

A Study of Instruction in Vocational Education Institutions by Applying Multi-level Supply Model^{*}

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Abstract

The objectives of the research were to study instruction in Vocational Education Institutions (VEIs) by applying multi-level supply model as the two sub-objectives: 1) to study the context of Vocational Education Institutions (VEIs) at Vientiane capital, Lao PDR, and 2) to study teacher characteristics, classroom context, and classroom process in VEIs at Vientiane capital, Lao PDR. The participants included four groups: 1) 18 persons of director committee, 2) 18 academic officers, 3) 108 teachers, and 4) 120 students. The instruments included interview form, self-assessment form and evaluation form. The statistic used in data analysis were mean (M), Standard Deviation (SD), Percentage (%). The study results indicate the context of VEIs included good leadership, good situation, and good teamwork. For teacher characteristics, the results showed teachers skills was at good level ($M=3.65-4.12$), teacher' attitude was at good level ($M=3.97-4.43$), and teacher' knowledge revealed 69.33% of teachers passed assessment criteria while 30.77% fail. In addition, it was the classroom context provided not enough facilities for instruction (94.44%). However, the classroom processes there was at good level ($M=3.50-3.92$).

Keywords: 1. Instruction, 2. Multi-level Supply

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Introduction

The instructional in Technical and Vocational Education and Training (TVET) is steadily gaining popularity at the global debates and in government priorities for education and national development agendas (Marope et al, 2015 cited in Paryono, 2017). Since 2015, Laos had requirements for skilled workers in many fields continually in order to develop competitive products for the domestic and international market. In addition, the current economic growth of Laos has been continuously increasing. The promotion of small and medium business and private companies has increased dramatically, due to the effect to the higher requirement of the quality workforce. Therefore, the Ministry of Education and Sports (MOeS), especially Technical and Vocational Education Department has a strategy for pre-and in-service training of technical and vocational education and training (TVET) personnel as in strategy 3 and 4 stating that “there should be upgraded education qualification for vocational education teacher, staff with both quantity and quality, so that they have the adequate competencies to teach; and improve TVET-Approach and training modes, that is to improve quality of learners and relevance to meet with the demand of labor market in different areas, support involvement of economic agencies in vocational education development and link with regional and international” (Ministry of education and sports, 2016). Currently, the development of vocational education has developed continuously. The law on Technical and vocational education and training endorsed in 2013 determines the principle, rule and measures on organization, monitoring and inspection of the technical and vocational education and training with effectiveness in order to train and develop Lao labor force. Equipped with knowledge, ability, occupational skill and work attitude in response to the needs of labor market updated to integrate with the sub-regional, regional and international communities and contribute to national safeguard, construction and development (Technical Vocational Education Department, 2016).

The meaning of instruction was the processes planning for organizing the relationship/interaction between teacher and student to encourage learning of the student to reach the goal; however, inside the process, the teacher can learn from students as well (Wangsa, Chianchana, & Na Wichian, 2015). However, a traditionally bad image of vocational education in Laos and a lack of technical and pedagogical expertise in schools remain big challenges along the way to a sustainable and broad economic development (Kneer, 2014). According to Lao National Chamber of Commerce and Industry (2016), many enterprises, particularly medium-sized and large enterprises were facing with major challenges related to

the shortage of skilled labor and difficulty to recruit and retain moderately and highly skilled employees.

For these reasons, this researcher thinks that it's necessary to Study of Instruction by Applying Multi-level Supply Model in Vocational Education Institutions in Vientiane Capital in order to find out the strength and weaknesses of instruction in vocational education and also hope that the important results from the research will be used for improvement curriculum for vocational teacher and for instruction improvement to be consistent with the current situation of learning and teaching of VEI. In addition, the most important thing is to develop the quality of students in accordance with the demand of labor market.

The objective of research

The objectives of research were to study instruction in Vocational Education Institutions (VEIs) by applying multi-level supply model as the sub-objectives below:

- 1) To study the context of Vocational Education Institutions (VEIs) in Vientiane capital, Lao PDR.
- 2) To study the teacher characteristics, classroom context, and classroom processes in VEIs in Vientiane capital, Lao PDR.

