individual potential and interests, (2) setting clear and realistic career goals, (3) integrating theories and practices into learning, and (4) building networks and support systems.

Context of educational welfare schools

Northern Thai educational welfare schools serve underprivileged and special needs students. The aim is to prepare them with life and vocational skills to support long-term self-reliance. According to the Office of the Basic Education Commission (2022), these schools have tasks to promote educational equity and deliver contextually appropriate teaching and learning. The schools have to integrate vocational skill curricula at various learning levels while collaborating with local communities and industries. Consequently, students' vocational skill development is in line with labor market demands and teachers' specialized skills. Northern Thai educational welfare schools play a significant role in supporting underprivileged and special needs students, offering both education and care aimed at fostering long-term self-reliance.

According to the literature review, it can be summarized that the development of teacher competencies in the Northern Thai educational welfare schools requires consideration of multiple dimensions: knowledge, skills, and personal attributes. Professional development for teachers should be ongoing and include different methods, such as learning through real experiences, self-reflection, coaching, mentoring, and personal growth. Vocational skill training should also meet the needs of today's job market and match the unique setting of welfare schools, where students often have special needs and come from different backgrounds. As a result, improving teacher skills should focus on combining knowledge with practice, while also helping students stay focused and inspired. Most importantly, working closely with communities and other sectors helps ensure that vocational education is both effective and lasting.

Methodology

Research Design

This research is a research and development consisting of three main phases as follows:

The first phase was to study the actual condition, expected condition, development guidelines, and components of teacher competencies. The population comprised school administrators, government teachers, and civil service employees from 17 northern educational welfare schools, totaling 1,452 participants. The research sample was determined using Krejcie and Morgan's (1970) table. The total sample employed 306 participants: 18 school administrators and 288 government

teachers and employees. They were selected by a stratified random sampling method. For the study on development guidelines, a purposive sampling method was applied, which included nine experts and three best-practice schools. The questionnaire on actual and expected conditions was a five-point rating scale and had a reliability coefficient of 0.92 during its trial. Basic statistics such as mean, standard deviation, and the Priority Needs Index (PNI) were used, along with content analysis and inductive reasoning, for the analysis of development guidelines.

The second phase involved examining the components of teacher competencies. Focus group discussion was conducted with nine experts who were selected by purposive sampling. The research instrument was a meeting record form for identifying teacher competency components. The qualitative data were analyzed by examining logical relationships, and the results were presented using descriptive narrative analysis.

The third phase was to develop a teacher competency development model. The participants were 15 individuals: school administrators, academic department heads, and vocational teachers who were selected through purposive sampling and involved in drafting the model. The research instruments were a workshop record form for drafting the model and a model appropriateness assessment form based on a five-point Likert scale. Nine experts evaluated the appropriateness of the model, which showed a reliability coefficient of 0.89. Both basic descriptive statistics – mean and standard deviation – and qualitative analysis were applied for data analysis. Logical relationships within the data were examined and presented using descriptive narrative analysis.

Results

The following is a presentation of the research findings based on the two objectives:

1. The Actual Condition, Expected Condition, Development Guidelines, and Components of Teacher Competencies.

1.1 Components of teacher competencies to enhance vocational skills.

According to the public hearing, three aspects in components of teacher competencies were found as shown in Table 1.

Table 1 Components of teacher competencies to enhance vocational skills

Components	Details
1. Knowledge	- Knowledge in specialized professional fields - Knowledge in managing vocational skill learning - Knowledge of measurement and evaluation
2. Skills	- Skills of integrated learning management - Teaching technological integration skills - Skills of career counseling
3. Attitudes	- Commitment to student development - The value of pursuing a career - Teaching professional ethics

1.2 The actual condition and expected condition

The results on the actual condition, expected condition, and necessary needs for developing the components of teacher competencies to enhance students' vocational skills in the Northern Thai educational welfare schools were analysed for the difference between the actual condition and the expected condition by both a t-test and the modified PNI, based on a sample group of 306 participants, as shown in Table 1 and Figure 2. The gap analysis of between the actual condition and expected condition revealed that the component with the greatest difference was the curriculum development in vocational skills, with a PNI modified value of 0.49, as detailed in Table 2.

