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The Development of the Services of the Center of Vocational Manpower Networking Management Department of Energy Techniques Chaiyaphum Technical College

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Abstract

Office of the Vocational Education Commission has assigned Chaiyaphum Technical College to be the Center of Vocational Manpower Networking Management (CVM) in the field of energy techniques. It has a mission to develop teachers, learners and build a body of professional knowledge. Under the vocational intelligence resource, educational institutions have excelled in the academic year 2021, which was used as a case study this time. The purposes of this research article were: 1) to study the service of the Center of Production Network Management and Vocational Manpower Development-Energy Technical Program, 2) to study the service results of CVM., Energy Technical Program. The tools used were interview forms, questionnaires, and the interview. The participants were 11 key participants. The research findings were; 1) service results of CVM were the success in producing and developing high-quality manpower including; (1) producing and developing technicians on disciplines, requirements and be able to work internationally through the curriculum aligned to the professional standard framework, (2) collaborating with government agencies / private sectors and leading companies within the country and abroad, (3) teachers, professional staff in the field of energy techniques which able to enhance work efficiency, (4) responding to community, social and strategic needs for country development at provincial level, 2) the service results of the CVM-Energy Technical Center were: 1) the curriculum had been improved and developed, 2) learners have skills in the field of energy techniques, 3) learners had further education in their fields of study, 4) internships in the workplace; and 5) the workplaces were satisfied for supporting students, including (1) morality and ethics with mean of the highest level ($\bar{X} = 4.61$), (2) knowledge and skills with the highest level ($\bar{X} = 4.55$), (3) human relations in work had the overall mean in the highest level ($\bar{X} = 4.65$), and (4) had the overall mean internship at the highest level ($\bar{X} = 4.60$) as well.

Keywords: Center of Vocational Manpower, Networking Management: CVM, Energy Technique

1. Introduction

In planning for developing man power, it has been necessary to have the information about establishments, characteristics of needed man power, information and labor demand of each establishment in order to develop man power harmoniously with industrial types. The Twelfth National Economic and Social Development Plan (2017-2021) has created the framework of the human resource development to meet with the need of the industrial sector in order to support Industry 4.0. (The Twelfth National Economic and Social Development Plan (2017-2021))

The Ministry of Education has established an education management policy to provide education for careers and build competitiveness of the country by modernizing the curriculum and learning process. It is in line with the National Qualifications Framework (NQF) and the ASEAN Qualifications Reference Framework (QAQRF) with modern tools and in line with current technology Developing quality teachers and efficiency as well as driving the Center of Excellence in Vocational Education (Excellent Center) so that educational institutions manage vocational education in accordance with the spatial context and meet the needs of the country, so that vocational graduates have careers and suitable income for living and good quality of life contributes to enhancing the ability to compete on the world stage.

The Office of the Vocational Education Commission Produce and develop quality manpower which be in line with the needs of the agricultural, industrial, business and service sectors of the country. It has foreseen the