The conceptual framework of research

In the research focused on instruction in VEIs in Vientiane capital, Lao PDR. For the model of this research, the researcher adapted the model from Brühwiler and Blatchford (2011). That model is a multilevel supply-use model of student learning which has four levels: the system level (IV), the school level (III), the teacher or class level (II) and the individual student level (I); from level IV to level II is a supply and level I is use and outcome. From this model researcher used only Supply Level that is “multi-level supply of differentiated instruction”. There are included two levels:

- 1) Level 1 is Institution, included context of VEIs.
- 2) Level 2 is classroom, included teacher characteristics, classroom context, and classroom process as figure 1.

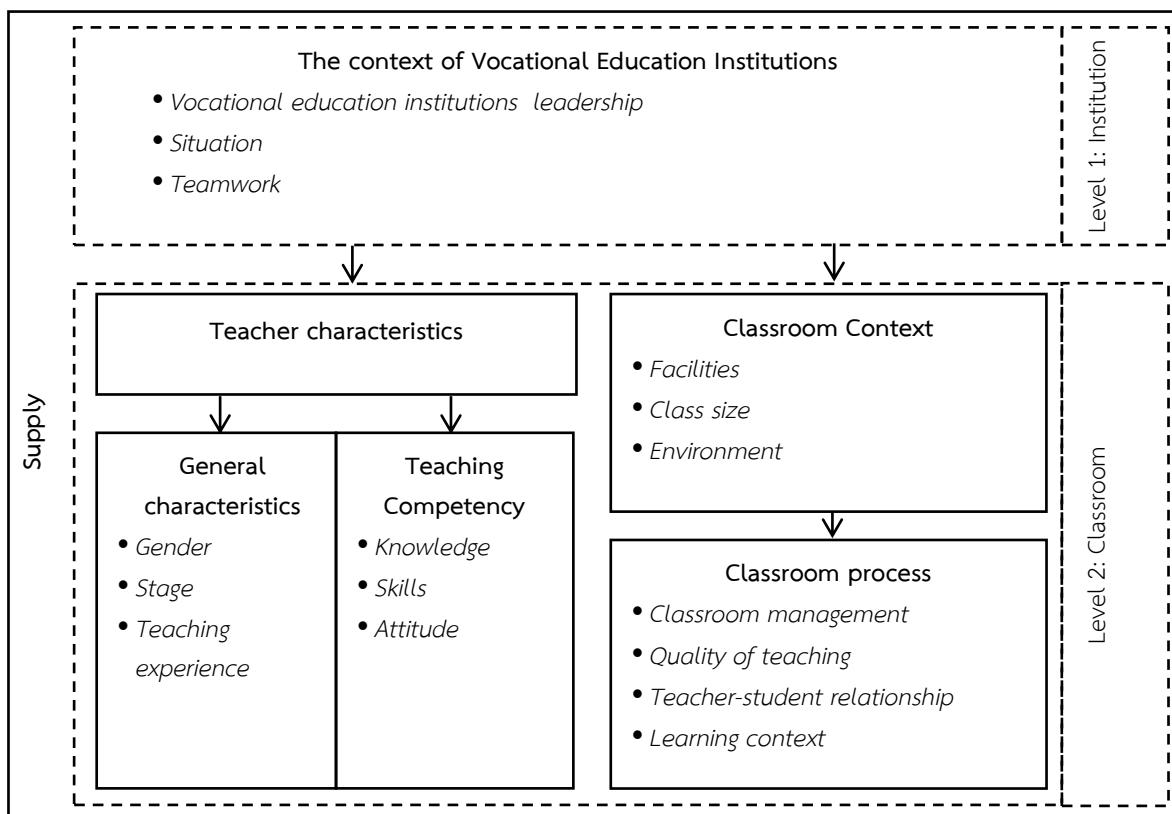


Figure 1. Multi-level supply of differentiated instruction. The variables in this study are printed in italics (adapted from Brühwiler & Blatchford, 2011)

Methodology

The participants of research divided into 4 groups:

Level 1 Institution: 18 directors committee from six VEIs at Vientiane capital, calculated by stratified random sampling.

Level 2 Classroom: 1) 18 persons of academic officer from six VEIs at Vientiane capital, calculated by stratified random sampling. 2) 108 teachers from six VEIs at Vientiane capital, divided from sampling unit by using formula of Bartlett, Kotrlik & Higgins (2001). 3) 120 students from six VEIs in Vientiane capital, divided from sampling unit by using formula of Bartlett, Kotrlik & Higgins (2001).