The research revealed, from Table 1 and Figure 2, that the actual condition of teacher competency components for enhancing students' vocational skills in the Northern Thai educational welfare schools had a mean as 3.68 and a standard deviation of 0.94. The highest mean was for encouraging students' self-awareness ($\bar{x}$ = 3.89), followed by use of technology in product design, counseling, student development in vocational skills, curriculum development in vocational skills, and supervision and support for learning resources and career training sites, respectively.

The expected condition of teacher competency components for enhancing students' vocational skills in Northern Thai educational welfare schools indicated a mean as 4.97 with a standard deviation of 0.15. The highest mean was for student development in vocational skills, use of technology in product design, and counselling ($\bar{x}$ = 4.98*)* followed by encouraging students' self-awareness, curriculum development in vocational skills, and supervision and support for learning resources and career training sites, respectively.

Table 2 The Results on the actual condition and expected condition of teacher competencies (n = 306)

Competencies	Actual Condition (D)	Expected Condition (I)	PNI modified = (I-D)/D	Prioritization Level
1. Curriculum development in vocational skills	3.30	4.92	0.49	1
2. Student development in vocational skills	3.71	4.93	0.32	5
3. Use of technology in product design	3.83	4.98	0.30	6
4. Encouraging students' self-awareness	3.89	4.97	0.27	7
5. Counseling	3.81	4.98	0.31	4
6. Supervision and support for learning resources and career training sites	3.54	4.98	0.41	2
Means	3.68	4.97	0.35	

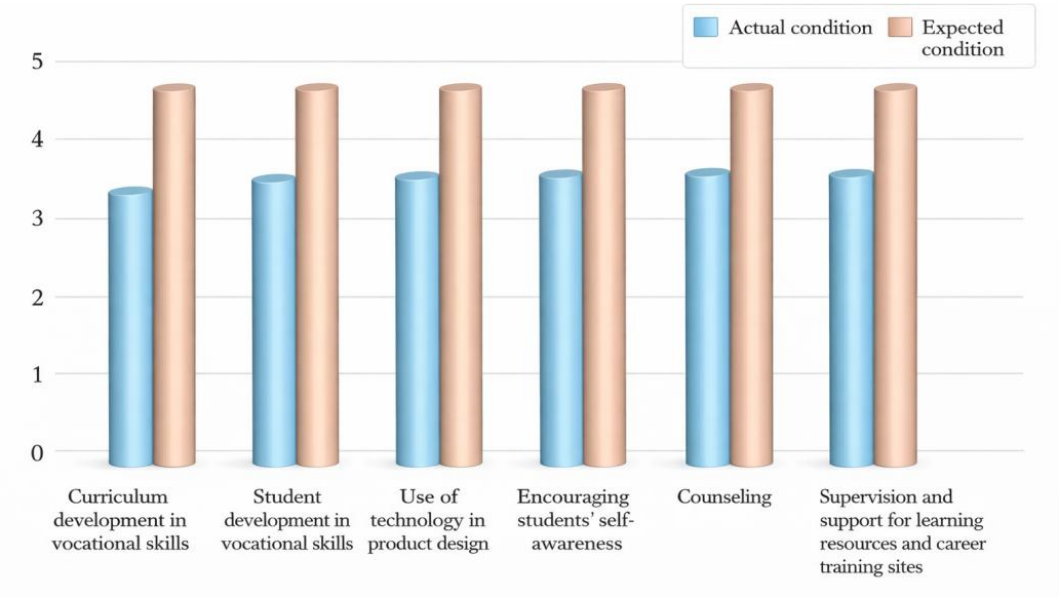


Figure 2 Bar chart comparing the average values of the actual condition and expected condition in each aspect

1.3 Development guidelines

According to the study of best practices and interviews with experts, six key development guidelines were identified, as shown in Figure 3.

