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Exploring the Competency Components for Technical and Vocational Education Teachers in Cambodia through a Qualitative Approach

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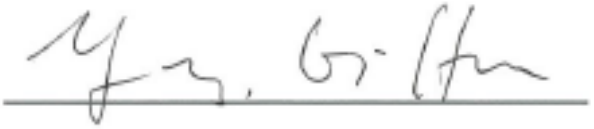

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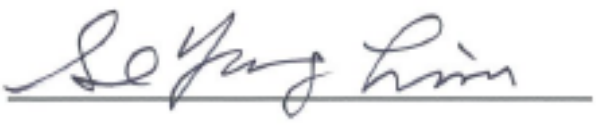

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ABSTRACT

Exploring the Competency Components for Technical and Vocational Education Teachers in Cambodia through a Qualitative Approach

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Technical and vocational education quality is limited in Cambodia with limited recognition and un-interests from stakeholders, incompetent teachers without industrial experiences, impractical curriculum (more theoretical), weak partnership with the industrial sector, lack of practical equipment and facilities, and limited theoretical foundation. Among them, teachers are more emphasis by the government in order to deliver quality service. In this regard, this study aim is to identify the competency components for technical and vocational education teachers in Cambodia. The qualitative research approach was employed to answer one research question with a purposive sampling technique in data collection. Because of the data saturation, 12 participants as technical and vocational education teachers from seven different TVET institutions within four provinces and one municipality under the supervision of three government ministries were asked for a semi-structured interview. The open coding was employed to identify components and sub-components. The hand analysis of data was employed emerging components, sub-components, and items grounded from data.

623 codes and 68 sub-components emerged from visual data which were symbolically categorized into four major components and 30 sub-components. The results indicate that the competency components for Cambodian technical and vocational education teachers develop through five major components embracing vocational and academic abilities, pedagogical abilities, support and understanding of learners, administrative competencies, and knowledge-

integration competencies. Each component has some supportive sub-components. For example, the component *vocational and academic abilities* has four sub-components consisting of upgrading vocational knowledge, mastering practical work, mastering vocational knowledge, and high academic knowledge. The component *pedagogical abilities* has 10 sub-components consisting of curriculum and textbook development, teaching methods and techniques, lesson planning, instructional material development and preparation, class management, assessment and evaluation methods, training methods, educational psychology, flexible skills for lessons and student characteristics and environment, and creative skills for students learning. the component *support and understanding of learners* has four sub-components consisting of supporting students to be employed, supporting students to upgrade their vocational knowledge, facilitating student internship and practicum, and supporting students to have entrepreneurship skills. The component *administrative competencies* has six sub-components consisting of recruiting and selecting new teachers and students, instructional resource and budget planning, being adhesive to educational standards and regulations, being adhesive to teachers' professional ethics, cooperating with communities and stakeholders, and time management. Finally, knowledge-integration competencies cover six sub-components consisting of general knowledge, entrepreneurship skills, labor market knowledge, technology knowledge, foreign language competencies, and research competencies.

This study offered several implications for future research relevant to the competency components for technical and vocational education teachers in Cambodia. Among them, teacher professional development programs and strong supports from relevant stakeholders such as industries, government, communities, and TVET institutions should be considered.

Keyword: technical and vocational education, teachers, competency components, competencies, technical and vocational education and training (TVET), Cambodia

Korean Abstract

국문 요약

성질상의 접근법을 통한 캄보디아 직업기술교육교사의 역량 구성요소에 대한 탐색

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캄보디아 직업기술교육의 질은 이해관계자의 제한적인 인식과 무관심, 산업현장 경험이 없는 교사, 이론에 치중한 비실무적인 교육과정, 산학 파트너십의 취약, 실습용 장비와 시설의 부족 등으로 인한 많은 문제점을 가지고 있다. 이러한 문제를 해결하기 위한 방안 중의 하나로 캄보디아 정부는 양질의 교육훈련 서비스 제공을 위해 교사의 역량증진에 힘쓰고 있다. 이를 위해, 본 연구는 캄보디아 직업기술교육 교사의 역량 구성요소를 밝히는 것을 목적으로 한다. **성질상의** 접근법은 데이터 수집에서 의도적인 샘플링 기법(purposive sampling technique)으로 연구 질문에 대한 답을 도출하기 위해 사용되었다. 구체적으로 데이터 분석을 위해 체계적인 설계 가 사용되었다. 데이터 포화로 인해, 3개 정부 부처의 감독 하에 있는 1개의 지방자치단체와 4개 주에 있는 7개의 직업훈련원에 소속된 12명의 직업기술교육 교사에게 반구조화된 인터뷰 형태로 질문하였다. 오픈 코딩

으로 구성된 주제/구성요소 및 카테고리/하위구성 요소를 식별하기 위해 3단계의 데이터 분석이 사용되었다. 데이터를 근거로 해서 주제/구성요소 및 카테고리/하위 구성요소를 도출하기 위해 데이터 손 분석을 사용하였다. 옮겨진 텍스트는 글꼴 11, 위쪽 및 아래쪽 여백, 왼쪽 0.7, 오른쪽 0.7 형식으로 총 66.5 페이지로 구성되었다.

5개의 주 구성요소와 30개 하위 구성요소로 크게 분류되는 시각적 데이터로부터 623개의 코드와 68개의 하위 구성요소가 부각되었다. 본 연구 결과들은 캄보디아 직업기술교육 교사들의 역량이 직업적 학문적 능력, 교육학적 능력, 행정적 능력, 학습자들에 대한 지원과 이해- 이 4가지 주요 요소를 통해 발전한다는 것을 보여준다. 각 구성 요소는 하위 보완적인 요소들을 가지고 있다. 예를 들어, 직업과 학문적 능력이란 구성요소는 직업지식 향상, 현장기술 숙련, 직업지식 숙달, 높은 학문적 지식 등과 같은 4가지의 하위 요소로 구성되어 있다. 교육학적 능력이란 구성요소는 교과과정과 교과서 개발, 교수 방식과 기법, 지도 계획, 교재개발과 준비, 학급 운영, 숙제와 평가 방법, 연수법, 교육 심리, 수업내용과 학생들 특성 및 교육환경에 따른 유연한 기법, 창의적 학습법 등과 같은 10가지 하위 요소로 구성되어 있다. 행정능력이란 구성요소는 신임교사와 학생의 모집과 선발, 교육 자원과 예산 책정, 교육적 기준과 규율 엄수, 교사의 직업윤리 확립, 지역사

회 및 이해관계자와의 협력, 시간 관리, 보건 지식, 세계적 상황, 행정과 교육적 철학, 창업 기술, 노동시장의 이해, 기술적 지식, 외국어 능력, 연구 능력 등과 같은 12개의 하위 요소로 구성되어 있다. 마지막으로, 학습자의 지원과 이해라는 구성요소는 학생들에 대한 취업 지원, 직업기술 향상 지원, 인턴쉽과 실습 장려, 그리고 창업기술을 가진 학생 지원과 같은 4가지 하위 요소로 구성되어 있다.