The research instruments included 4 forms:

1) Interview form for directors committee, used for assessing context in VEIs. The quality of the instruments were evaluated by five experts, the Item Objective Congruence (IOC) were .60-1.00.

2) Evaluation form for academic officers, used for assessing classroom context. The quality of the instruments were evaluated by five experts, the Item Objective Congruence (IOC) were .60-.80.

3) Self-assessment form for teachers, used for assessing teachers' competencies. The quality of the instruments were evaluated by five experts, the Item Objective Congruence (IOC) were .60-1.00, and the reliability of instruments were try out with 30 teachers in Skills Development Center Vientiane Capital, Lao PDR (Cronbach's Alpha=.804).

4) Evaluation form for students, used for assessing classroom process. The quality of the instruments were evaluated by five experts, the Item Objective Congruence (IOC) were .60-1.00, and the reliability of instruments were try out with 30 students in Skills Development Center Vientiane Capital, Lao PDR (Cronbach's Alpha=.849).

Data collection

The data were collected in 6 VEIs at Vientiane capital, Lao PDR. For level 1 on the Institution, were collected by researcher directly interview with the director committee. On level 2 the classroom, researcher collected the data by sent the instruments to academic officers, teachers, and students.

Data analysis

Data analysis was using the descriptive statistics, included: Mean (M), Standard Deviation (SD), and Percentage (%). The criterion for data analysis is presented as follows:

1) The criterion: M=4.50-5.00 Excellent, M=3.50-4.49 Good, M=2.50-3.49 Fair, M=1.50-2.49 Poor, M=1.00-1.49 Very poor, there were using with the Evaluation form, and Self-assessment form (Almuntasshiri, 2016).

2) The criterion: Score= 80-100 Pass, Score < 80 Fail, there were using for assessment Knowledge of teacher (Slavin, 1987).

3) The evaluation forms for academic officer was used percentage to analysis, and Interview form was used contents analysis.