According to Figure 3, the guidelines for teacher competency development in six areas are as follows:

Competency 01: Curriculum Development in Vocational Skills.

This refers to teachers' ability to design, develop, and improve curricula oriented toward enhancing students' vocational skills. It consists of curriculum development knowledge according to the school context, designing curricula that meet the needs of the labor market, integrating vocational skills with various subjects, and evaluating and improving the curriculum systematically.

Competency 02: Student Development in Vocational Skills.

This refers to the teacher's ability to manage learning activities that enhance students' vocational skills. It includes

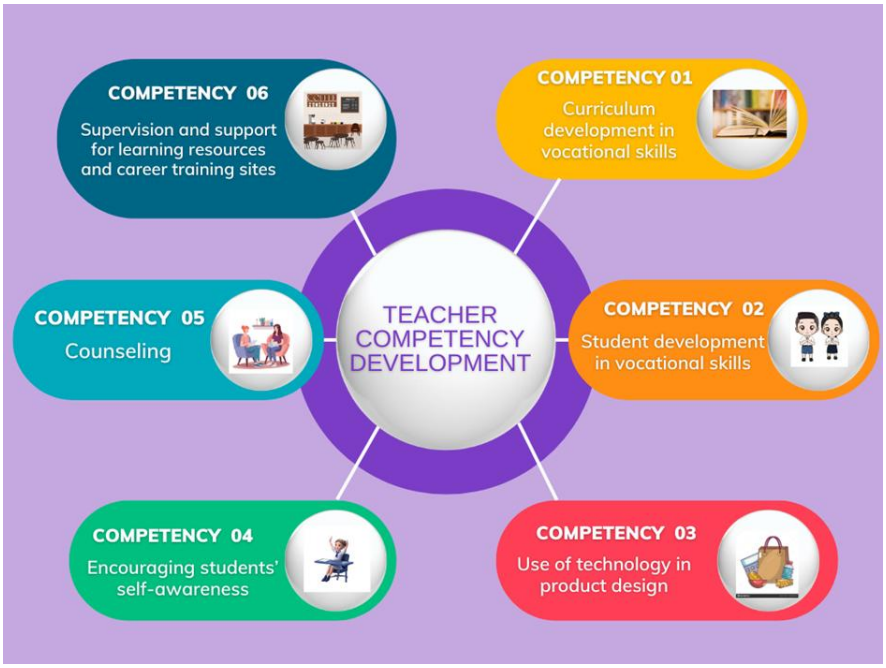


Figure 3 Diagram illustrating the six key guidelines to teacher competency development

organizing numerous learning activities in improving vocational skills, providing authentic learning experiences through projects and practical activities, integrating learning with the real world of work, and conducting a holistic assessment of students' vocational skill development.

Competency 03: Use of Technology in Product Design.

This refers to the ability to integrate technology into design and product development. It includes applying computer programs in product design, implementing digital technologies for development, guiding design techniques meeting market demands, and integrating technological knowledge into product design.

Competency 04: Encouraging Students' Self-Awareness.

This refers to the teacher's ability to support students to explore their aptitudes, interests, and unique identities. It includes organizing activities to encourage self-discovery and the identification of aptitudes, using tools for personality and interest assessment, providing career planning guidance to be in line with the student's identity, and creating a safe space for exploring and experiencing various skills.

Competency 05: Counseling.

This refers to the ability to coach and counsel fellow teachers for professional growth. It includes professional coaching and mentoring skills, exchanging knowledge and experiences among colleagues, establishing professional learning communities (PLCs), and promoting ongoing professional development.

Competency 06: Supervision and Support for Learning Resources and Career Training Sites.

This refers to the teacher's ability for supporting, managing, and developing learning and vocational training resources. It involves building collaborative networks with businesses, managing learning resources internal and external to schools, supervising and monitoring students during internships, and evaluating the quality of learning and training resources.