이 연구는 캄보디아의 기술직업교육 교사의 역량 강화와 관련된 향후 연구에 필요한 몇 가지 의미를 내포하고 있다. 그 중에서도 특히 교사 전문 프로그램 개발과 함께 기업, 정부, 지역사회, TVET 기관과 같은 관련된 이해관계자들의 강력한 지원이 필요하다는 점을 제시하고 있다.

키워드: 직업기술교육, 교사, 역량 구성요소, 능력

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I. Introduction

TVET teachers' competencies are so critical in Cambodia in terms of quality and effectiveness. To tackle this issue, this study was embarked on exploring the competency components by starting the theoretical background of TVET teachers' competencies. The theoretical background that covers introduction chapter which consists of three sections such as (1) statement of the problem, (2) research purpose and research question, and (3) term definition.

1. Statement of the Problem

Cambodia wishes to achieve a modern technology and knowledge-based industry by 2025 (MoEYS, 2019a). To achieve this, the education sector functions as a catalyst for socio-economic development (MoEYS, 2019a). Education has a key role in eradicating poverty helping people to obtain decent jobs, raising their incomes and generating productivity gains that fuel economic growth (Incheon Declaration, 2015). Particularly, the Cambodian education system focuses on producing knowledgeable, skillful and competent human resources to meet the labor market need (MoEYS, 2019a). However, social and economic changes have significant implications for technical and vocational education (UNESCO, 1997). Furthermore, TVET is widely seen as having a key role in promoting both economic and socio-economic growth, increasing productivity (UNESCO, 2014). To keep up with technological innovation, technical education needs to be responsive to the society needs (Hoekstra & Newton, 2017). TVET can be understood as a system to close the skill gaps (Aprilio et al., 2019). Thus, education and training are solutions for developing the country to foster innovations and leapfrog from being labor-intensive economy to the industry-driven one (MoEYS, 2019a).

The expansion of vocational education offerings creates a flood of individuals not specifically prepared to teach students required by the society (Gorman & Hamilton, 1975). Consequently, technical education teachers are not granted a high status in their instructional positions (Grollmann, 2008). Another challenge in TVET is the lack of joined efforts in training TVET teachers/lecturers (Cambodia Ministry of Labor and Vocational Training, 2017). This case formulates the gaps being the limitation of young people who do not flourish in schools, or who find themselves trapped in low skilled, low paid, and insecure employment (Ledger, 2015).

The education system doesn't provide a sufficiently high quality of relevant learning (MoEYS, 2014). In this regard, relevant stakeholders participating in TVET development is limited (Cambodia Ministry of Labor and Vocational Training, 2017). The low recognition of vocation and technical education posits the concern for discussion (Grollmann, 2008). Most of the vocational and technical teachers focus their instructional purposes and activities only within the teaching institutions, not linking with the enterprises and work processes (Grollmann, 2008). Importantly, there is a limited linkage between education and vocational training and industrial policies (National Employment Agency, 2018). The current TVET curriculum is not aligned with the industrial standard (Khemarin, 2012 as cited in Paryono, 2015). Thus, the quality of TVET is not responsive to the labor market needs in Cambodia in a short run (Cambodia Ministry of Labor and Vocational Training, 2017).

The jobs in textile, wearing apparel and footwear, hotels and restaurants, trade, construction, finance, transportation and communication, real estate and business are expected to grow in the future in Cambodia (National Employment Agency, 2018). These TVET jobs are popular in the current needs of the Cambodian labor market requiring TVET teachers to be aware of them to teach students the right skills and trades. TVET can deal with societal problems such as poverty reduction, violence and conflict resolution (Euler, 2018). Therefore,

TVET teachers play a key role in providing highly qualified workforces to the market to push up the national economic growth (Bauer, 2007).

Richly developed portrayals of expertise in teaching are rare for teachers in reality (Shulman, 1987). When asked what students liked least about the school, the responses included too much homework, and poor teachers for their instructional capacities (Newmann, 1992). Some teachers didn't observe each other's lessons constructively, were not mutually supportive, and didn't talk openly about what went on in their classrooms (Buzzing, 2004). For example, secondary vocational agriculture teachers were less competent in conducting instructional activities (Findlay & Drake, 1989 as cited in Findlay, 1994). The teachers tend to be criticized for poor test marks to students (UNESCO, 2017). Teachers themselves thought that they were difficult to face the realities for their instructional role (Gorman & Hamilton, 1975). In some ASEAN countries including Cambodia, TVET teachers are recruited among fresh graduates from technical and vocational higher institutions without industrial experiences (Paryono, 2015). Therefore, the education and training system encounters several challenges such as high dropout rates, poor graduation rates, irrelevant curriculum, poor recognition from the public, and limited linkages between schools and industries because of TVET teachers' incompetence (MoEYS, 2019a).

One of Cambodia's skill gaps has resulted from the quality of education (Madhur, 2014). Teacher competencies and qualifications are the main drivers for education quality. Teachers are the school's greatest asset for students (Day, 1999). A world-class education can't be reached unless the students have a well-prepared teacher (Center on International Education Benchmarking, 2019). Therefore, to bridge this gap, teacher education might be considered to gear students' productive outcomes upon graduating.

The educator is obliged to possess the appropriate skills and knowledge to deliver effective lecturing standards to all students (Armitage et al., 2003 as cited in Williams, 2009).

Intensively, teachers within technical education institutions need to be qualified in both their vocational knowledge and pedagogical abilities and have had sufficient practical work (UNESCO, 1997). Educators or teachers have a great influence in pushing up positive or negative attitudes to the academic achievements of students (Akessa & Dhufera, 2015). Teacher quality influences the quality of technical and vocational education (Grollmann & Rauner, 2007). Therefore, having a competent teacher is important for student academic achievement for every institute (Lasley, Siedentop, & Yinger, 2006).

One of the challenges that TVET in Cambodia is stagnated is an inauthentic experience in the industry of technical educaiton teachers (Cambodia Ministry of Labor and Vocational Training, 2017). Most technical education teachers for some subjects didn't have enough practical work for their respective taught area (MoEYS, 2016). Many newly qualified teachers are too young to get work experiences (Grollmann & Rauner, 2007).

Most of the employers in Cambodia complain about their employees' skills, particularly soft skills in settling down into the work setting. Cambodian youth lacks soft skills, especially communication, foreign languages, teamwork (Ly, 2016; Ai, 2019). Specifically, TVET teachers are part of Cambodian youth that needs to be addressed to find out what kinds of soft skills they are deficient to fill out this gap.