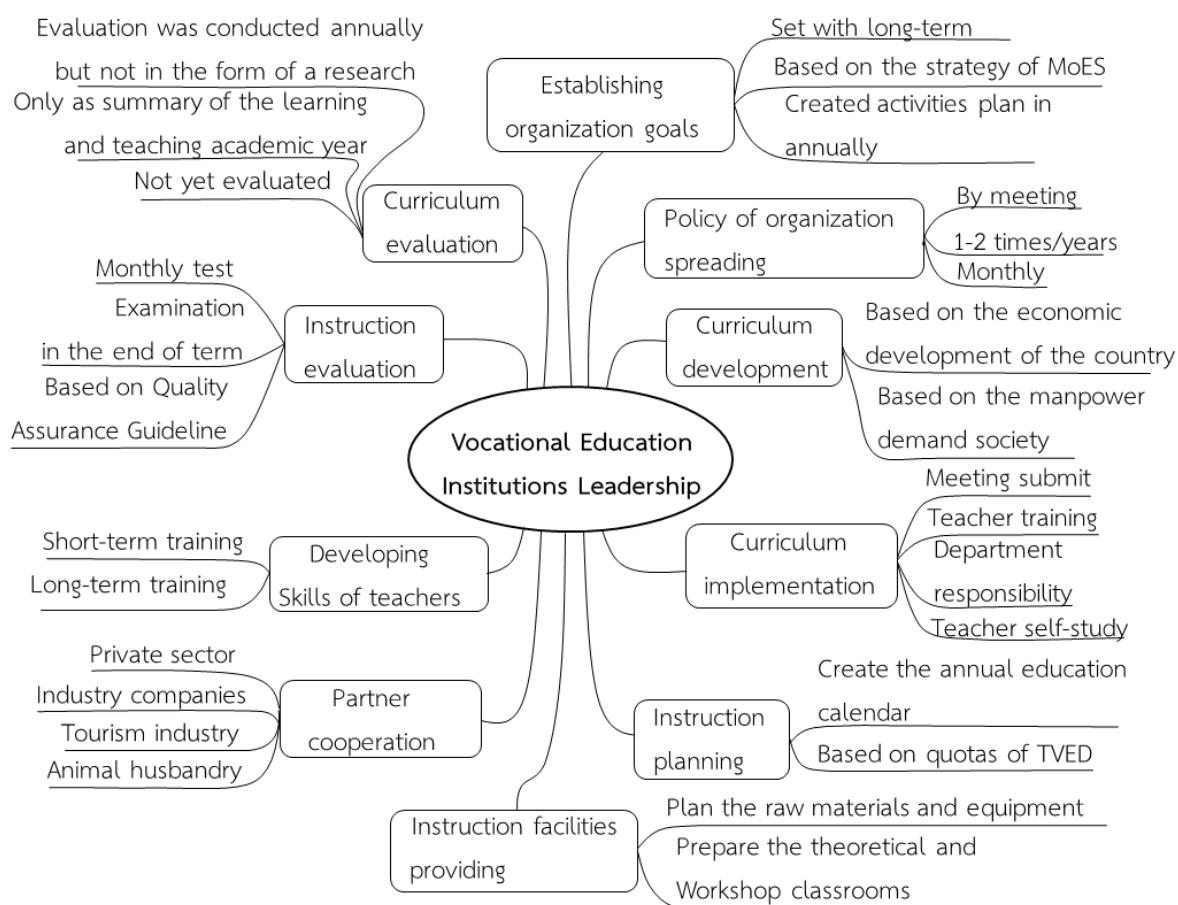
The results

The results of the data analysis were following the research objectives and divided into 2 sections: 1) Contexts of VEIs, and 2) Teacher characteristics, classroom context, and classroom process in VEIs.

The result of analysis of the context of VEIs

The results of analysis found that most of the interviewers were male (94%), the education level mostly a master's degree (50%) and their working experience were between 20-25 years old (72.2%), the details of analysis were divided into 3 sections as follow:

1) The results of the interview of VEIs leadership found that they have established the organization goals, spread the policy of organization, curriculum development, curriculum implementation, instruction planning, instruction facilities providing, private sector cooperation, teacher skills development, instruction evaluation, and curriculum evaluation. The details of results were shown in figure 2.



2) The results of the interviewing of VEIs situation found that the curricular which were conducted in VEIs was aligned with the country's socio-economic development, is involving the private sector in developing curriculum, considered the increasing number of students registrations, some school registrations increased 100%, evaluating the model of instruction implementing is used a credit point or project base. The teachers providing for the changing of modern technology was sent the teachers to train in enterprises in short-term and long-term.

3) The results of interview of teamwork in VEIs found that the consideration and acceptation of the teacher and staff offering more given opportunity in the annual teacher conference council. The collaborative skills in organization, most of them used the training and spreading the government regulations and school policies. They have divided the responsibility as individual and work performance control. Study and promote teachers and staffs, and each departments solve the problem itself. The promoting of creativity, creative thinking and sharing the idea of staffs and teachers in organization mostly, they consult and support the budget to teacher and staff, promoting them by giving them the opportunity to present the project which they need to develop and improve something and respecting the opinion of teacher and staffs. The skills for problem-solving in organization mostly train the teacher and staffs in each department, forcing regulation, brainstorming, problem analysis and solving step by step, building the solidarity by creating artistic and sporting activities. The building confidence in organization there were exemplary behavior acting, integrity in career, punctuality, working with plan, monitoring and evaluating in each section, developing human resource in good quality and be able serve society, there were working in team. The struggled to use skills communication with the teacher during conducting instruction together, mostly trying apply the communication skills to teacher during working together in conducting instruction by spreading instructional policy, introducing, giving a hint to staffs by giving some section to monitor and evaluate, spreading ethics, monitoring by using school welfare. Inanition, conducting the conformance to disseminate the official regulation and giving to each section to more supervision. The promoting of sharing knowledge and resources using by conducting seminar for sharing the knowledge between highly experienced teachers to new teachers, knowledge sharing to each other working in group to share knowledge or experience to each other, promoting to use and maintenance equipment device by using school principle together and some said that not yet promote.

Results data analysis of teacher characteristics, classroom context and classroom process

1) The results of data analysis of teacher characteristics

The general characteristic of the teachers: The respondent of assessment form has 108 people most of them were male covering 67% and female covering 33%. The stage of teachers most of them received medium policy (45%) and good (41%), the quality of life after applying to be a teacher found that most of them were good (48%) and medium (43%) and the supporting and technical assistance of teaching for the teachers most of them had been trained sometime (45%) and good (41%), in addition, the teaching experience of teachers found that most have teaching experience of 5-10 years and subsequent was 5 years.