importance of developing vocational education institutions by emphasizing the college as a center of vocational education management in development of the quality of education for all concerned parties. The goal is the quality of vocational learners. Its main objective is to produce and develop human capital to be technicians and high technologists, to develop educational institutes to be excellent in their fields of study to meet with needs of the community, Society and National Development Strategy, and also promote and support the government cooperation private sector and industry both domestically and internationally. Besides that, this develop teachers to have professional competencies and experiences that meet the needs of the enterprise sector and develop professional and entrepreneurial skills of students to have new knowledge and necessary skills continuously in order to change technology and innovation. Teachers have up-to-date professional competencies that are in line with the technology used by today's workplaces. Learners have professional competencies in their subject areas to meet the needs of the establishment Educational institutions and have quality assurance systems that meet with the educational standards and suitable for the course teaching management, technology media, and learning resources. The Office of the Vocational Education Commission has evaluated the performance according to the vocational education quality development guidelines of both public and private vocational education institutions and grouping educational institutions into groups. According to the field of study, it was divided into 3 groups: General (Standard), Specialized (Expert), Excellent and Specialized (Excellent Center), that proceed to select schools of excellence and specialization with potential in management that correspond to the professional groups of the subcommittee in collaboration with the public and private sectors in order to produce and develop vocational manpower (Center of Vocational Manpower Networking Management). The Office of the Vocational Education Commission has announced the Center for Management of Production Networks and Vocational Education Manpower Development, academic year 2021, June 18, 2021, a total of 25 places and Chaiyaphum Technical College was selected to be the center of vocational manpower networking management (CVM) in the field of energy techniques. For this reason, Chaiyaphum Technical College has been allocated budget for the development of the Excellence Center of the Vocational Education Project (Excellent Center) for educational institutions to carry out missions according to Activity 1, which based on standards, indicators, and assessment criteria of educational institutions in the development project. The center of excellence of the vocational education (Excellent Center) cooperates with the establishment to strengthen the development of teachers, learners and build a body of professional knowledge under the vocational knowledge warehouse, specialized educational institutions and self-assessment report according to the management standards for the development of the Excellent Center for Vocational Education Project (Excellent Center) and for educational institutions to carry out missions according to Activity 2, clarifying the use of competency-based curriculum in accordance with professional standards according to the National Qualifications Framework (NQF) and the ASEAN Qualifications Reference Framework (AQRF) for educational institutions under the Office of the Vocational Education Commission public and private offered in fields of excellence. It also allocates a budget for training and teacher development of the Center for Vocational Education Manpower Development and Production Network (CVM) for the fiscal year 2022, using the budget from Activity 1, development of modern teacher competencies on standards occupation under the vocational education teacher potential development project to have the competency of modern teachers and teachers in the 21st century on the strategic plan to develop the quality of education and learning, 2022.

The researcher attended a professional practice in educational administration at Chaiyaphum Technical College on 19 August - 30 September 2022, with Dr. Pha Agsonsua and Associate Professor Dr. Chalard Chantarasombat supervising the training experience at that time which received a report on the service of the Center of Vocational Manpower Networking Management (CVM) in the field of energy techniques of Chaiyaphum Technical College. The development of services of the center for production network and vocational manpower development Department of Energy Techniques Chaiyaphum Technical College was made to study the service results of the Center for Production Network Management and Vocational Manpower Development both in terms of conditions, progress, success of operations, problems, obstacles and solution as well as innovations, forms, guidelines for the establishment of educational institutes, the Center of Vocational Manpower Networking Management: CVM, as well as the level of satisfaction of the workplace towards students who practice in the workplace as well.



2. Purposes

- 1) To study the service of the Center of Vocational Manpower Networking Management: CVM1) and Vocational Manpower Development-Energy Technical Program in the field of energy techniques of Chaiyaphum Technical College
- 2) To investigate the service results of CVM. Energy Technical Program in the field of energy techniques of Chaiyaphum Technical College

3. Research Methodology

There were 3 phases of data collection;

- Phase 1: studying the service process of the Center for the Production Network Management and Vocational Manpower Development Energy, Technical Branch of Chaiyaphum Technical College from the guide to drive network center operations production and development of vocational manpower of the Office of the Vocational Education Commission Report form summarizing the performance of various projects of the CVM Center for the academic year 2022.
- Phase 2: interviewing, the researcher coordinated with Dr. Pha Agsonsua and Associate Professor Dr. Chalard Chantarasombat, co-researchers, interviewed administrators, teachers, staff, students and personnel involved in the service of the Center for Production and Development Network. Manpower vocational education CVM which visiting the area at Chaiyaphum Technical College to collect data and evaluate the internship in the research area
- Phase 3: Summarizing of service results of the Center for Production Network Administration and Vocational Manpower Development in the field of energy techniques of Chaiyaphum Technical College. The researcher coordinated with the teachers who were teaching and learning in a bilateral system to use the appraisal form with 11 students to analyze their satisfaction characteristics of each aspect.

Research Instruments

1. The interview was used to interview the administrators and staff
2. The satisfaction interview which 5 Likert scales

Statistic Used

The data from the interview were analyzed to find the percentage, mean, standard deviation, and the mean was 3.51 (Srisa-ad, 2011).