Educational standards and regulations play an integral part in enhancing teaching and learning effectiveness because they guide, orientate, and engage teachers in the development process. However, the possibility of following and developing educational standards and regulations which were issued and required by the government for TVET teachers in Cambodian was constrained (Department of Vocational Orientation, 2019). This might result from a misunderstanding from TVET teachers.

Teachers with very limited competencies for their instructional areas enable students to be poor academically (Madhur, 2014). TVET teachers have some drawbacks in the area of

applying their instructional competencies (Jenewein, 1994 as cited in Bauer, 2007). Moreover, few TVET teachers possess technical skills related to industrial needs (UNESCO, 2013a). Teachers lack instructional time, energy, support systems, and expertise to develop their competencies (Day, 1999). TVET teachers' teaching techniques are pedagogy are limited in the passive learning process, doing routine tasks and teacher-centered approach (UNESCO, 2013a). Intensively, some Cambodian TVET teachers have no experience in teaching methodologies (Phin, 2014).

2. Research Purpose and Research Question

The purpose of this study is ultimately to explore the competency components for TVET teachers in Cambodia. Responding to this critical research aim, one research question will be examined, namely: What are the competency components for TVET teachers in Cambodia? To answer this research question, 12 participants as TVET teachers from diverse geographical and academic backgrounds were asked for a semi-structured interview employing a grounded theory approach in data analysis letting the results grounded from primary data.

The results of this study will redound to the benefits of Cambodian society as a reliable source for policymakers, curriculum developers, and decisionmakers to develop TVET teachers. The quality of education needs to be a focus through improving teaching methodologies, and teacher training (UNESCO, 2015b).

3. Term Definition

To support the study process to be consistent across the study, the major terms for this study are potentially defined as follows:

3.1.Competency

Competency is the capacity of people to apply knowledge and skills to produce productive achievements (Trinder, 2008). Competency informal education emphasized that all learning should be insightful and relevant and that students at any level can be successful and achievable at high levels with the right assistance and learning experiences (Schaef, 2016). Furthermore, competency is combinations of attributes that underlie successful performance (Hager, 1995). The competencies cover an inventory of expected knowledge, skills, and attitudes which make the successful performance of the organization in a short run (Sarna, 2018). A competency is broken into specific skills to achieve competence in a particular job at a desired level (Lasse, 2015). It is the act of possessing knowledge, attitudes, and skills for the successful work. Finally, Competency is the capacity to perform the designated activities within an occupation to the target standard required by the ogranization (Heywood, Gonczi, & Hager, 1992).

3.2. Competency Components

Competency component is the desired performance required in the workplace for success (Heywood et al., 1992). Competency components are a description of workplace capacities that students should be able to do successfully after the course completion (Hager, 1995). Similarly, competency components describe the knowledge, and skills required to perform fruitfully in a particular function (Australian National Training Authority, 1998). There is a variety of capacities that can be achieved for organizational success (Trinder, 2008). They are the elements of the capacities that individuals are required to learn to perform a certain task to a given level such as computer skills, teaching methodology, interpersonal skills, etc. The components are developed over time when interacting, training, educating and working which

is a kind of social learning. However, the competency components are developed through work experiences by mastering skills, knowledge, and attitudes in a typical work setting. Collectively, the competency components are integrated to formulate a nomenclature. Dreyfus (2004) classified five stages of skill acquisition on competency levels, ranging from a novice to an expert level.

3.3. Technical and Vocational Education

It means that the educational activities that offer a variety of courses that provides individuals with the academic and technical competence and practice the individuals need to do further education (Standards and Guidelines for Secondary Career and Vocational/Technical Education in Montana, 2002). Technical and vocational education in this study denotes vocational and technical subjects and academic subjects that students are enabled to learn in the periods ranging from at least one year.

3.4. Technical and Vocational Education and Training (TVET)

It is a training course referred to skills development, human development and human capital theory (Aprilio et al., 2019). TVET focuses on training people who want to immediately get employed upon the course completion (Sothy, Madhur, & Chhem, 2015). TVET focuses on the possession of knowledge and skills for the workplace needs through technical and vocational course delivery (Paryono, Heusinger, & Bock, 2017). The training programs range from weeks to years focusing on vocational and hand-on skills for an immediate need for the labor market right after finishing courses. Moreover, TVET covers all forms of hands-on skills with essential technical and vocational components for students learning (UNESCO, 2013a).

II. Literature Review

A core element of a teacher's vocational competence is the capacity to identify a variety of teachership components and utilize them effectively (Tampere University of Applied Science, 2016). Lortie and Clement (1975) argue that TVET teachers' professional knowledge is radically influenced by their own school practices (as cited in Kleickmann et al., 2013).

This chapter is split into five headings describing the theoretical foundation of teacher competency components. The first section introduces empirical findings of Cambodian TVET with an explanation of various examples and models. The second section examines the technical and vocational teacher qualification by comparing and contrasting the empirical findings from contexts to contexts and from approach to approach. The third section discusses the literature related to competency components for technical and vocational teachers related to academic requirements and criteria to provide quality education and training courses. The fourth section presents Cambodian technical and vocational teachers highlighting the current status that needs to fill out the gaps. Finally, the fifth section states the summary of the literature review by classifying relevant components and sub-components of technical and vocational teacher competencies.

1. Cambodian Technical and Vocational Education and Training

The competency components for teachers form an integral part in promoting the quality of teaching improvement of students (Department of Education and Training,2004). Teachers might possess professional knowledge being capable of applyi ng that knowledge to the reality within their work settings (Pantic & Wubbles, 2010). Specifically, the national occupations cover skills, product knowledge,and understanding for performance in the workplace with the hope of productive outcomes (SkillsActive,

2019). However, the low perception of being a teacher is pervasive countrywide so the attraction of competent candidates to be a teacher is limited (MoEYS, 2015). Four important gaps for the TVET system in Cambodia contributes to high drop-out rates for general education stream students, low rates of TVET graduates, TVET curriculum deficiencies, and limited engagement in TVET (ADB, 2016). For this reason, Cambodian TVET needs to be tackled, particularly teachers.

Even though students graduate from grade nine, TVET institutes lament the quality of students, in terms of basic skills (ADB, 2016). The enrollment rate for the long-term courses on TVET was 30% in Cambodia (MoEYS, 2015). This needs to be considered for upgrading teachers' competencies because teachers are one of the main drivers for students' academic achievements. TVET teachers should be aware of vocational knowledge and practical work being responsive to the labor market needs in Cambodia (UNESCO, 2014).