2) Teachers competencies

The data analysis of teachers competencies, the researcher divided into 3 topics: 1) The results of data analysis for knowledge of teachers in 6 VEIs, which includes 13 assessment items, found that the teachers' knowledge passed the criterion 9 items of 13 items (69.33%), fail 4 items (30.77%). 2) The results of data analysis for skills of teachers in 6 VEIs, which includes 20 assessment items, found that all of the skill of the teacher was good, the most prominent item was "the introduction purpose of learning in each unit is clearly stated", with mean 4.12 and the listen and respond learner's question, with mean is 4.1. 3) The results of data analysis for the attitude of the teachers in 6 VEIs, which included 5 assessment items found that all of the attitudes of teachers were good level, the most prominent item is "The teachers must not seek the benefits of being employed from students, with mean 4.43", in addition, the minimum item is "teachers love all disciple equally, with mean 3.97".

The results of classroom context analysis

The respondent were 18 people the most of them were female 61.11%, male 38.89% and most of them have working experience between 5 to 10 year covering 50.00% and more than 10-15 year covering 22.22%. The detail of analysis was divided into three sections as follow:

First, the results of facilities analysis in VEIs found that there was much equipment for experimentation which covered 83.33%. But on the contrary, the basic equipment in the classroom was not enough covered 77.78%. The technology instruction media was not enough covered 72.22% and showed in table 1.

Table 1 the facilities for instruction in VEI

Detail of evaluation	results
1. The school has enough basic equipment in each classroom such as handbook; Board; pin board; flipchart; and stationery	Enough (22.22%) Not enough (77.78%)
2. The school has enough technology instruction media such as LCD projector; computer; internet connection	Enough (27.78%) Not enough (72.22%)
3. The school has the smart boards	Has (72.22%) Don't have (27.78%)
4. The school has the e-learning platform	Has (22.22%) Don't have (77.78%)
5. The school has enough materials for student practical	Enough (5.56%) Not enough (94.44%)
6. The school has equipment for experimentation	Has (83.33%) Don't have (16.67%)
7. The school has enough equipment for experimentation	Enough (66.67%) Not enough (33.33%)
8. The school has equipment for demonstration	Has (16.67%) Don't have (83.33%)
9. The school has equipment for scientific investigation and discovery	Has (38.89%) Don't have (61.11%)
10. The school has a suitable library for teachers and students to search for instructional information	Suitable (27.78%) Not suitable (72.22%)

Second, the results of classroom size analysis found that the number of classrooms for students was not enough covered 72.22%, and the classroom design was not suitable covered 61.11%.

Third, the results of classroom environment analysis found that the organizing of situation for workshop place was good covered 72.22%, but the noise management was very low covered 83.33%. The allocation of first aid equipment was not enough which covers 44.44%. Also, the organizing of material, tools, and machine was not suitable covered 50%.

The results classroom processes analysis

The respondents were 120 people the most of all were male 69.2 %, studying in the first year 40.8%, 45.0% in the second year, third year 14.2%. The details of analysis was divided into 4 sections: 1) The results of data analysis for classroom management of teachers in 6 VEIs in Vientiane capital showed that all of the items evaluated, the teachers performed at a good level ($M=3.50-3.55$). 2) The results of data analysis for quality of teaching for teachers showed that most items evaluated, the teachers performed at a good level ($M=3.55-3.92$) and have only one item was fair level ($M= 3.28$), as table 2. 3) The results of data analysis for teachers and students relationship showed that most of the items evaluated, the teachers performed at a good level ($M=3.66-3.92$), and only one item was fair level ($M=3.48$). 4) The results of data analysis for learning context showed that most of the items evaluated, the teachers can perform at a good level ($M=3.53-3.90$), and only one item was fair level ($M=3.48$).