4. Results

Phase 1: According to the Announcement of the Office of the Vocational Education Commission on the Center for Network Management and Manpower Development Vocational Education academic year 2021, on June 18, 2021, the Office of the Vocational Education Commission has assessed the performance on the vocational education quality development guidelines for both public and private vocational education institutions. The educational institutions are grouped based on the fields of study into 3 groups; the general group (Standard), the specialized group (Expert), and the excellence and expertise group (Excellent Center). Specialization with management potential in the fields of study are consistent with the occupational groups of the Joint Government-Private Sector Sub-Committee for Production and Development of Vocational Manpower (Center of Vocational Manpower) which be the Center of Vocational Manpower Production and Development Network Networking Management) with 25 locations and Chaiyaphum Technical College was selected in the field of energy techniques. The Office of the Vocational Education Commission has allocated a budget for the development of the Center of Excellence project, Vocational Education (Excellent Center) 1st installment and let educational institutions carry out missions according to Activity 1, administer according to standards, indicators, and educational institute assessment criteria in the Center of Excellence Development Project. The vocational education (Excellent Center) cooperates with the establishment to strengthen the development of teachers, learners and build a body of professional knowledge under the vocational knowledge warehouse, specialized educational institutions and self-assessment report on the management standards for the development of the Excellent Center for Vocational Education Project (Excellent Center) and for educational institutions to carry out missions on Activity 2, which clarifying the use of competency-based curriculum in accordance with professional standards on the National



Qualifications Framework (NQF) and the ASEAN Qualifications Reference Framework (AQR) for educational institutions under the Office of the Vocational Education Commission public and private. It also allocates a budget for training and teacher development of the Center for Vocational Education Manpower Development and Production Network (CVM) for the academic year 2022, using the budget from Activity 1, development of modern teacher competencies on the standards. occupation under the vocational education teacher potential development project in order to have the competency of modern teachers and teachers in the 21st century, a strategic plan to develop the quality of education and learning, academic year 2022, organized a short-term vocational training program, workshop on curriculum improvement and development in collaboration with enterprises on the National Qualifications Framework (NQF) and the ASEAN Qualifications Framework for Reference (AQR) Training and Development of Teachers in Energy Techniques (Online) Curriculum for Assistant Personnel Responsible for General Energy Level 5 (Online), teachers, electrical departments, Chaiyaphum Technical College, 9 people would practice for the professional experience in the workplace in 2020 for the Higher Diploma Program (revised 2022) to be used in teaching and learning for the 2022 academic year.

Phase 2: The researcher coordinated with Dr. Pha Agsonsua and Associate Professor Dr. Chalard Chantarasombat to join with the co-researchers, the interviewers, teachers, officers, students and personnel involved in the service of the Center for Production Network Management and Vocational Manpower Development, CVM. For collecting the data at Chaiyaphum Technical College and evaluate the internship students. In summary, Chaiyaphum Technical College operates in organizing educational institutions under the Center of Excellence in Vocational Education (Excellent Center) and the Center of Vocational Manpower Networking Management (CVM) and the results are summarized as follows.

1. Preparation for using the competency-based curriculum, there were various projects prepared by Chaiyaphum Technical College;

1) Workshop on the use of a competency-based curriculum in line with professional standards on the qualifications framework National (NQF) Department of Energy Techniques Solar Cell Power Technique under the Excellence Center for Vocational Education Development Project at the Vocational Education Manpower Development and Production Network Management Center (CVM) in the energy technique field, Chaiyaphum Technical College, April 21, 2022. The participants were 20 people who were teachers in the Department of Energy Techniques, Department of Electrical Power or related fields in educational institutions under the Office of the Vocational Education Commission. The speakers were Mr. Siam Phopphet and Mr. Wisut Bunserm.

2) Organize a project to establish standards, indicators, and criteria for evaluating institutions in the Center of Excellence Development Project. The vocational education (Excellent Center) with the establishment at the Network Management Center for Vocational Education and Manpower Development (CVM) in the field of energy techniques, Chaiyaphum Technical College, April 22, 2022. The participants were 20 staff.