There are 325 TVET institutes under supervision of 12 different ministries, of which, 45 are state training organizations, and the remainder is an education institute (ADB, 2016). Among them, two are the main ones consisting of the ministry of labor and vocational training (MoLVT) and the ministry of education, youth, and sport (MoEYS). For example, MoLVT is in charge of formal vocational education, and non-formal vocational education and training that the vocational training programs are from days to years. Mostly, the program focuses on hand-on skills to meet the immediate needs of the labor market, meaning that right after finishing or graduating from the course, they enter the labor market directly with trained skills. On the other hand, MoEYS cares for formal education for technical education stream from grade 10 to grade 12. This refers to the general and technical high schools (GTHSs), offering two subject clusters: vocational subjects and general subjects that support vocational subjects. Both ministries have to follow the national qualification framework (NQF) in terms of credits, teaching hours, academic degrees, and study paths to ensure a common and accredited system

of TVET countrywide. According to Ai (2015), the academic requirements to be TVET teachers are different among the two ministries. This might hinder the training quality to students, requiring further studies to explore the root causes.

Specifically, MoEYS requires teacher candidates to earn at least bachelor's degrees to take an entrance exam to get trained pedagogical methodologies for one year. The contents of training programs cover teaching practicum and achievement tests. In other words, MoLVT requires teacher candidates to earn at least associate degrees to get trained pedagogical methodologies for two years. The content comprises teaching practicum, achievement tests, and internship programs for one year at industrial sites. Therefore, different academic requirements and training contents for TVET teachers postulate more rigorous studies to explore teacher competency components.

In particular, MoEYS oversees technical education from grade 10 to grade 12, called the general and technical high schools (GTHSs) in certain trades such as mechanics, electronics, electricity, agronomy, animal husbandry, food processing, tourism, etc. Students who opt to study this stream require to obtain at least grade nine certificates with good morale of conduct, without taking an entrance exam. Impractical curriculum without trade textbooks hinders TVET quality delivery because most of the instructional activities within the curriculum are theory-based without operating and practicing equipment and materials. Furthermore, the practical equipment and materials are limited for student practice in terms of crowded students practicing each instructional hour with limited numbers of equipment. On the other hand, TVET teachers' competencies are limited in delivering TVET lectures. Some of them are former associate degree graduates who were fresh graduates without work experience and teaching experience because of the immediate needs of TVET teachers at GTHSs for every upcoming school year. They didn't attend the pedagogical training programs that have been offered by MoEYS at the national institute of education (NIE). This should be considered to

develop TVET teachers' competencies in relevant required skills and trades. Some of the challenges in education sectors are teaching and learning materials and specialized teachers for some subjects, especially science subjects and specialized teachers in general and technical high schools were not sufficient (MoEYS, 2016).

2. Technical and Vocational Education Teacher Qualification

The availability of teachers teaching the courses of technical and vocational training is limited (National Employment Agency, 2018). This resulted from some particular reasons from context to context and from setting to setting. Among them, academic degrees (Bachelor's degrees), pedagogical training programs, prior practical work, and teaching licensure. For example, in Turkey, TVET teacher qualification was more emphasis on subject matters earning a bachelor's degree (Grollmann & Rauner, 2007). For technical education teachers in Cambodia, fresh graduates from an associate or bachelor's degree with prior practical work can be entitled (Paryono, 2015). In Denmark, the qualification for TVET teachers is less emphasis on the subject matter, but much emphasis on work experiences (Grollmann & Rauner, 2007). TVET teachers in Denmark have to earn at least five years of professional experience for the qualification without prior pedagogical training certificates (European Center for the Development of Vocational Training, 2012). In Finland, the qualification was at least a Master's degree to be legally entitled to become TVET teachers (Center on International Education Benchmarking, 2019). However, some others required technical and vocational education teachers to complete vocational internships and teaching practicum. Therefore, the capacities and qualifications of TVET teachers should be enhanced to capture insightful experiences from national and international perspectives (Cambodia Ministry of Labor and Vocational Training, 2017).

In Indonesia, The TVET instructor qualifications include technical tasks and teaching pedagogy, assessing competency, but most instructors do not have certificates of teaching methodologies (Bateman & Liang, 2016). The four-year higher education degrees are required by laws in Indonesia to be a teacher. In other words, TVET teachers in Indonesia are required to have high academic degree, knowledge, and skills, practical work and pedagogy, passing the teacher certification (Kurnia, 2013; Malloch & Helmy, 2015). In Thailand, to be TVET teachers, the candidates are required to attend TVET teacher training programs for two years with an academic degree of bachelor's degree (UNESCO, 2015c). This is the reason why this study is undertaken employing a qualitative approach, not the synthesis report.

To prove these aforementioned statements, Grollmann and Rauner (2007) argue that the teaching qualification for TVET teachers should focus heavily on subject matter awareness. If the practice is not enforced appropriately, the qualification might be counter-productive. For example, in Brazil and China, there is a limited linkage between the academic requirements for TVET teachers and the reality that they currently earn and possess (Grollmann & Rauner, 2007). In Malaysia, TVET teachers are recruited from a pool of bachelor’s degree graduates without work experience (Mohamad, Saud, & Ahmad, 2009). Finally, TVET teachers of most of the countries earned bachelor’s degrees for their ultimate qualifications (Felix & Joachim, 2006).

The qualification for ASEAN TVET teachers is common for all members as a referencing standard. For example, ASEAN TVET teacher qualifications should be at least one-year teaching experiences, relevant industrial experience, bachelor’s degree holders, higher skill possession (Paryono et al., 2017). In contrast, in Malaysia, TVET teacher qualifications require at least one degree higher than the degree which will be taught without practical work (Bateman & Liang, 2016). However, the research highlighted limited qualifications and vague methods under study requiring more rigorous study to explore the competency components.

Particularly, in Vietnam, a bachelor's qualification in vocational majors with teaching

pedagogy certificates for bachelor's holders is the minimum qualification for TVET teachers (Bateman & Liang, 2016). In Brazil, the TVET teacher has to earn at least a bachelor's degree in their respective majors as a required academic qualification (Carnielli, Gomes, & Capanema, 2007). Also, the vocational and pedagogical requirements are the main component for TVET teacher qualifications in Japan (Bateman & Liang, 2016), and the minimum academic requirement to be TVET teachers is a bachelor's degree. Thus, the synthesis report needs to specify any particular research methods to make the study more empirical.

Work experience is one of the competency components for teachers engaging them to apply hand-on skills to students authentically. For example, in Japan before obtaining a teaching permit or a teaching license, each candidate had to have prior experience as a laboratory assistant, part-time lecturer or worked at a private company (Terada, 2007). The synthesis report covered one requirement for TVET teachers in Japan.

In most of East Asia Pacific countries, the TVET teacher qualifications include the level of competence in the vocational and technical contents in teaching and pedagogy with workplace experience (Bateman & Liang, 2016). Intensively, to be qualified as TVET teachers, the candidates must complete teacher training programs at higher educational institutes and receive teacher license from the prefecture committee of education in Japan (Bateman & Liang, 2016). The findings were resulted from the synthesis report without employing research methods.