Table 2 Quality of teaching

Evaluation items	M	SD	Interpretation
1. The teachers introduce purpose of learning in each unit clearly	3.72	0.95	Good
2. The teacher give me the lesson	3.72	0.82	Good
3. The teacher gives me the worksheet	3.28	0.95	Fair
4. The teachers demonstrate knowledge of students literacy development in reading, writing, speaking and listening	3.92	0.88	Good
5. The teacher select suitable teaching methods which giving students the opportunity to express their ideas	3.82	0.88	Good
6. The teacher uses teaching media, technical equipment and information and communication technology.	3.57	0.87	Good
7. The teachers can be designed the assessment tools	3.55	0.97	Good
8. The teachers arranged the lesson from easy to difficult	3.85	0.89	Good
9. The teachers designed assessment tools at the appropriate level of difficulty of the lesson	3.70	0.93	Good

Conclusion

The conclusion was divided into 2 sections as follow:

The context of Vocational education institutions (Level 1 Institution)

The conclusions detail in this section includes three sub-topics:

1) The VEIs leadership can be summarized that they have established the organization goals, the policy of organization spreading, curriculum development, curriculum implementation, instruction plan, instruction facilities providing, and cooperation with the private sector, teacher skills development, instruction evaluation, and curriculum evaluation.

2) The VEIs situation can be summarized that the curriculum offered in the vocational educational institutions setting is aligned with the country's socio-economic development, the private sector is involved in developing curriculum, the number of student enroll increased, some school increase 100%, the model of instruction implementing are project base, and the providing of teachers the changing of modern technology mostly sent teacher to train at the enterprises.

3) The teamwork in VEIs can be summarized that they have considering and accepting for teacher and staff, collaborative skills in organization, promotion of the creativity, creative thinking and idea sharing in organization, the skills for problem-solving in organization, struggled to use skills of communication with the teacher while working together on an instruction implementation and promoting of sharing knowledge and resources with others.

Teacher characteristics, classroom context and classroom process (Level 2 Classroom)

1) Teacher characteristics

The conclusions detail in this section included four sub-topics:

First, the general of teachers characteristics showed that most of them were male, in this stage of teacher they had received medium policy, for the quality of life after applied to be a teacher found that most of them are good, the supporting and technical assistance of teaching for teacher most of them have been trained sometimes and in addition the teaching experience of teacher mostly has teaching experience 5-10 years.

Second, the knowledge of teachers most of the respondents were passed the assessment criteria, on the other hand, there were some of the respondents still fail an assessment criterion, which was a relatively high number.

Third, the skills of teachers, all of them were good level, the most prominent topic was "the introduction purpose of learning in each unit clearly stated" and "listens and responds to learner's question" and in addition, the minimum mean level was topic of "create the worksheet".

Fourth, the attitude of teachers for all of them was at a good level. The most prominent item was "The teachers must not seek the benefits of being employed by the student", in addition, the minimum level of the item was topic "teacher love all disciple equally".

2) Classroom context

The results of the analysis showed that most were female and most of them have working experience between 5 to 10 years and then was more than 10-15 year. The conclusions detail in this section included 3 sub-topics:

First, the results of analysis of facilities for instruction can be summarized that the facilities mostly were not enough and don't have for instruction implementation. On the contrary, facilities that were sufficient to carry out the instruction are only a few.

Second, the class size can be summarized that the number of classrooms for students was not enough and that the classroom design was not suitable for the instruction.

Third, the classroom environment can be summarized that the organization of situation for workshop place were good but the noise management is very low. The allocation of first aid equipment is still not enough. In addition, the organizing of material, tools, and machine is not suitable.

3) Classroom processes

The results of data analysis showed that most students were studied in the first year and second year. The conclusions included 4 sub-topics:

First, the results of data analysis of classroom management from evaluating showed that the teachers performed at a good level.

Second, the teaching qualities of the teachers mostly there were performed the teaching at a good level and only one item was fair level.

Third, the teachers-students relationship, mostly the teacher performed at a good level and only one item at the fair level.

Fourth, The learning context mostly teacher performed at a good level and only one item was fair level.

Discussion

1) The context of Vocational Education Institutions

The results of analysis of the context of VEIs found that the leadership executives of Vocational Education Institutions had good management skills, especially for distinctly establishing organizational goals because the leadership of Vocational Education Institutions have a framework to define the planning especially as concerns the strategy of Technical and Vocational Education and Training Development Plan 2016-2020. In addition, they have a lot of work experience; the average is between 20-25 years old. Every year, the Technical and Vocational Education and Training Department held the national conference of TVET leaders to define the development plan together. For these reasons, they are properly planning and defining the organization's goals and will bring the organization to success which related with the suggestion of Locke & Latham (2002) which state that, the goals have a pervasive influence on employee behavior and performance in organizations and management practice