2. Teacher development, Chaiyaphum Technical College organizes teacher training to prepare for the development of teachers in energy techniques as follows:

1) Organize training and development for teachers in energy techniques (online), courses for Assistant staff of General Energy Level 5 (online) which were between 23 - 26 September 2021 at Puangsaed Conference Room Department of Electrical Engineering, Chaiyaphum Technical College, lecturer from the Clean Energy Research Unit, Rajamangala University of Technology Lanna The participants were 79 teachers and educational staff under the vocational education, the department for the training consists of Office of Teacher Competency Development and Vocational Education Personnel (VOC) and Vocational Workforce Development and Production Network Administration Center (CVM) in Energy Techniques, Chaiyaphum Technical College.

2) Organize a workshop project Course for practitioners in designing power generation systems from solar cells Level 4, at Puangsaed Conference Room Department of Electrical Power Chaiyaphum Technical College which were April 25-29, 2022. The participants were 20 teachers, Department of Energy Techniques, Department of Electrical Power or related fields in educational institutes under the Office of the Vocational Education Commission. The speakers were Dr. Tuangsap Jongchaipak and Dr. Phairot Panukan

3) Sending 9 teachers to the electrical power departments, Chaiyaphum Technical College to practice professional experience in the workplace. This step was divided into 2 periods, the first period was 20 - 30 April 2022 and the second period was 3 - 13 May 2022. The research area were; 1) First Control System Company Limited, 2) Delta-Nei Company Co., Ltd., 3) Sima Energy Service Co., Ltd., 4) ATT Switchboard Co., Ltd.



3. Curriculum improvement and development, Chaiyaphum Technical College has organized various projects to improve and develop the curriculum as follows:

1) Organize a project, a workshop on curriculum improvement and development in collaboration with enterprises on the framework National Qualifications (NQF) and the Asian Qualifications Reference Framework (AQRF) meet the requirements of enterprises on 15-16 September 2021 at Kangsadan Conference Room, Chaiyaphum Technical College. The participants were staff from many agencies, including Chaiyaphum Technical College, curriculum development with Provincial Electricity Authority, Chaiyaphum Province, Rajabhat University, Skill Development Institute, Chaiyaphum Provincial Energy Office and various establishments.

2) Organize a short-term vocational training program on competency, Education to Employment: Vocational Boot Camp (E to E) 60-hour electrical system energy conservation course, duration of 60 hours, on 21 August 2021 to 18 September 2021 at Puangsaed Conference Room Department of Electrical Engineering, Chaiyaphum Technical College. The lecturers were Mr. Manoon Najhuang from Chaiyaphum Technical College and Mr. Sontaya Nasungnoen, skill development worker, Chaiyaphum province who received the Higher Diploma Program, 2020 (Revised 2022) used in teaching and learning for the 2022 from the first semester of the 2022. The target group included a high vocational certificate students (High Vocational Certificate) in the field of energy technology.

4. Teaching and learning management, Teaching and learning in 3 models were as follows

Class 1, Academic Year 2018, High Vocational Diploma Program 2014 in the field of energy technique, field of work energy management techniques

Class 2, Academic Year 2021, High Vocational Certificate Program 2020 in Energy Techniques, Field of Work alternative energy techniques

Class 3, Academic Year 2022, High Vocational Certificate Program 2020, Major in Energy Techniques, in the field of Work Techniques for electrical energy from solar cells

Each cohort has a duration of 2 years of study. It is a bilateral course which education in this system, students or trainees (Trainee) must study general subjects by studying and practicing basics at an educational institution for 1 academic year and practicing professional experience in a workplace for another 1 academic year.

5. Innovation/form/approaches for educational institute management under the center of excellence Vocational Education Center (Excellent Center) and Center of Vocational Manpower Networking Management: CVM

1) Off grid innovation

2) Short teaching style about solar energy with Chaiyaphum Skill Development Office

3) Guidelines for curriculum development in collaboration with enterprises according to the National Qualifications Framework (NQF) Framework ASEAN Reference (AQRF)

4) Personnel Development Guidelines, send teachers to practice real professional experience in establishment

6. Achievements in producing and developing high-quality manpower

1) Produce and develop technicians to have disciplines, be able to work internationally under the course linked to the framework of professional standards

2) Cooperation with government agencies / private sector and leading companies in the country and abroad

3) Teachers and the staff have professional competence in the fields of energy techniques and able to create innovations to enhance work efficiency

4) Respond to the needs of communities, society and national development strategies and provincial level

5) The curriculum is adjusted and developed to be in line with professional competencies on professional qualifications framework.