In South Korea, TVET teacher qualifications require the candidates passing a theory and demonstration test; upon successfully candidates are required to take a final interview (Bateman & Liang, 2016). The bachelor’s holders have to sit for a competitive test for the national teachers. This process requires the candidate to possess a high competency in their respective majors and teaching pedagogy to pass the test. In Lao, TVET teachers are required to be trained at universities (theory teachers), and to be at vocational education institutes

(practical teachers) (Bateman & Liang, 2016). Thus, a particular research approach was not mentioned.

In the United States of America, the career and technical education teachers are obliged to earn a bachelor's degree without experience (Lynch & Ruhland, 2007). During a probation period of three years, the contract teachers are required to attend the course as part of professional development until they earn a full tenure as a teacher (Lynch & Ruhland, 2007). Different contexts and settings with scientific data analysis need to be intensified to compare and contrast the data.

Teachers inspire education exerting their high expertise and academic achievements so that they must be well-qualified to reach a world-class level. For example, in Singapore, the rigorous entry requirements to be a teacher include interviews, exams, and demonstration lessons (Center on International Education Benchmarking, 2019). Similarly, In South Korea, the requirements to be a teacher are written tests, interviews, and micro-teaching. Therefore, the two advanced countries set strict criteria for being teachers, different from the Cambodian teacher education system.

To be a TVET teacher in Thailand, the candidate must obtain a teaching license from the government, a bachelor's degree as high academic knowledge; and the license must be renewed every five years (Potang, 2015). However, the system keeps teachers stay innovative for their competencies to catch up with technological innovation, different from Cambodian TVET system.

3. Competency Components for Technical and Vocational Education Teachers

There is some literature on competency components for TVET teachers, but some of them were described to compare and contrast the empirical study results. For example, Hopf

(2012) found four competency components of vocational teachers consisting of professional competence, method competence, relational competence, and controlling competence (as cited in Diep & Hartmann, 2016). The study might focus heavily on more theoretical work of technical and vocational education teachers enabling the in-depth study to explore relevant perspectives supporting teachers' work and success.

The competency components for teachers form an integral part in promoting the quality of teaching improvement of students' academic outcomes (Department of Education and Training, 2004). Teachers need to master a body of vocational knowledge and practical work and be able to apply them to a variety of situations successfully (Pantic & Wubbels, 2010). Specifically, the national occupational standards cover competencies, and understanding for organizational performance in the workplace with the hope of productive outcomes (Skills Active, 2019).

Green (2004) identifying teaching competencies for teachers, found particular components and class management consisting of vocational knowledge, instructional planning, pedagogy and class management, assessment and evaluation methods, community and parent relationship, instructional performance management and development, staff and adult management, resource management, and strategic leadership. TVET teachers should possess practical work and other required skills appropriate for their majors before teaching at TVET institutions (Mou, Lavigne, Rostamian, Moodie, & Wheelahan, 2018).

Potang (2015) found that TVET teachers' competencies comprised core component, professional component, and functional component for Thai TVET teachers. Each component is broken down into attributes/dimensions as implementation actions. However, each component and attributes/dimensions are too broad to capture the reality; and the system is applicable for the Thai context. Each component and its attributes are highlighted in **<Table II-1>**. The study didn't highlight the technical competencies required to function at the

organization successfully. In other words, the core values for ASEAN's successful cooperation for TVET comprise partnership, effectiveness, communication, and learning (Aprilio et al., 2019). Therefore, the quality of TVET depends on the commitment of TVET teachers that they possess (Euler, 2018).

<Table II-1> Competency Components and Attributes for TVET Teachers in Thailand (Potang, 2015)

Component	Attribute
Core Component	-Everybody must be competent in communication, numerical analysis, technology and communication, problem solution, reactions among people, and self-professional development.
Professional Component	-The teachers' capacities of curriculum development, of instructional management, of assessment and evaluation, of psychological education, environmental management and administration, of academic research competencies, of development of technology, of counseling and learning activity management, and of building mutual cooperation between schools and communities.
Functional Component	-Concerns with instructional material development for technical education learners, working in specific academic areas, such as class, workshop and laboratory management, equipment usage and maintenance, innovation building, apprentice management, evaluation of professional development, knowledge and skill application to specific academic areas, together with instructional management and self-development.

General Directorate of Education, Vocational Training and Learning Innovation (2010) identified TVET teachers' particular teaching competencies encompassing knowledge, abilities, skills, attitudes, and behavior patterns. The study exploring a knowledge base on leadership in vocational and technical education undertaken in Canada to the chairs and associate chairs of departments for vocational and technical education institutes employing a qualitative approach expressed the values of quality teaching and learning (Hoekstra & Newton, 2017). To get a highly-skilled workforce, technical and vocational education might capture more technical and practical insights from teachers. However, the study was applicable for TVET teachers for the Canadian context with a broad inventory of skills and knowledge.

TVET teachers need to possess four competencies covering diagnosis, evaluation, cooperation, and quality development (Bauer, 2007). The competencies were extracted from the policy actions without employing any particular approach. Too broad perspectives on teacher competencies were employed.

Ismail, Nopiah, Rasul and Leong (2017) exploring the competency components for Malaysian TVET teachers by reviewing 14 research articles published between 2009 and 2015, found (1) the lack of English language competencies; (2) the need to improve vocational knowledge, technology knowledge and teaching methods and techniques; (3) the deficits of TVET teacher job information; and (4) the need to upgrade TVET teacher competencies through training and development. The study was employed a literature review approach in Malaysia with different contexts from Cambodia.

In Indonesia, there are four competency components with attributes for TVET teachers at upper secondary levels (Malloch & Helmy, 2015). The components and sub-components are highlighted in **<Table II-2>.** Thus, it requires a more rigorous empirical study for the Cambodian context to specify each component and sub-component.

<Table II-2> Four Competency Components and Attributes for TVET Teachers in Indonesia (Kurnia, Dittrich, & Murniati, 2014; Malloch, & Hemly, 2015)

Component	Attribute
Pedagogic Component	-Be able to deal with learners' characteristics -Master learning theories and principles for effective instructions -Develop the curriculum for own instructions -Organize learning environment -Use information technology for instructional service purposes -Facilitate the learners' potentials for development and growth -Communicate with learners in an effective way -Conduct assessment and evaluation of instructional processes -Utilize assessment and evaluation results for instructional betterment -Take effective action for improving the instructional quality

Personal Component	-Act according to religious, legal, social, and national culture -Present one's self as a competent person with noble characters for students and community model -Present one's self as a competent person who is wise and authoritative -Demonstrate work ethics, and high responsibilities for students learning -Uphold the code of ethics for students and teacher's adhesiveness
Social Component	-Act objectively without discriminating demographic characteristics -Communicate effectively with relevant stakeholders such as peers, students, parents, and community -Be able be familiar to diverse socio-cultural contexts of academic environment
Professional Component	-Possess the concepts, theories, and materials for one's specific areas of teaching and learning -Be proficient in the basic competencies and specific competencies -Develop instructional materials for serving own teaching actions in an innovative way -Build own professionalism continuously through reflection-on-action and reflection-in-action -Apply information technology for self-development and learning

The competency components are divided into core components (competencies required within the technical area), and basic components (Bateman & Liang, 2016). However, the study is a synthesis report.

