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Current Condition, Needs, and Readiness Affect Competency of Training Teachers in The Electric Vehicle Companies

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Abstract

Thailand is facing the situation of changes in the automotive industry. Thailand is a base country for automobile production in the region, considered that Thailand has internal combustion engine expertise and leading to the electric vehicle industry therefore in order to get ready for such changes, Thailand has a policy to develop all aspects in electric vehicle including the manpower with both quantity and quality to feed into the vehicle industry by the Office of the Vocational Education Commission as the main agency for producing the country's vocational workforce. Office of the Vocational Education Commission received the policy and recognized the importance of such changes therefore the High Vocational Certificate programs in Mechanical Techniques and Electric Vehicle Techniques are offered. To meet the real needs of vehicle industry, vocational education colleges must co-operate with companies related to vehicle industry that have professionals to participate in teaching as the joint teachers to produce labor force according to the needs. The questions for research are about: current condition, needs, and how readiness affect competency of training teachers in the electric vehicle companies. First of all, this research was a qualitative study, using document analysis as an important research method to synthesize the conceptual framework of educational institution basic information together with the competence of training teachers in the electric vehicle workplaces. The next step was to study the current situations, needs and readiness affecting competency of teachers in the electric vehicle companies by using a questionnaire at the vocational education colleges offering high vocational certificate programs in Mechanical Techniques and Electric Vehicle Techniques in Thailand. It was found from a qualitative study that (i) there were both public and private vocational education colleges offering vocational certificate programs in Mechanical Techniques and Electric Vehicle Techniques altogether 18 out of a total of 874 institutions. The necessary competency required for teachers in the electric vehicle companies obtaining from the document synthesis had a total of 5 aspects namely Core competency, Technical competency, Management competency, Social competency, and Professional competency. (ii) there are The 5 aspects of necessary competency required for teachers in the electric vehicle companies sorting priority from high to low are: 1) Technical competency, 2) Core competency, 3) Professional competency, 4) Management competency, and 5) Social competency.

Keywords: Current State, Needs Analysis, Readiness, Vocational Education, Affecting, Competency, Industrial Instructors, Enterprises, Electric Vehicles

1. Introduction

The current situations of changes in the automotive industry from previous traditional automotive industry (internal combustion engine) to modern automotive industry (electric vehicle) impact on the global automotive industry. Thailand, considered as a center base for automobile production in the region especially the base for producing general vehicles with Internal Combustion Engine: ICE, using main power from petrol fuel, that are commonly used on the roads, has expertise in producing general vehicles but later on is found that its vehicle production slowing down due to the said technological changing. The electric vehicle is able to reduce environmental pollution, reduce global warming, and has no noise pollution. It also has a higher effectiveness in energy consumption

comparing to petrol cars. In addition, the problem of airborne dust that needs to be resolved urgently will stimulate the government to set measures supporting the electric vehicle industry and accelerate the widespread adoption of electric vehicle in the future **(EVET, 2019).** This can be said that the automotive industry is experiencing a step into an important transformation. This stimulates vehicle industry around the world to change the production of internal combustion engine to electric-powered vehicles. In the near future, we will see the use of electric cars, powered by an electric automotive that turns the electricity from battery into mechanical power to drive the wheels instead of the internal combustion engine. Thailand, as the main producer of the region, must adapt to compete for its space in the automotive production chain of the future, especially during this technological transformation. Both the government as a supporter and the companies directly impacted by the change need to co-operate and adapt themselves for driving Thai economy from a long time being a middle-income country towards a high-income country by keeping up with new technologies and producing quality manpower to meet the needs and changes as mentioned above.

Aforesaid, in order to adopt the automotive industry to handle the electric vehicle considered as new technology is a challenge for Thailand. The national research and development department by National Science and Technology Development Agency **(NSTDA, 2017).** provided "Electric Vehicle Industry" study to report the need for vocational labor force (Demand) in the First S-Curve industry, for overall perspective 2017-2021. The report showed that the highest demand for modern automotive labor force are the 3 provinces in Eastern Economic Corridor: EEC which are Rayong, Chachoengsao, and Chonburi in the total amount of 34,311 persons. A great number of labor force needed for supporting the production base of electric vehicle (EV) due to the growing trend of the automotive industry that requires labor to speed up the production therefore the shortage of skilled labor is following. The severe lack of labor problem affects the national economic growth as well. The production of quality manpower to be skillful labor is important. Firstly, it must produce workable and competent labor according to the needs of electric vehicle industry. The companies must co-operate with government agencies responsible for producing and developing manpower in order to obtain the needs of electric vehicle companies. The companies have professionals as the training teachers of the organizations and they are an important factor for the successful manpower production to directly supply the electric vehicle companies. The study on teacher competency development in workplace in Thailand found that there were 5 agencies which carried out the occupational standards for teachers in workplace and guidelines for training teachers in workplace. All of these are referenced from the Instructors Standard in ASEAN countries framework developed by German Organization for International Cooperation (Deutsche Gesellschaft fur Internationale Zusammenarbeit: GIZ). However, all of them still lack the specificity in the competence of training teachers in the electric vehicle workplaces.