6) Learners have skills in the field of study, be able to perform tasks that meet the requirements of the workplace which continuing higher education in the field of study energy technique

7. Success Factors

Success factors in driving the operation of the Center for Production Network Management and Vocational Manpower Development (Center of Vocational Manpower Networking Management : CVM) of Chaiyaphum Technical College has the potential in teaching and learning management which are ready in terms

of locations for teaching and learning management on the High Vocational Diploma Program in the field of Energy Techniques. There are also places to support energy training for government agencies and private sectors. There is a training seminar to educate students and the general public who were knowledgeable staff. Students could visit the real condition of workplaces. Administrators and teachers had opportunities to visit abroad.

Phase 3: Summary of service results of the Center of Production Network Management and Development of Vocational Education, Technical Branch Energy of Chaiyaphum Technical College. The researcher coordinated with the teachers for teaching and learning in a bilateral system to use the assessment form for the internship students, which were assessed by the trainers in the workplaces. The trainers analyzed the satisfaction of desirable characteristics of each side of 11 students, of the 2nd generation students, academic year 2021. Moreover, there were 11 people from the Diploma Program 2020 in the field of energy techniques, who graduated in academic year 2022, which were divided into 3 aspects of assessment; 1) morality and ethics, 2) knowledge and skills, and 3 human relations. The results of the satisfaction assessment in each aspect of desirable characteristics can be summarized as follows; (1) morality and ethics with a total mean of 4.61. The results of the assessment were satisfactory at the highest level, which can be summarized in descending order as follows; the establishments were satisfied at the highest level. The students had the highest honesty and selflessness with an average of 4.82, followed by patience and tolerance with an average of 4.73, discipline and dressing with an average of 4.55 and satisfaction at the high level, which was responsibility and straightforwardness per time with an average of 4.36 (2) knowledge and skills with a total average of 4.55, the results of satisfaction assessment were at the highest level. Summarized by items in descending order as follows: The establishments were satisfied at the highest level, that is, students had knowledge, ability to learn, and had knowledge and ability to solve problems with an average of 4.82, followed by work piece quality with an average of 4.64. To safety, there was an average of 4.55. The results of satisfaction assessment were at a high level, that is, knowledge application (analytical thinking) had an average of 4.45, efficiency of work had an average of 4.36, maintenance of tools and equipment had an average of 4.36. average 4.18 (3) human relations in work with a total mean of 4.65, satisfaction assessment results were in the highest level Summarized by items in descending order as follows: The establishments were satisfied with the highest level, that is, students were selfless with an average of 4.91, followed by diligence and determination with an average of 4.82, communication and persuasion abilities with an average of 4.73 and Enthusiasm with an average of 4.55 for satisfaction assessment results at a high level, namely leadership with an average of 4.27. Overall results of student internships in all 3 workplaces have satisfaction assessment results in student characteristics. Internships were at the highest level with an average of 4.60. There was an integrated work summary of study and research results as shown in Figure 1-7.



Picture 1: The researchers and the administrators at Chaiyaphum Technical College were planning to do a research



Picture 2: Getting the document about the Center of Vocational Manpower Networking Management: CVM



Picture 3: The researchers collected the data



Picture 4: The researchers observed the learning of Year 3 trainee in the Academic Year 2022 for the Technical Program in the field of energy techniques of Chaiyaphum Technical College



Picture 5: The researchers interviewed Year 2 trainee in the Academic Year 2021 for the Technical Program in the field of energy techniques of Chaiyaphum Technical College