Soysouvanh et al. (2013) identified five components and 16 sub-components with supportive attributes for TVET teachers in Lao. Among them, 16 sub-components encompassed (1) internalizing positive attitudes; (2) recognizing national ethics; (3) respecting rights and duties; (4) considering the diverse backgrounds of learners; (5) considering the work setting, (6) assisting self-determination; (7) connecting and interacting mutually; (8) managing lesson planning processes; (9) giving lessons; (10) supporting the learning process; (11) motivating learners; (12) considering individual preconditions; (13) measuring learner performance; (14) accepting professional requirements; (15) continuing professional development; and (16) participating in innovation. The study was conducted in Lao employing a literature review approach. The detailed sub-components are shown in **<Table II-3>**.

<Table II-3> Sub-Components for the TVET Teacher Competency Components in Lao (Soysouvanh et al., 2013)

Sub-Components	Source
-Cooperating with communities and stakeholders -Adhesive to educational standards and regulations -Training methods -Supporting students to upgrade their vocational knowledge -Teaching methods and techniques -Mastering vocational knowledge -Flexible skills for lessons, student characteristics, and environment -Creative skills for students learning -Technology knowledge -Performing administrative work -Upgrading vocational knowledge -Instructional resource and budget planning	(Soysouvanh et al., 2013)

Grosch (2017) explored three competencies for ASEAN TVET teachers covering 15 categories/sub-components. The 15 sub-components were (1) students' backgrounds; (2) designing a lesson plan; (3) preparing, designing and choosing learning contents; (4) designing appropriate instructional techniques and methods; (5) preparing suitable instructional material and supporting media; (6) developing assessment/evaluation strategies and instruments; (7) encouraging students in self-learning; (8) effective management of class activities; (9) interacting with relevant stakeholders for effective instructional outcomes; (10) applying effective teaching techniques and methods; (11) connecting learners with the world of work and job information; (12) applying appropriate instructional materials and media; (13) assessing students' academic outcomes and outputs; (14) providing and getting constructive feedback from stakeholders; and (15) conducting an evaluation processes. The components and sub-components were applied to five ASEAN countries employing the focus group approach.

Paryono et al. (2017) identified three components of regional TVET teacher standards

consisting of personal and social, pedagogy and teaching methods, and technical. Each component is divided into attributes, as highlighted in **<Table II-4>**. However, the competency components with attributes covered the regional perspectives of the TVET teacher system.

<Table II-4> Regional TVET Teacher Competency Components and Attributes (Paryono et al., 2017)

Component	Attributes
Personal and Social Component	-Promoting the dignity, culture, values, beliefs, and rights of individuals -Utilizing entrepreneurial and soft skills in the learning environment -Observing and applying laws and regulations of educational institutions -Working in teams with their colleagues to enhance TVET delivery -Planning and implementing professional development to enhance their skills, knowledge, and attitude
Teaching Methodology Component	-Planning learning sessions -Delivering and demonstrating learning sessions -Carrying out assessments and evaluations of learning outcomes -Putting the development level and the living environment of students -Shaping the learning and school culture -Customizing learning and interaction processes
Technical Component	-Delivering technical training to develop and strengthen technical skills -Assessing the technical skill performance of learners -Planning and managing the workshops according to professional requirements

Ngubane and Khoza (2016) exploring the competency components of TVET teachers who teach disability students in South Africa, employed a qualitative approach interviewing six TVET teachers. They found three components comprising technological knowledge, pedagogical knowledge, and professional knowledge with sub-components as highlighted in **<Table II-5>**. However, the study was undertaken in South Africa to teachers who teach students with disabilities.

<Table II-5> Competency Components and Sub-Components for TVET Teachers in South Africa (Ngubane & Khoza, 2016)

Component	Sub-Component
Technological Knowledge	-Hardware and Software -Learning Approaches
Pedagogical abilities	-Teaching methods and techniques -Goals -Assessment and evaluation methods
Vocational knowledge	-Algebra -Trigonometry -Geometry -Forces -Structures

Grollmann and Rauner (2007) argue that three main components of TVET teacher innovation patterns interacted with each other formulating TVET teacher competency components. The three components ultimately consisting of political, practical, and scientific research and development which are what TVET teachers have to possess. Likewise, Minghat and Yasin (2010) employing a qualitative approach to interview 12 TVET experts in Malaysia identified competency components for TVET teachers consisting of creativity, teaching methods, soft skills, technology knowledge, vocational knowledge, communication, professional commitment, and class management. The study needs more competency components to cover TVET teachers' work specifically.

Arifin, Rasdi, Anuar, and Omar (2017) identifying vocational education teachers' competencies for effective job performance in Malaysia, found four competency components for vocational education teachers consisting of (1) instructional competence, (2) professional competence, (3) communication competence, and (4) personal competence. The core tasks of TVET teachers encompass instructing, demonstrating, diagnosing, assessing and developing competence, reflecting on teaching and learning processes, and managing (Terhart, 2000 as

cited in Bauer, 2007). To attract more TVET students, TVET should perceive labor market needs and provide career advice to students properly for their decisions on study paths (UNESCO, 2013b). However, each competency is too broad to capture technical education teachers' competencies. Likewise, the study was conducted in different contexts with various economic status. No sub-components covered teacher aspects.

TVET teachers' competencies for component *administrative competencies* include communication, technology knowledge, class management, critical thinking, integrity, and responsibility (Paryono, 2014). In other words, the component *administrative competencies* consist of flexible skills for lessons student characteristics and environment, professional commitment, upgrading vocational knowledge, teamwork, communication, technology knowledge, and class management (Ismail & Mohammed, 2015). These skills are critical for TVET teachers.

The competency components for career and technical education teachers encompass five components consisting of (1) committing to students and their learning; (2) knowing the subject they teach and know-how; (3) responsibilities in managing and monitoring student learning; (4) thinking about their practice and learn from experience; and (5) members of learning communities (National Board for Professional Teaching Standards, 2002 as cited in Lynch & Ruhland, 2007). However, the study was employed in a different research approach.

UNESCO (2011) conducting literature review to TVET teachers' work found that TVET teachers might possess these typical competency components comprising (1) understanding ICT in education, (2) curriculum assessment, (3) pedagogy, (4) ICT, (5) organization and administration, and (6) teacher professional learning (Soysouvanh et al., 2012). TVET teachers may possess substantial vocational knowledge for their majors (UNESCO, 2013b). This was a global context for TVET teachers, focusing more on technology.