From the importance of the above said, it can be seen that Thailand is in need of quality manpower in electric vehicle industry considered as a new technology that requires specialized knowledge and skillful labor which are different from the petrol-powered vehicle technology that we generally use at present time and the new technology in electric vehicle will make changes in the future. The government has the Office of the Vocational Education Commission as the main agency unit responsible for producing and developing vocational manpower. There are both public and private vocational education institutions together with the companies that have the competent teachers in their workplaces co-operating with each other to arrange learning program for vocational students which is an important factor for the success of the co-operation in teaching and learning that transform these students to become skillful labors with skills and competences according to the national needs of electric vehicle industry. We should pay attention and adapt with the major change which will lead us to the readiness to supply the change of new technology in modern automotive vehicle (Electric vehicle), therefore the researcher is interested in studying the current condition, needs, and how the readiness affect competency of teachers in the electric vehicle companies.

2. Basic information of vocational colleges in Thailand

The High Vocational Certificate Program in Electric Vehicle Techniques (High Voc. Cert.) appeared in the additions part of High Vocational Certificate Programs B.E. 2557 of the Office of the Vocational Education Commission on May 10, 2019 in the industrial category, Mechanical Techniques and Electric Vehicle Techniques. Later on, the Office of the Vocational Education Commission has promulgated the High Vocational Certificate Program in year 2020 **(Vocational Education Commission, 2020)**.

The public vocational education colleges under the Office of the Vocational Education Commission, Ministry of Education are in a total of 429 institutions in which 16 institutions offer High Vocational Certificate programs (High. Voc. Cert.) in Mechanical Techniques and Electric Vehicle Techniques which are in the industrial category.

The private vocational education colleges under the Office of the Vocational Education Commission, Ministry of Education are in a total of 445 institutions in which 2 institutions offer High Vocational Certificate programs in Mechanical Techniques and Electric Vehicle Techniques which are in the industrial category.

3. Previous researches related to competency of teachers in the electric vehicle companies

The study of the competence theories, academic documents, and researches resulted that there was no specific research studying about the competence of training teachers in the workplaces especially the training teachers in electric vehicle companies. Most of the researchers studied about the development of competencies that are close to the training teachers in the workplaces. In this research, the researcher synthesized the most related research results that were consistent with the competence of training teachers in the workplaces as follows: **Anuchai, R (2007)** conducted study on the results of the standards development of human resource competencies in the automotive industry study divided the competencies into 2 groups: core competencies which were based on the United States concept that emphasized the individual behavior and good characteristics suitable for the automotive industry. They were subdivided into 3 groups: 1) changes management competency, 2) ability to commit and perform the duties to successfully achieve desired results, and 3) conflicts management competency. There were 4 groups of performance on duty; 1) career management, 2) strategic human resource management, 3) training, and 4) employment and compensation management. **Montree,P (2017)** conducted study on the training teacher competencies to train labor force according to the goal for training teachers to be skillful professional (SMART Trainer) that meet the needs of the companies and aim to increase the national labor productivity. The SMART Trainer had 7 units which were: training synchronization competency, training curriculum construction competency, training design competency, training techniques competency, measurement and evaluation competency, professional in job career competency, and increasing productivity by training competency. **Opas, S. et al. (2019)** conducted study on the development and presentation of work training styles for vocational education students of bilateral system in industrial subjects of training teachers in the workplace resulted that the work patterns of vocational education students of bilateral system in industrial subjects for training teachers in the workplace (GEAR +3 Coaching Model) consisted of 4 steps (GEAR) which were: team preparation for teaching step (Group Planning), knowledge sharing, work training and consulting step (Educating and Coaching), evaluation for improvement step (Assessment and Evaluation), reflection and creation of standards practice step (Reaction and Standard Setting), and condition to support teaching in 3 parts (+3) comprised of 1) standards for vocational education management in the bilateral system, 2) competency of training teachers in the workplace, 3) mechanisms for supporting the work training. **TPQI, (2019)** conducted on the occupational standards for training teachers in the workplace for developing training teachers in the workplace to have
the same standards throughout the country and systematically trained by developing the standards for training teachers in
the workplace are referred from standards framework of training teachers in the workplace from Asian countries which was developed by Deutsche Gesellschaft fur Internationale Zusammenarbeit (GIZ) GmbH. The said standards of training teachers in the workplace covering training teachers in all category and was not specific in electric vehicle industry therefore the researcher then synthesized data for conceptual framework to develop the competence of training teachers in electric vehicle workplace later on. The competence standards of training teachers in the workplace of Thailand Professional Qualification Institute had professional units as follow: competency to analyze the trainees, competency to analyze the training needs, competency to analyze the workplaces, competency to define curriculum details, competency to develop the training documents, competency to select training method, competency to do teaching planning, competency to prepare the training, competency to perform in class training, competency to perform consulting training, competency to develop trainees after training, competency to improve quality of training courses, competency to improve quality of training process, competency to supervise the training for the development of training teachers, competency to increase the productivity through training. **Grzybowska, K. & Lupicka, A. (2017)** conducted study on the core competencies for industry 4.0 based on the research findings dividing competencies into 3 groups: technical competencies comprised of all job-related knowledge and skills such as communication skill, the knowledge management and statistical commands programing skill. Technical competencies are the abilities that a person acquires through practice and learning, for example: person with a specific ability or skill set, such as excellent computer coding skill which make that person to be a qualified candidate for a computer scientist position or qualified for technology company. The managerial competencies including all skills and abilities to solve problem and make the decision such as analysis and research skill, conflict and problem-solving, creative thinking, as well as the competence of negotiating strategies and responsive behavior. The social competencies include social value of the individual. The motivation such as competency to transfer knowledge, leadership, team working ability and it is often for social competencies to relate to social competency in social communications and communication between individuals. **Ianos, G. M., & Tebeanu, A.V (2018)** conducted study on the training and initial competencies for professional