Picture 6: The researchers and teachers summarized the satisfaction interview



Picture 7: The researchers, teachers and students were discussing the results

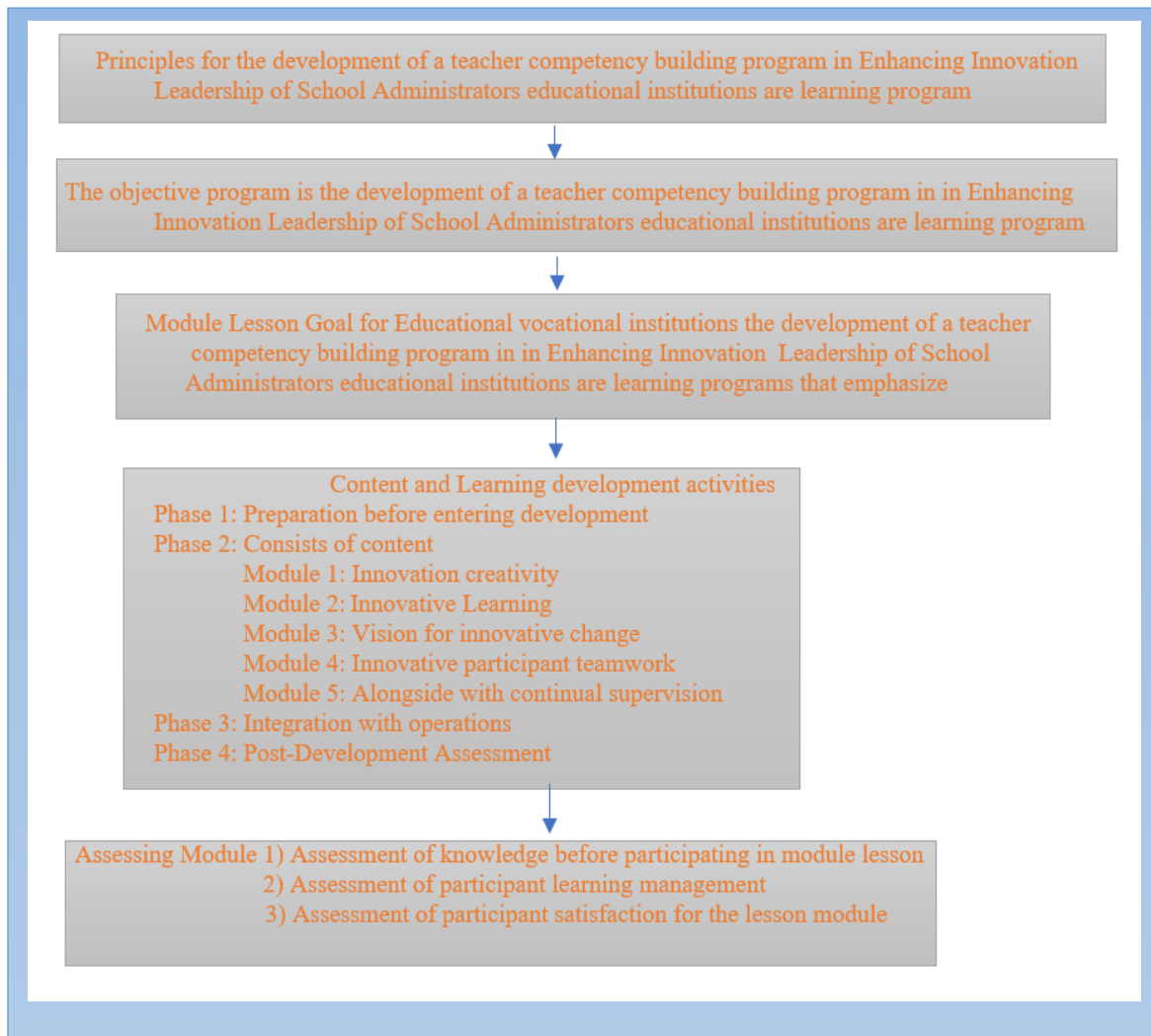


5. Conclusions and Discussion

1. Performance of services provided by the Center for Production Network Management and Vocational Education Manpower Development technical field Energy has been successful in producing and developing high-quality manpower. This may be because there are methods and operations as follows: (1) production and development Technician level by field of study, able to work internationally under the curriculum linked to the professional standards framework (2) There is cooperation with government agencies / private sector and leading domestic companies (3) Prepare teachers, educational personnel with professional competencies in the field of energy techniques. Until being able to create innovations to enhance work efficiency and (4) learning through real practices that respond to community, social and strategic needs country development and provincial level. This is consistent with the study report. of the electrician department The Center for Vocational Education Manpower Development and Production Network (CVM), Chaiyaphum Technical College (2022) has studied the subject of According to the National Qualifications Framework (NQF) in Energy Techniques Electrical Energy from Solar Cell Technical Department Under the vocational excellence center development project (Excellent Center)” has the highest average of Appropriateness of the environment and atmosphere in the training room This may be due to the environment and atmosphere in the training room suitable for training workshops on the use of the curriculum This resulted in the training being smooth and successful and consistent with the study report of power electrician department Center for Network Management and Vocational Education Manpower Development (CVM), Chaiyaphum Technical College (2022) has studied the subject of “workshop training. Manufacturing system design practice course.