The administrative competencies for TVET teachers covered upgrading vocational

knowledge, communication, and teamwork (Brewer & Comlyn, 2015). Each category has its attributes/dimensions. For example, the sub-component *upgrading vocational knowledge* encompassed willing to learn, using learning techniques to acquire and apply new knowledge and skills, pursuing independent learning, taking responsibility for own learning, thinking abstractly, organizing, processing and hold information, interpreting and communicating information, beginning, following through and completing tasks, and selecting the best approaches for tasks. The communication comprised articulating own ideas and vision, listening to understand and learn, listening and communicating effectively, writing to the needs of an audience, writing effectively in the language, and understanding and speaking the language. The teamwork includes working in teams or groups, interacting with co-workers, respecting the thoughts and opinions of others in the group, working within the culture of the group, understanding and distributing to the organization's goals, making decisions with others, taking accountability for actions, building partnerships and coordinating a variety of experiences, working towards group consensus in decision making, valuing others' inputs, accepting feedback, coaching, mentoring and giving feedback, and mobilizing a group for high performance. Finally, the problem-solving embraced solving problems independently, identifying problems, and identifying and suggesting new ideas to get the job done. However, it was a synthesis report, covering only administrative competencies.

The code of professional conduct for teachers in Ireland encompassed six components consisting of (1) values and relationships, (2) integrity, (3) conduct, (4) practice, (5) professional development, and (6) collegiality and collaboration (The Teaching Council, 2012). Particularly, Marsono, Purnomo, Tuwoso, Romlie and Solichin (2017) in Indonesia identified seven sub-components for component *administrative competencies* for TVET teachers including communication, critical thinking and problem-solving, teamwork, upgrading vocational knowledge, entrepreneurship, professional commitment, and class

management. These studies covered only soft skills for TVET teachers in different contexts.

Amiruddin, Ngadiman, Abdul, and Saidy (2016) assessing the level of administrative competencies acquired by TVET trainees in Malaysia employing a survey design method, found that the sub-components of TVET trainees' competencies were communication skills, problem-solving, teamwork, and class management. Likewise, research in Kenya employing a quantitative approach to 200 former TVET students, found that TVET teachers possess administrative competencies covering critical thinking, class management, technology knowledge, creative skills for students learning, teamwork, communication, and practical work (Murgor, 2013). These studies were employed a quantitative approach exploring only sub-components of TVET trainees' administrative competencies.

Basco (2017) employing a descriptive comparative approach to assess instructional competencies of college science teachers in the Philippines, found that teachers are competent in the learning environment, diversity of learners, curriculum, and social regards for learning. The component *administrative competencies* for TVET teachers in Australia included communication, teamwork, problem-solving, class management, upgrading vocational knowledge, and technology knowledge (Brewer & Comlyn, 2015). The studies were particularly undertaken at different contexts from Cambodia employing different research approaches.

TVET curriculum in Brunei Darussalam embraces class management, mastering learning behaviors, communication, applying technology skills, and problem-solving (Paryono, 2014). These competency components need to be authentic to teachers in advance to gain prior knowledge and insights before integrating them into instructional successfully.

The teacher competencies cover the ability to work in a variety of contexts, the ability to be independent in life and work, and foreign language competencies, mathematics, and technology knowledge (Rychen & Salganick, 2001, 2002 as cited in Peklaj, 2015). Ayonmike,

Okwelle, and Okeke (2015) employing a survey design to 160 TVET teachers in Nigeria found that TVET teachers' competency components and sub-components including teaching methods and assessment/evaluation methods. UNESCO (2013b) argues that TVET teachers might be experienced properly in their majors.

There were 10 competency components in the United States of America (Lynch & Ruhland, 2007). They were (1) mastering vocational knowledge; (2) supporting students learning; (3) ability to work with diverse learners; (4) use of diverse instructional strategies; (5) positive learning environment; (6) effective verbal, non-verbal and media communication; (7) ability to plan and integrate instruction; (8) continuous intellectual, social and physical environment of learners; and (9) ability to develop as a reflective practitioner; and (10) participate in the larger community to support students' learning and well-being. It was a synthesis report covered different contexts.

Paryono (2014) employing a qualitative approach interviewing 19 TVET teachers, exploring TVET teachers' competency components of transferable skills for integrating into TVET instruction, found teaching methods, and assessment/evaluation knowledge. The component *teaching methods* covered sub-components of teacher-centered pedagogies, a hybrid approach that encourages students to be more involved, and a project-based learning approach. Finally, component *assessment/evaluation methods* encompassed monitoring-based assessment, and rubrics and electronic portfolios. The study only explored transferable skill or soft skill components for TVET teachers.

Ismail and Mohammed (2015) argue that TVET teachers' hard skills include technology knowledge, and mastering vocational knowledge. Indonesian TVET teachers have to possess vocational abilities and administrative competencies according to the requirements of the TVET curriculum (Seitawan, 2017). Assessment/evaluation methods can be perceived by TVET teachers to measure student learning (UNESCO, 2013b). Phakkdey (2016)

conducting a qualitative study interviewing eight TVET teachers and 22 TVET students in Cambodia, found that TVET teachers' competency components covered teaching methods, class management, and Instructional material preparation. TVET teachers need to understand the process of how to develop the curriculum for practice-based learning (UNESCO, 2013b). Therefore, vocational knowledge plays an important role for TVET teachers that need to be considered.

4. Cambodian Technical and Vocational Education Teachers

There is limited literature on technical and vocational education in Cambodia. Capacities and qualifications of TVET teachers may be enhanced to capture insightful experiences from national and international perspectives (Cambodia Ministry of Labor and Vocational Training, 2017). Inadequate educational qualifications and lack of teacher training programs persistently plagued the country's education quality (Madhur, 2014). Thus, several reforms should be undertaken to improve the quality of teachers (MoEYS, 2019a).

To be technical and vocational education teachers, the candidates must earn at least associate degrees in their technical majors, attending pedagogical training courses from one to two years, and conducting a practicum for a certain period required by different ministries. But before entering this program, the associate and bachelor's degree students must master vocational knowledge and technology. To this study, the broad perspectives of teacher competency standards are obliged because a step-by-step requirement enabling teachers to meet.

TVET teacher candidates must earn at least associate degrees to be junior technical teachers and bachelor's degrees to be senior technical teachers with a one-year pedagogical training program (Sothy et al., 2015). Later on, the bachelor's degree holders must study a two-

year pedagogical training program before becoming TVET teachers. During a two-year training course, teaching methodology and trade enhancement along with teaching practicum are provided. However, TVET teachers who are bachelor's degree-holders under the supervision of the ministry of education, youth, and sports are required to get trained in pedagogical courses for one year. The one-year program integrates teaching methodology and teaching practicum. This should be focused more on upgrading teachers' knowledge and skills in new technology and science (Sothy et al., 2015). These are the current status requiring rigorous empirical study exploring context-based results.