The development of these six teacher competencies is interconnected. It works jointly for holistic teacher development in terms of knowledge, skills, and attitudes. It emphasizes continuous and sustainable development to respond to students' needs and to address societal changes in the 21st century.

2. The Results of Developing Teacher Competency Development Mode

2.1 Elements of the model

The developed teacher competency enhancement model consists of five components, as shown in Figure 4.

Component 1: Principles. Teachers have competencies in enhancing student's vocational skills based on their potential

Component 2: Objectives. (1) To develop teachers' competencies in enhancing student's vocational skills, and (2) To promote students' vocational skills as their potential

Component 3: Implementation guidelines, which consist of two main parts. The first part, 3.1, presents development guidelines using the PAOR+N model: P (Plan) involves creating a teacher competency development model by identifying and analyzing key issues for resolution; A (Action) refers to implementing the planned strategies; O (Observe) entails monitoring the outcomes of implementation; R (Reflect) focuses on reflecting on the results, gathering feedback and critiques from stakeholders to inform future improvements; and N (Network) highlights the importance of building collaborative networks. The second part, 3.2, details six development modules. Module 1. Recognizing and understanding individual

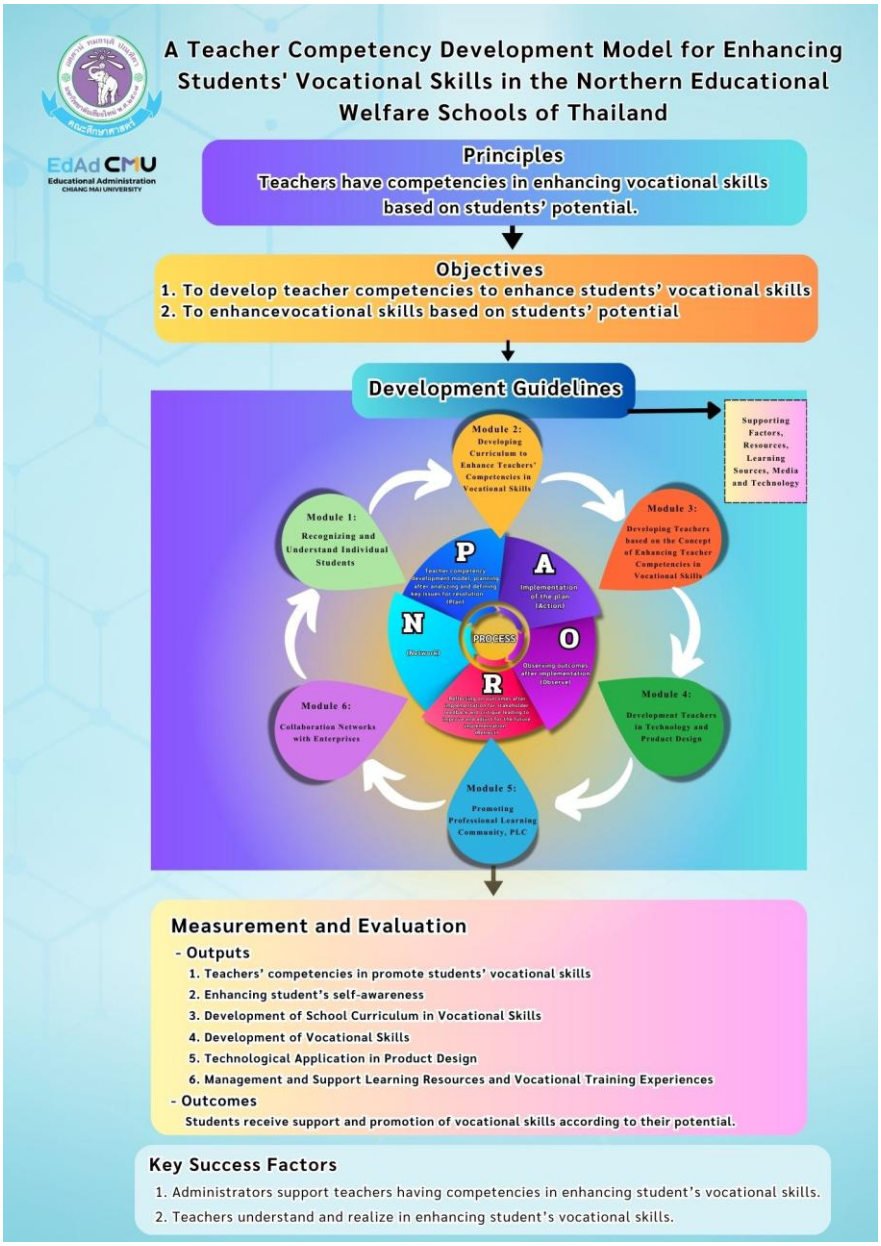


Figure 4 Diagram showing the teacher competency development mode

students. Module 2. Developing curriculum to enhance teachers' competencies in vocational skills. Module 3. Developing teachers based on the concept of enhancing teachers' competencies in vocational skills. Module 4. Development of teachers in technology and product design. Module 5 Promoting professional learning communities, PLC. Module 6. Collaboration networks with enterprises based on supporting factors, resources, learning sources, media, and technology in the implementation process.

Component 4: Measurement and evaluation. This emphasizes two key areas. First, Teachers have competencies in enhancing student's vocational skills, which includes encouraging students' self-awareness, vocational education curriculum management, vocational skills development of students, technological application in product design, counseling, Supervision and support of learning resources and vocational training opportunities. Second, students receive support and promotion of vocational skills according to their potential.

Component 5: Key success factor. Administrators support teachers having competencies in enhancing student's vocational skills. Teachers have knowledge, understand and realize in enhancing student's vocational skills.

2.2 Evaluation results of the model's suitability

The models' suitability evaluated by experts, is shown in Table 3.