2. Result of using the service of the Center for Network Management and Vocational Education Manpower Development Department of Energy Techniques Chaiyaphum Technical College in the academic year 2021 and the academic year 2022 has upgraded the quality of education management to excellence in vocational education. This may be due to continuous improvement and development of work according to plans and goals. The development of the energy technical curriculum was 1) the curriculum was revised and developed to be in line with 2) Learners have skills in the field of energy techniques able to work according to the needs of the enterprises; 3) have further education at a higher level according to their field of study; 4) have an internship in the enterprise; and 5) the learners are satisfied with each aspect of activities of students, including (1) morality and ethics The mean was included in the highest level (\bar{x}) =4.61). (2) knowledge and skills. The mean was included in the highest level (\bar{x} = 4.55). (3) Human relations in work, 4) the overall mean total in the highest level (\bar{x} = 4.65) and 4) the overall average overall internship at the highest level (\bar{x} = 4.60) as well, which tended to increase. Consistent with the study report of power electrician department. The Center for Vocational Education Manpower Development and Production Network (CVM), Chaiyaphum Technical College (2022) has studied on “Project Implementation of Standards, Indicators and Criteria for Educational Institution Assessment in the project to develop a center of excellence in vocational education (Excellent Center) in collaboration with the enterprise.

3. This research, the researcher discovered new the development of the Services of the Center of Vocational Manpower Networking Management Department of Energy Techniques Chaiyaphum Technical College educational institutions are learning programs that emphasize learning by doing and excellence learning module that user of the program must learn by Chalard Chantarasombat and Tharika Phumsathan (2022) have studied the subject Development of learning kits for teachers in learning management to enhance creativity for learners at the Vocational Certificate level, Chaiyaphum College of Agriculture and Technology the development of learners have skill this may be because in the field of Efficient development of the learning package. on new ideas in educational reform of teachers 1) efficiency of the implementation process/efficiency of outcomes The mean percentage was 84.40/8 2 .54 which was higher than the set criteria 2) The effectiveness index was 0 .8 5 6 2 which showed that teachers had an increase of 85.6 2 % knowledge 3) Compared the average after learning with before. 4) The teachers' overall satisfaction with the learning package was at the highest level. Consistent with education by Sunet Thongpo, Chalard Chantarasombat & Vanich Prasertphorn (2023) themselves new knowledge program as Figure



From Figure 8, the researcher discovered a new body of knowledge, the development of a teacher competency building program in in Enhancing Innovation Leadership of School Administrators educational institutions are learning program that emphasize Components of the educational institutions consist of 1) principles, 2) objectives, 3) contents, 4) development methods, and 5) program evaluations.

6. Recommendations

Recommendations for job development

1. Educational institutions should support the provision of teaching packages and training on the use of technology in teaching and learning. to cover all forms of education such as self-study distance education lifelong learning community education local wisdom There are a variety of teaching and learning channels, such as learning in the form of electronic devices (e-Learning), computer assisted instruction (Computer Assisted Instruction), and teaching by video conferencing vision Learning through networks and modern media, learning through Google Classroom, etc.

2. Cooperation with enterprises related to energy technical disciplines is still not enough to match the branches in the area Parents of students still do not understand the study of energy techniques. Solutions Make more cooperation in other provinces and outside the area related to more renewable energy work.



Research recommendations

1. Should study research and development (Research & Development). Innovation media is a program for teaching and learning in the field of energy techniques or a module-based learning package in energy technical fields of technical colleges and enterprises to register patents and intellectual property.
2. Research and development of program learning should be conducted. Or module learning lessons on innovative leadership, energy techniques at the vocational level of teachers and students at the bachelor's level that promote thinking skills of programmers or modules in adaptive learning (Adaptive Challenge) in the 21st century.

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