teachers and technicians divided the competencies into 3 groups as follows: specialized competences such as people working in human resources must have a specific ability to plan about manpower, data analysis to select people and fulfill the various positions that have different specific job description. The professional competences are the preparations of digital classrooms by example. The transversal competences such as professional development, the ethics value and social moral values development, the cultural communication and working collaboration, creativity and innovation, etc. **Alberto et al., (2017)** conducted study on the competencies development for industrial project management 4.0 for developing the competencies for project management focused on human capital according to IPMA ICB 4.0 standard and its influence on the adapting of the labor force needed changing for the industrial revolution in every aspect. The research result divided competencies as follows: strategic directing, structure of power, interests and cultures, communication values, leadership, results alignment, change and transition. **Voinea, M. (2019)** conducted study on the suggestions about teacher competency in the future proposed that teachers should be trained and have competency to keep up with the changes for being a role model for students. The teachers need to develop modern methods for teaching along with being a professional teacher. The students who will grow and be the future of the nation will become the labor force that need to be developed to meet the requires competencies. The competencies that the students need is the potential of teacher in 21st century which are: teachers must think thoughtfully, have competency to work together, competency in social movement, well-conducted of oneself, and so on. Therefore, those who will come to perform teaching duty need to accelerate to develop oneself to keep up with the changes because students cannot have the required competencies if the teachers lack the needed competencies.

4. Research methods

The basic information, current condition, needs, and the readiness affecting competency of teachers in the electric vehicle companies are studied and analyzed from the related documents, the relevant researches, and the basic information of vocational colleges that offer high vocational certificate programs in Mechanical Techniques and Electric Vehicle Techniques which is divided into 2 parts.

Part 1 is the synthesis of fundamental data framework for teacher competence in the electric vehicle workplaces by studying documents, textbooks, academic articles, and both domestic and international researches.

Part 2 is the study of current condition, needs, and the readiness affecting competency of teachers in the electric vehicle companies. Data was collected by questionnaire. The respondents were directors, deputy director of academic department, head of automotive or mechanical department, and supervising teachers from 18 institutions in both public and private vocational education colleges under the Office of the Vocational Education Commission.

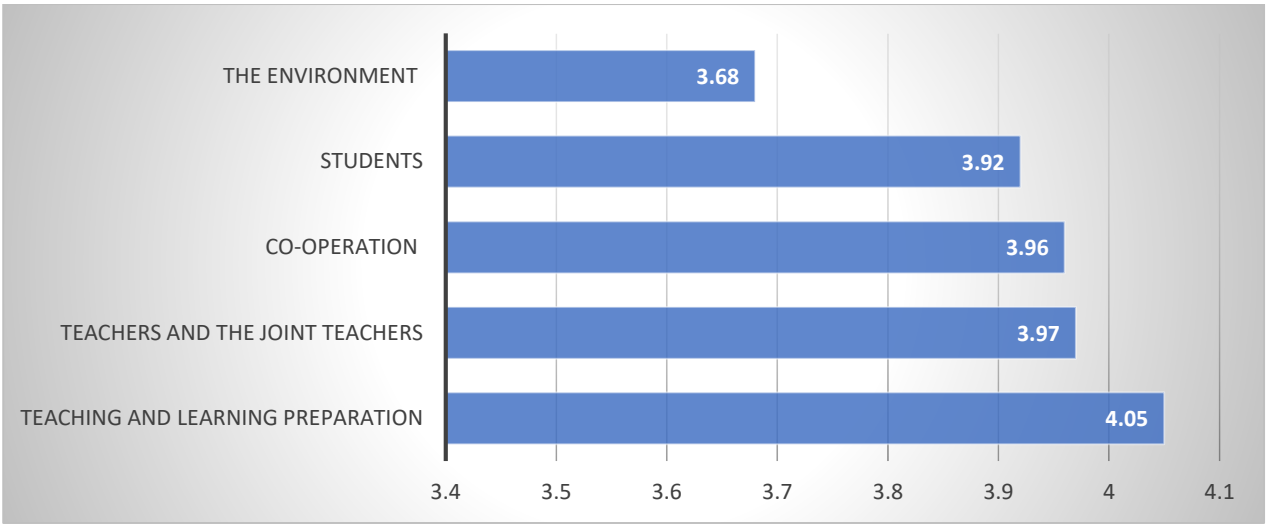
5. Findings

It was found from out of the total population of 72 persons that there were 18 directors, 18 deputy directors of academic department, 18heads of automotive or mechanical department, and 18 supervising teachers. They were specifically selected from the vocational education colleges offering High Vocational Certificate program (High Voc. Cert.) B.E.2557 (10-05-62) in Mechanical Techniques and Electric Vehicle Techniques and High Vocational Certificate program (High Voc. Cert.) B.E.2563 in Mechanical Techniques and Electric Vehicle Techniques. The selection accorded with a specific selection process with the population size that was not very large and was able to be studied in this research. The researcher studied the entire target population using a questionnaire to ask for opinions on the current condition, needs, and the readiness affecting competency of teachers in the electric vehicle companies. The results of the data analysis are as follows:

5.1 Current condition

The respondents had a level of opinion about the current condition of vocational education colleges both public and private institutions offering High Vocational Certificate program (High Voc. Cert.) B.E. 2563 in Mechanical Techniques and Electric Vehicle Techniques at a high level for the overall average opinions ($\bar{X}$= 3.91, SD = 1.00). The averages in each aspect were as following; teaching and learning preparation ($\bar{X}$= 4.05, SD = 0.92), teachers in vocational education colleges and the joint teachers in the electric vehicle companies ($\bar{X}$= 3.97, SD = 1.04), co-operation with the electric vehicle companies ($\bar{X}$= 3.96, SD = 0.87), students in electric vehicle techniques field ($\bar{X}$= 3.92, SD = 1.04), and the environment such as premises of the vocational education colleges ($\bar{X}$= 3.68, SD = 1.11) respectively.

Figure.1 showing the overall average opinions level of the respondents on the current condition of vocational education colleges both public and private institutions offering High Vocational Certificate program (High Voc. Cert.) B.E. 2563 in Mechanical Techniques and Electric Vehicle Techniques

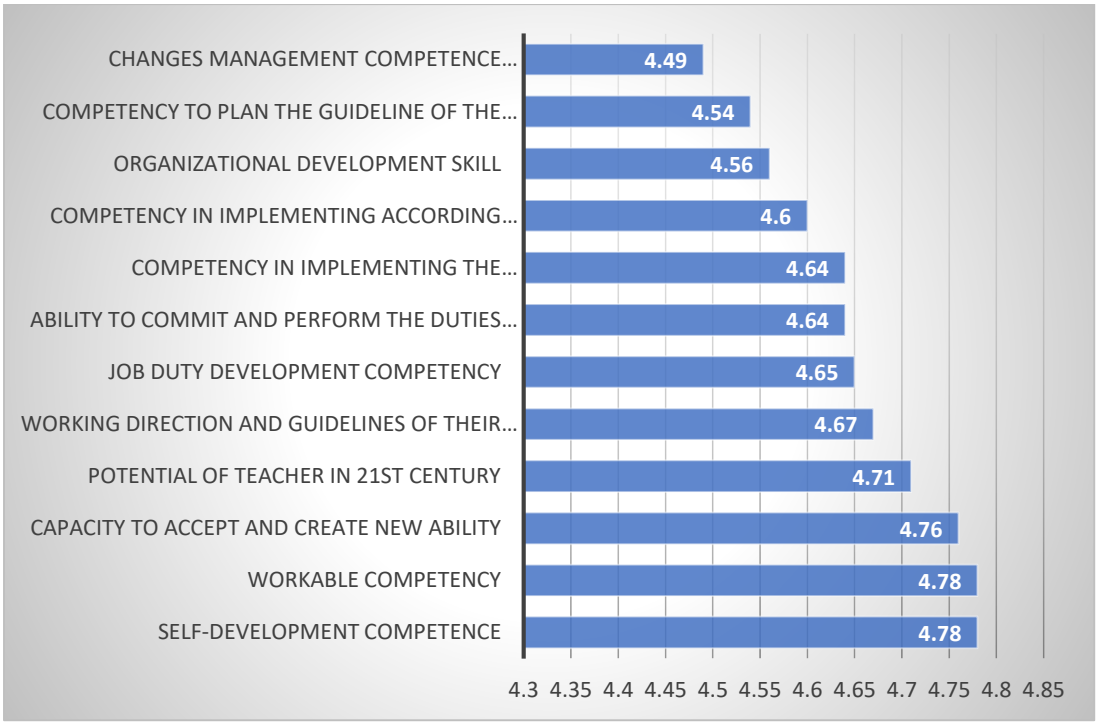


5.2 Necessary requirements for teacher competences in the electric vehicle companies

5.2.1.Core Competencies

The respondents had a level of opinion about the Core Competencies at a highest level for the overall average
($\bar{X}$= 4.63, SD = 0.47). Each sub competence had the averages sorting as follows: self-development competence ($\bar{X}$= 4.78, SD = 0.42), workable competency ($\bar{X}$= 4.78, SD = 0.42), capacity to accept and create new ability ($\bar{X}$= 4.76, SD = 0.42), potential of teacher in 21st century ($\bar{X}$= 4.71, SD = 0.42), working direction and guidelines of their own practice determination skill($\bar{X}$= 4.67, SD = 0.47), job duty development competency ($\bar{X}$= 4.65, SD = 0.48), ability to commit and perform the duties to successfully achieve desired results($\bar{X}$= 4.64, SD = 0.48), competency in implementing the curriculum of educational institutions ($\bar{X}$= 4.64, SD = 0.48), competency in implementing according to the organizational vision ($\bar{X}$= 4.60, SD = 0.49), organizational development skill ($\bar{X}$= 4.56, SD = 0.50), competency to plan the guideline of the work operation result ($\bar{X}$= 4.54, SD = 0.50), and changes management competence ($\bar{X}$= 4.49, SD = 0.55) respectively.