2) Teacher characteristics

The results of teacher characteristic analysis found that regarding the knowledge of teachers, 29% of the respondents do not pass an assessment criterion. The topic that teachers do not pass assessment criteria most are "Lesson plan". This may be caused they receive less of pedagogy training; some teachers are not graduated in the field of vocational teacher education. Additionally, the promotion of teacher knowledge skills is still minimal. Because of all of these factors, the teachers do not have sufficient knowledge in teaching and, eventually, the quality of teaching and learning will decrease. So in contrast with Wong (2009) suggested that the lesson plans affects not only teacher's instruction but classroom management as well. Characteristics of a well-managed classroom are that: 1) students are deeply engaged with their work which would be possible if their roles are described and they have a goal as provided in a good lesson plan, 2) students know what is expected, which would be possible via routinely implemented good lesson plans, 3) there is little wasted time or confusion which would be possible via effective implementation of a good lesson plan and 4) the climate of such a classroom would be work-oriented but relaxed and pleasant which would be possible via good time management with effective implementation of a good lesson plan. In addition, Lesson plans writing is teacher's important work that reveal working systematically in planning quality instruction (Chaowakeratipong, 2017) and it can also lead to the creativity on the work (Taphongmart and Pongern, 2015).

3) Classroom context

The results of data analysis of classroom context found that the facilities were not enough and don't have easy instruction implementation especially "The materials for student practical" due to support of public sector to the development of technical vocational education and training is limited. The Vocational Education Institutions lacks of possibility study before opening the curriculum such as infrastructure, facilities and budget resources to be managed and, in addition, the budget allocation is not targeted which this is what causes the Vocational Education Institutions to lack of budget to procure equipment and material for practical training which makes students less of practice and less of skill follow. So in contrast with Knezevich (1975 cited in Okeke, 2013) mention on the school facilities, as well as classroom facilities, constitute the major components of both direct and indirect action elements in the environment of learning. The direct action elements are the instructional materials that facilitate teaching and learning while the indirect learning components are the academic support facilities that make the school environment conducive to teaching and learning. A direct relationship exists between the quality of school/classroom facilities provided and the quality of the products of the school.

4) Classroom process

The results of analysis of classroom process found that the topic of "my teachers makes me feel that he/she cares about student" was good level, due to the Ministry of Education and Sports disseminates more rules and ethics of teachers, teacher gives students the opportunity to talk more, teacher has used the teaching method by learning center so that the student can freely express his ideas, it makes teachers and students more relationship and intimacy, which make students feel that their teachers care and love them more. So there is related to suggestion of Fosen (2006) state that the relationship between a teacher and a student is good it has openness or transparency; caring, each know that he is valued by the other; independence (as opposed to dependency) of one on other; separateness, to allow each to grow and develop his uniqueness, creativity, and individuality; mutual needs meeting, so that neither's need are met at the expense of the other's needs.

Recommendation

The policy

The policy recommendations from this research are divided into 2 sections as follow:

1) Recommendations for curriculum evaluation: The results from the context of VEIs analysis found that the curriculum evaluation mostly not yet evaluated. Also, the Ministry of

Education and Sports, especially Technical and Vocational Education Department should behave the regulations for curriculum evaluation and create the control system for the duration of curriculum implementation.

2) The instruction facilities: The results analysis of facilities for instruction found that, the facilities not enough for instruction implementation. Also, the Ministry of Education and Sports should be allocating a budget to support the VEIs development as providing enough.

The practice

1) Continued from the curriculum evaluation mostly not yet evaluated, the Vocational Education Institutions should evaluate the curriculum by research every fine year to improve the curriculum and develop the skills of students in accordance with the needs of the enterprise.

2) The results analysis of stage of teachers found that the supporting and technical assistance of teaching for the teacher, they have received relatively few training about the pedagogy and technician. So the VEIs should training teachers every year after finish academic year to improve their teaching knowledge and skills.

3) The results analysis of classroom environment found that the organizing of material, tools, and machine is not suitable for the instruction. So Vocational Education Institutions should behave system to organizing the material, tools, and machine in the classroom and workshop place to support the teaching and learning.

The Future Research

The results of analysis of teacher characteristics found that the knowledge of teacher half of the respondents did not pass an assessment criterion. In addition, the results of VEIs leadership found that the instruction model, mostly there are used the same and some VEIs using the instruction was not yet clear. So they should be studied as follow: 1) VEI should analyze the cause of teacher knowledge in VEIs, and 2) VEI should study the instruction model in VEIs.

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