From Table 3, the developed teacher competency development model was highly suitable in all components. It had an overall average score of 4.75 (SD = 0.41).

Discussion

The research covers the significant points to discuss as follows:

1. Components of Teachers' Competencies

The findings present that necessary teacher competencies consist of three main aspects: knowledge, skills, and attitudes. This is related to McClelland's (2023) concept, which presents that competencies are behavioral characteristics as the result from knowledge, skills, and attributes. The findings indicate that necessary teacher competencies consist of three main aspects: knowledge, skills, and attitudes. This aligns with McClelland's (2023) concept, which states that competencies are behavioral characteristics resulting from knowledge, skills, and attributes. Additionally, the results of the gap analysis between actual and expected conditions indicated that the largest difference was found in curriculum development for vocational skills (means of 3.30 and 4.92, respectively). This reflects an urgent need to develop teacher competencies. The finding is in line with Williams (2021), who reported that teachers in schools with unique contexts still lack the necessary skills to develop curricula that address the specific needs of students. Significantly, the findings of this study differ from those of Chen et al. (2022), who researched general school contexts. They found that teachers needed more development in technology use than in curriculum development. This difference can be attributed to the unique characteristics of welfare schools. These schools require flexible curricula that are consistent with the special needs of students from diverse social and economic backgrounds. As Thompson and Harris (2023) pointed out, curriculum development in specialized educational contexts must prioritize the specific needs of students.

2. Teacher Competency Development Model

The teacher competency development model presented in this study exhibits uniqueness in implementing the PAOR+N framework-Plan, Action, Observation, Reflection, and Network. This approach serves with the professional development concept outlined by Darling-Hammond and

Table 3 Evaluation results of the model's suitability

Components	Mean	*SD*	Suitability Level
1. Principles	4.75	0.43	Highly
2. Objectives	4.82	0.38	Highly
3.Implementation Guidelines	4.68	0.45	Highly
4. Measurement and Evaluation	4.71	0.41	Highly
5. Success Factors	4.77	0.40	Highly
Overview	4.75	0.41	Highly

McLaughlin (2018), who prioritize participatory professional learning and practical application. The 'Network' dimension extends the traditional action cycle framework. This is supported by the findings of Hargreaves and O'Connor (2023), who emphasize that forming collaborative networks between teachers and external organizations plays a key role in enhancing students' vocational skills.