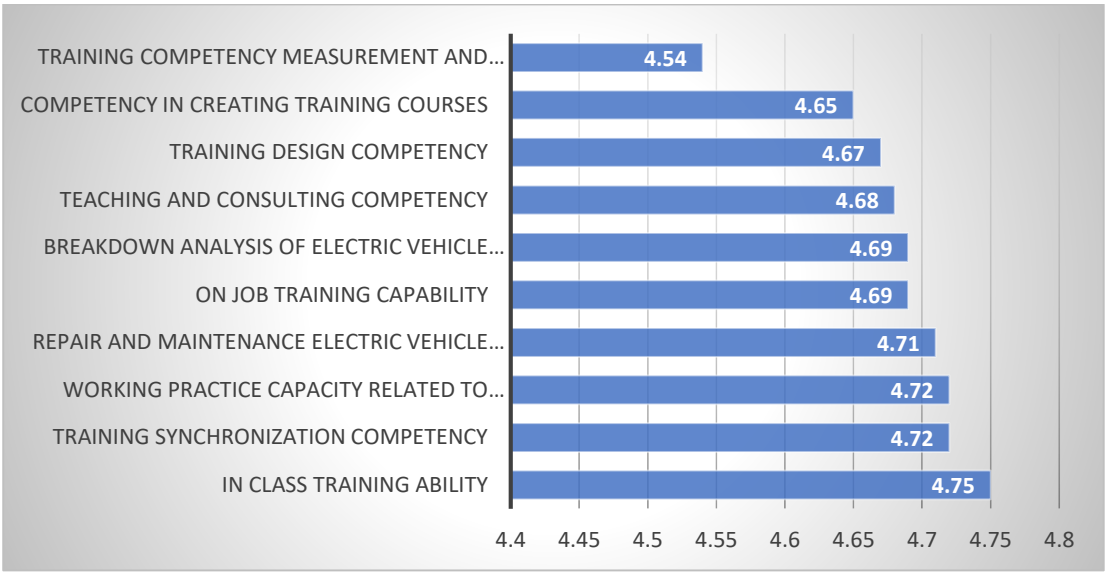
Figure.2 showing the overall average opinions level of the respondents on necessary requirements for teacher competences in the electric vehicle companies (Core Competencies



5.2.2. Technical Competencies

The respondents had a level of opinion about the technical competencies needs at a highest level for the overall average ($\bar{X}$= 4.68, SD = 0.46) and each sub competence had the averages sorting as follows: in class training ability ($\bar{X}$= 4.75, SD = 0.43), training synchronization competency ($\bar{X}$= 4.72, SD = 0.45), working practice capacity related to electric vehicle techniques ($\bar{X}$= 4.72, SD = 0.45), repair and maintenance electric vehicle ability ($\bar{X}$ = 4.71, SD = 0.45), on job training capability ($\bar{X}$= 4.69, SD = 0.46), breakdown analysis of electric vehicle competency($\bar{X}$= 4.69, SD = 0.46), teaching and consulting competency ($\bar{X}$= 4.68, SD = 0.47), training design competency ($\bar{X}$= 4.67, SD = 0.47), competency in creating training courses ($\bar{X}$= 4.65, SD = 0.48), and training competency measurement and evaluation ($\bar{X}$= 4.54, SD = 0.50) respectively.

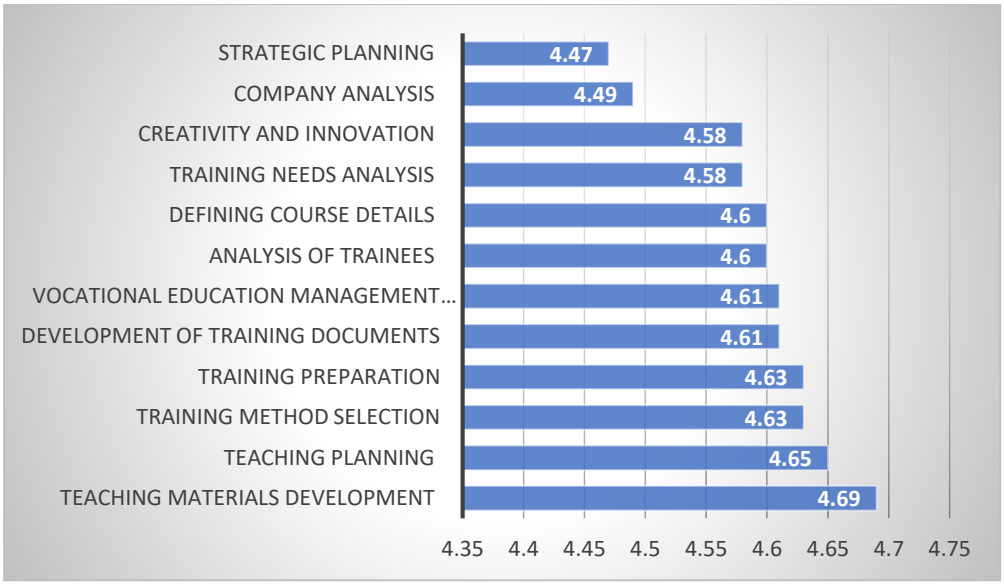
Figure.3 showing the overall average opinions level of the respondents on necessary requirements for teacher competences in the electric vehicle companies (Technical Competencies)



5.2.3.Managerial Competencies

The respondents had a level of opinion about managerial competencies needs at a highest level for the overall average ($\bar{X}$= 4.59, SD = 0.51) and each sub competence had the averages sorting as follows: teaching materials development competency ($\bar{X}$= 4.69, SD = 0.46), teaching planning competency ($\bar{X}$= 4.65, SD = 0.48), training method selection competency ($\bar{X}$= 4.63, SD = 0.54), training preparation competency ($\bar{X}$= 4.63, SD = 0.54), development of training documents competency ($\bar{X}$= 4.61, SD = 0.59), vocational education management for bilateralness system competency ($\bar{X}$= 4.61, SD = 0.59), analysis of trainees competency ($\bar{X}$= 4.60, SD = 0.49), defining course details competency ($\bar{X}$= 4.60, SD = 0.49), training needs analysis competency ($\bar{X}$= 4.58 SD = 0.49), creativity and Innovation competency ($\bar{X}$= 4.58 SD = 0.49), company analysis competency($\bar{X}$= 4.49, SD = 0.55), and strategic planning competency ($\bar{X}$= 4.47, SD = 0.55) respectively.

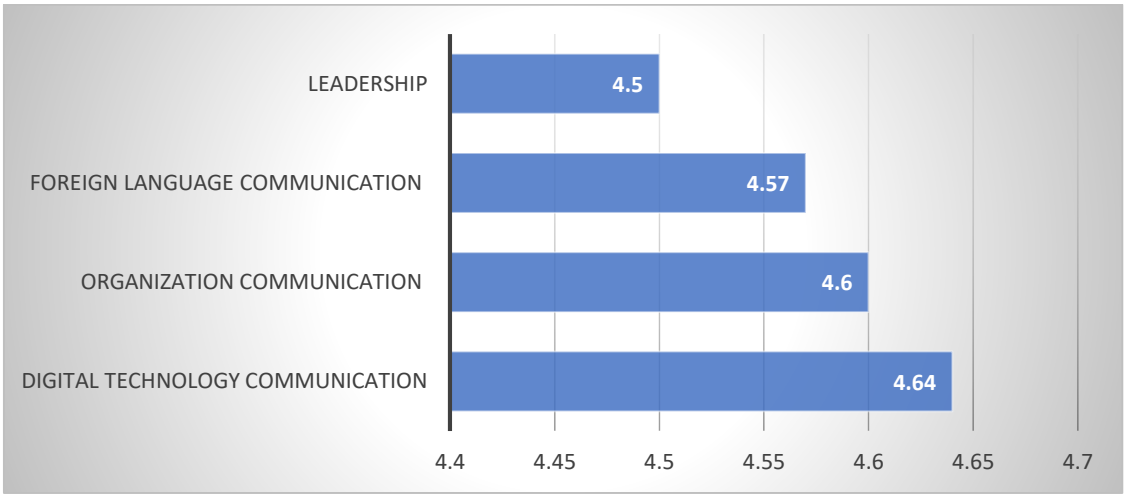
Figure.4 showing the overall average opinions level of the respondents on necessary requirements for teacher competences in the electric vehicle companies (Managerial Competencies)



5.2.4.Social Competencies

The respondents had a level of opinion about social competencies needs at a highest level for the overall average ($\bar{X}$= 4.58, SD = 0.54) and each sub competence had the averages sorting as follows: digital technology communication competency ($\bar{X}$= 4.64, SD = 0.56), organization communication competency ($\bar{X}$= 4.60, SD = 0.57), foreign language communication competency ($\bar{X}$= 4.57, SD = 0.55), and leadership competency ($\bar{X}$= 4.50, SD = 0.50) respectively.

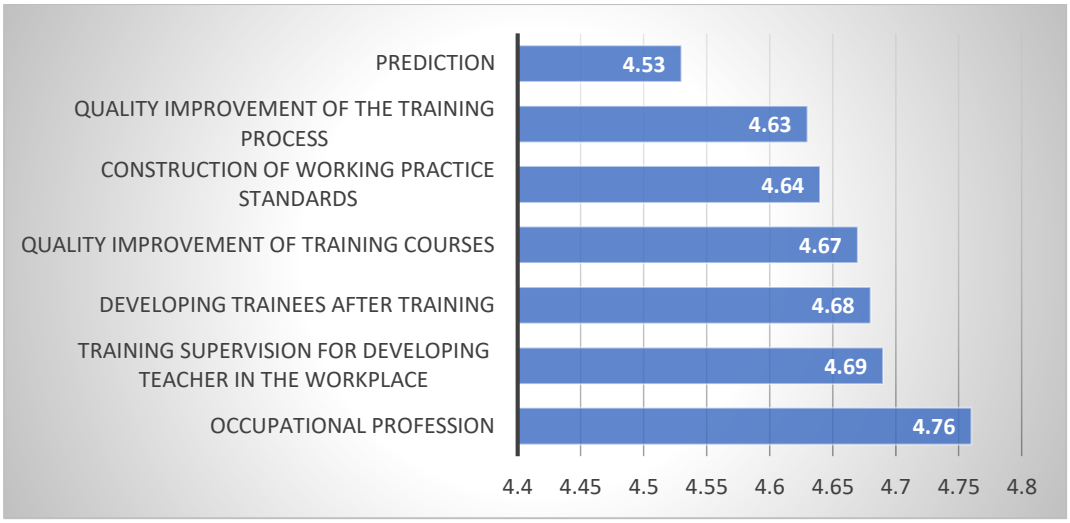
Figure.5 showing the overall average opinions level of the respondents on necessary requirements for teacher competences in the electric vehicle companies (Social Competencies)