The structure of the six development modules reflects a careful consideration of balancing curriculum development, instructional management, and network-building. This approach aligns with Timperley's (2020) holistic perspective on effective teacher professional development, emphasizing the importance of integrating content knowledge, pedagogical skills, and the creation of professional learning communities. However, implementing all six modules faces significant restrictions related to time and resource allocation, posing considerable obstacles to teacher professional growth in uniquely contextual schools.

3. Success Factors

The findings indicated that administrative support and awareness-building are important to the successful teacher competency development. This is compatible with the research concepts of Srisaan (2021) and Robinson et al. (2021), whose findings discovered that the success of professional skill development depends on collaborative networks with enterprises and administrative support. In addition, a professional learning community should be established, as it is an important mechanism for sustainable teacher competency development. It was found that school administrators' academic leadership has a positive correlation with both teacher professional development and student achievement. When school administrators prioritize and support the process of teacher competency development, it results in teacher motivation and provides sufficient resources for their professional growth.

Impact of Teacher Competency Development on Educational Development

The findings are significant for educational development in welfare schools and other unique context of schools. They are as outlined below.

First, the teacher competency development model presented in this study can be applied as a framework for national-level policy formulation in supporting vocational skills, as emphasized by UNESCO (2023). This integration of vocational skill development alongside general education is particularly important for students from socially and economically vulnerable backgrounds. Consequently, enhancing teacher competency serves as a crucial point for improving the quality of vocational education.

Second, the findings indicate the significance of designing teacher development curricula that respond to actual needs rather than relying on standardized models that may not address specific contexts. This is supported by Desimone's (2021) concept; he mentions that effective professional development for teachers must be based on a needs analysis and the unique context of schools.

Third, the integration of the PAOR+N concept into the teacher competency development model raises awareness of the value of participatory and continuous development processes. This approach aligns with the findings of Vescio et al. (2023), who concluded that professional learning communities (PLCs) with reflective practices and learning networks have a positive impact on teacher competency and student learning outcomes.

Conclusion and Recommendations

The research revealed the following key findings: (*1*) Teacher competencies involve three components: knowledge, skills, and attitudes. These competencies consist of six aspects: student development in vocational skills, the use of technology in product design, encouragement of students' self-awareness, counselling, supervision , and support for learning resources and career training sites, and (2) The developed teacher competency development model includes five components: principles, objectives, implementation guidelines, measurement and evaluation, and key success factors. The development approach is conducted through the PAOR+N process and consists of six development modules. Experts evaluated the model's appropriateness and pointed out that all components were rated as highly appropriate, with an overall average score of *4.75*.

Recommendations for Applying the Research Findings

1. Policy level

The Ministry of Education should establish the development of teacher competencies in vocational skills as a strategic priority in the national education development plan. The Office of the Basic Education Commission should establish regional centers for vocational teacher competency development collaborated with higher education institutions and vocational education institutes. Affiliated agencies should develop a

standardized teacher competency assessment system that serves the specific context of welfare schools.

2. School level

School administrators should implement the teacher competency development model appropriately with their school context. They can pay more attention on integrating all six development modules. Schools should promote the establishment of Professional Learning Communities (PLCs) with an emphasis on sharing knowledge in vocational skill development, and develop internal supervision systems to highlight coaching and reflection.

3. Teacher level

Teachers should analyze their competencies and work on an Individual Development Plan (ID Plan) that is consistent with students' needs. They should improve integrated instructional management system by connecting subject matter to vocational skills. Importantly, they should build learning networks with the experts in the fields and teachers in the other schools.

Conflict of Interest

The authors declare that there is no conflict of interest.

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