5.2.5.Professional Competencies

The respondents had a level of opinion about professional competencies needs at a highest level for the overall average ($\bar{X}$= 4.66, SD = 0.48) and each sub competence had the averages sorting as follows: occupational profession competency ($\bar{X}$= 4.76, SD = 0.42), training supervision for developing teacher in the workplace competency ($\bar{X}$= 4.69, SD = 0.46), developing trainees after training competency ($\bar{X}$= 4.68, SD = 0.47), quality improvement of training courses competency ($\bar{X}$= 4.67, SD = 0.47), construction of working practice standards competency ($\bar{X}$= 4.64, SD = 0.48), quality improvement of the training process competency ($\bar{X}$= 4.63, SD = 0.48), and prediction competency ($\bar{X}$= 4.53, SD = 0.55) respectively.

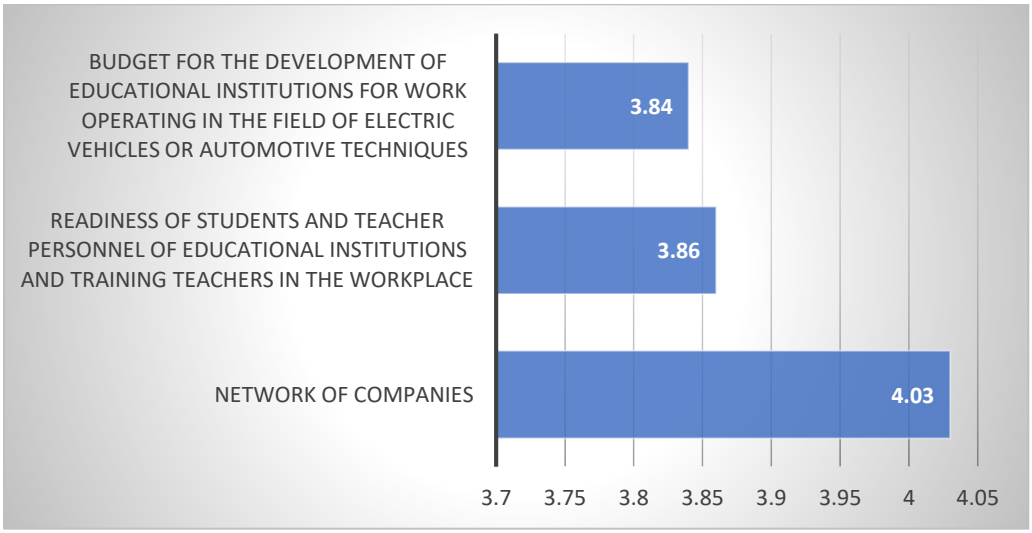
Figure.6 showing the overall average opinions level of the respondents on necessary requirements for teacher competences in the electric vehicle companies (Professional Competencies)



5.3 The readiness of educational institutions providing High Vocational Certificate programs in Mechanical Techniques and Electric Vehicle Techniques/Vehicle Techniques affecting competency of teachers in the electric vehicle companies

The respondents had a level of opinion about the readiness of educational institutions providing High Vocational Certificate programs in Mechanical Techniques and Electric Vehicle Techniques and Vehicle Techniques affecting competency of teachers in the electric vehicle companies at a high level for the overall average ($\bar{X}$= 3.91, SD = 0.94) and each sub competence had the averages sorting as follows: network of companies ($\bar{X}$= 4.03, SD = 0.89), readiness of students and teacher personnel of educational institutions and training teachers in the workplace ($\bar{X}$= 3.86, SD = 0.82), budget for the development of educational institutions for work operating in the field of electric vehicles or automotive techniques ($\bar{X}$= 3.84, SD = 1.12) respectively.

Figure.7 showing the overall average opinions level of the respondents on the readiness of educational institutions providing High Vocational Certificate programs in Mechanical Techniques and Electric Vehicle Techniques and Vehicle Techniques affecting competency of teachers in the electric vehicle companies



6. Discussion

The results of the research showed that the current condition of both public and private vocational education colleges offering High Vocational Certificate program (High Voc. Cert.) B.E. 2563 courses in Mechanical Techniques and Electric Vehicle Techniques have a small amount comparing to the total number of all vocational education colleges. The data analysis from questionnaires about the current condition of educational institutions in various aspects showed that it was at a high level. Most of the educational institutions that offered courses already analyzed the labor market needs and analyzed the curriculums in the fields that they offered. The educational institutions that did not analyze the labor market needs offered course according to the policy of the organizations. The results from the questionnaire analysis showed that the readiness of educational institutions

in every aspect was at a high level, budget for educational institution development, network of companies, and the readiness of students and teacher personnel of educational institutions and training teachers in the workplace. The results from the researches and questionnaire synthesis showed the needs for competence of training teachers in the electric vehicle workplaces in 5 competencies: (1) Core competency, (2) Technical competency, (3) Management competency, (4) Social competency, and (5) Professional competency.

7. Competency of training teachers in the electric vehicle companies.

7.1 Core Competency

The analysis and synthesis of this research data pointed out the importance and need for Core Competency which was the core competency that training teachers in the workplace must have to help supporting the educational institutions and companies to achieve the goals that have been set together. This is the ability that both educational institutions and companies expect from their training teachers to perform in a behavioral way comprised of 12 sub-competences that were: self-development competence, teamwork ability, capacity to accept and create new potential, being a teacher in the 21st century, working direction and guidelines of their own practice determination skill, job duty development competency, ability to commit and perform the duties to successfully achieve desired results, competency in implementing the curriculum of educational institutions, competency in implementing according to the organizational vision, competency to plan the guideline of the work operation result, and changes management competence.

7.2 Technical competencies

The analysis and synthesis of this research data pointed out the importance and needs of technical competencies which were knowledge, skills and any other characteristics that individuals have been trained, learned, and expressed in the performance of training teachers in the electric vehicle companies. There were 10 sub competencies as following: classroom training, synchronization of training, operation related of the electric vehicle systems, the electric vehicle maintenance, on-site training, analysis of the electric vehicle breakdowns,

job coaching and consulting competency, training design competency, competency in creating training courses, and training competency measurement and evaluation.

7.3 Managerial competencies

The analysis and synthesis of this research data pointed out the importance and needs of managerial competencies of training teachers in the electric vehicle companies for general problem solving, making decision, analysis, problem solving, and creative thinking including the competency to plan the performance teaching in the electric vehicle companies. It started from studying and understanding the work clearly, clear goals setting and clear operational plan, being able to perform the assigned duty successfully, separating problems that arise and being able to take action to solve them, being able to find the ways to improve the work process to reduce the time of operation as well as providing advice for problem solving, monitoring, and evaluating performance to increase operational efficiency, being able to manage the risks in order to accomplish the work according to the set goals on time. The needs of managerial competencies consist of 12 sub-competences as following: the development of training materials, lesson planning, selection of teaching methods used in training, preparation for training, training documents improvement, vocational education in bilateral system management, analysis of trainees, defining course details, training needs analysis, creativity and innovation,
the analysis of the companies, and strategy plaining.

7.4 Social competencies

The analysis and synthesis of this research data pointed out the importance and needs of social competencies which were the competencies to transfer knowledge, the use of physical, intellectual, emotional, and social skills in an individual including social communication and interpersonal communication for students of the training teachers in the electric vehicle companies. Social competencies consisted of 4 sub-competences as follows: digital technology communication competency, organization communication competency, foreign language communication competency, and leadership competency.

7.5 professional competencies

The analysis and synthesis of this research data pointed out the importance and needs of professional competencies that were the competencies providing trainees with ability to perform the work after graduation immediately including the competency to predict the development of labor market demand and prepare students for current jobs and plan for future. The criteria to response to current challenges (and as far as possible in the

future) consists of 7 competencies: occupational profession competency, training supervision for developing teacher in the workplace competency, developing trainees after training competency, quality improvement of training courses competency, construction of working practice standards competency, quality improvement of the training process competency, and future prediction competency.

8. Conclusion

The vocational education is an educational process to produce and develop manpower with skills at a professional level, technical level and technology level as well as to train and increase the knowledge of vocational skills to supply manpower into the labor market. Thus, vocational education is essential for the development of the nation skillful workforce. The production and development of vocational workforces must truly enable students to work after graduation. The co-operation of vocational education colleges and the companies to arrange the education will enhance the students to learn from the knowledge theories and real practices in the school and to also learn from the real practice with training teachers in the workplace. Therefore, the training teachers in the workplace need to have the competencies necessary for the educational institutions and for the workplace in order to train the trainees to have the needed competencies to work in the industry.

The electric vehicle industry is coming to play its role and being one of the 5 original industries (First S-Curve) that are important mechanism to drive the economic in the innovation aspect to enhance the competitiveness ability of Thailand in the future. It is necessary to produce and develop the national workforce in order to compete for space in the automotive production chain of the future. During this technological transition, the vocational education must produce and develop electric vehicle manpower to keep up with the demands of this industrial sector. First of all, in terms of current condition and the readiness of educational institutions, there must be an increasing of manpower production by increasing the number of educational institutions offering program in electric vehicle techniques and increasing the co-operation with electric vehicle related companies. The competencies need of the training teachers in the electric vehicle companies are important. The vocational education is essential to the competency of the training teachers in the electric vehicle companies in 5 competencies which are as follow: technical competencies, Core Competencies, professional competencies, management competencies, and social competencies.

This research was studied to analyze and synthesize documents and ask for opinions of educational institutions offering program in electric vehicles about the current condition, needs, the readiness towards the competency of training teachers in the electric vehicle companies as the main important parts. The addition research that is possible in the future may study more depth, and interview all stakeholders such as the people who set the electric vehicle industry policy, and the specialist of setting teacher competency in the workplace..

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