To be TVET teachers, the teacher candidates must take an entrance examination to study one or two years at any designated higher education institutions under different ministries. Because of an increase in teachers' salaries annually, the examination is slightly competitive among teacher candidates who hold at least bachelor's degrees in their respective trades. Around 40% of upper secondary education teachers hold at least a bachelor's degree (UNICEF, 2018). This number is still low requiring more effort. However, this is only the percentage of gleaned directly from schools. The empirical study should be conducted.

The national technical training institute (NTTI), under the supervision of the ministry of labor and vocational training (MoLVT), is in charge of training TVET teacher candidates. The TVET teacher training is a one-two program consisting of thirty-seven credits with teaching practicum and a one-year internship at the industry. About 300 TVET teacher candidates are encouraged to be trained every year to meet the growing labor market needs (UNESCO, 2015a). No relevant study explored TVET teacher issues.

For the trades of agriculture field, the ministry of agriculture, forestry, and fisheries manage partly the field. Two institutions named the royal university of agriculture and Prek Leab school of agriculture provide degree training courses ranging from the associate to doctoral degrees. For the trades of social work, the ministry of social work, veterans and youth

rehabilitation takes charge of this, regulating the national institute of social work. The institute provides programs ranging from the associate to bachelor's degrees. For the trade of fine arts and architecture, the ministry of culture and fine arts is in charge of managing it regulating the royal university of fine arts. The university provides programs ranging from the associate to doctoral degrees. However, most of the lecturers and professors earn bachelor's and master's degrees. The lecturers' work experiences and research publication backgrounds are very limited in their respective trades/fields. The capacities of TVET instructors are limited in Cambodia (MoEYS, 2019a). Lecturers' academic degrees affect service quality. Therefore, there is very limited literature on TVET teacher status.

The national training board (NTB) which formally was formulated by the royal government of Cambodia, manages technical and vocational education and training (TVET) for all fields and all ministries. The main responsibility of NTB is to ensure that TVET institutions provide quality TVET programs to students and villagers (National Training Board, 2019). NTB indirectly regulates teacher qualities and qualifications. TVET teacher status and qualifications are under different ministries hindering different qualities of TVET service provision programs. In this regard, very limited rigorous empirical studies have been undertaken to explore TVET teacher status and characteristics in Cambodia.

In the informal sector of TVET, there are a lot of master men or master trainers who run their businesses as a shop owner or employed trainers at small and medium enterprises (SME) without formal academic qualifications and experiences. Knowing what to teach is important but knowing how to teach is much more important (UNESCO, 2014). Sometimes they are fresh trainees or apprentices who have ever attended the real practice of a particular skill at the shop under a constant coach and guide from master men. The training or practicing contents and modules are practice-oriented, without formal curriculum or written scripts. Mostly, the training courses range from one week to months in the period. The course contents

are market-need oriented because the apprentice's purpose is to apply their new knowledge and skills to run their own business successfully. In some cases, master men or master trainers operate a required typical machine or equipment as a demonstration to trainees or apprentices as a model. After working or running their businesses (entrepreneurship) successfully on the market with a good reputation, new apprentices or trainees who are interested in running their relevant businesses, register to pay and learn from them as a circling process. This process means that the experienced or practiced person instructor transfer their knowledge and skills to inexperienced or new persons by directly exposing them to the real practice. This learning or transferring model is applied successfully on the market populated by many young people living in a rural area with poverty. Because of an informal sector with complicated processes that can't be captured, no relevant literature identifies the issues and challenges of master men or master trainers. Therefore, TVET instructors for this informal sector are very limited in terms of academic and theoretical backgrounds.

After graduating from specialized universities for each respective trade or major if the bachelor's, associate degree or master's degree graduates want to work as technical education teachers at the upper secondary level, the graduates must sit for an entrance examination and study pedagogical methodologies for one academic year. Then, they will be a formal public technical education teacher. For example, students who graduated from the royal university of agriculture majoring in agronomy can apply to take an entrance examination to study pedagogical methodologies at the national institute of education (NIE) and work as a teacher at public technical and vocational high schools under the supervision of the ministry of education, youth, and sports. However, there is a shortage of technical education teachers at the upper secondary level in terms of numbers and competencies. Fish (1995) proposed that competent teachers should possess subject matter knowledge and knowing how to transfer it to others; awareness of how individuals learn, feel and develop; and understanding social-cultural

contexts (Day, 1999; Celik, 2011). However, no literature exploring these issues has been undertaken so far.

Particularly, for TVET teachers under supervision of the ministry of education, youth, and sports (MoEYS), some bachelor's degree holders who have graduated in any typical trades from any Thai universities or higher education institutions can be entitled to be TVET teachers for their respective trades without taking an entrance examination to the national institute of education (NIE) for pedagogical training for one certain academic year. Because of better cooperation between Thai and Cambodian education, Thai education authorities provide undergraduate scholarships to students who have graduated from general and technical high schools annually to study at Thai higher education institutions (Department of Vocational Orientation, 2018). Those upper secondary teacher candidates can be assigned to work at general and technical high schools (GHTSs) as an upper secondary school teacher.

Teachers are the labor supplier so that they should perceive the labor market need to provide the right skills and knowledge. Labor market knowledge is a drawback for Cambodian TVET teachers because mostly they focus on the lessons and transferrable skills. Technology knowledge and foreign language competencies, as parts of supportive competencies, are also the challenges for them as most of the teachers heavily focus on the school-to-work approach, meaning that just after graduating from schools, teachers wish to be employed or self-employed (entrepreneurship). Consequently, they only master hard their vocational knowledge for a job.

TVET is under different organizations including NGOs and the non-formal sector. Some NGOs recruit TVET teachers from their fresh graduate pools or alumni without bachelor's degrees and pedagogical training certificates. But they learn from real work settings during studying as work experience. For example, Don Bosco vocational training centers, Private Don Bosco general and technical high school of Poi Pet, San François private general and technical high school, etc. are the private and NGOs-funded schools that autonomously recruit TVET

teachers without required academically qualifications. However, TVET teachers with low degrees and without pedagogical training recognition might jeopardize the quality. TVET teachers should do further studies for their majors (Phakkdey, 2016).

In particular, teachers are required to be the recruitment and selection members for new part-time teachers and new students for their respective trades or subjects because they will a member of their professional learning communities. Some TVET teachers are responsible for planning and allocating school budget for instructional services in collaboration with the school accountants and cashiers. They act as a team representative to plan and request the budget. Out of these, teachers communicate with the communities for facilitating student internship and practicum, particularly for this class students. Their specific tasks include guiding, inspecting, facilitating between interns and industry owners, and motivating them to work hard.

5. Summary of Literature Review

After an extensive review of the literature described above, themes/components and categories/sub-components explained by attributes/dimensions were emerged as components by components responding to the research question. For example, Cambodian technical and vocational education and training were briefly mentioned under two main ministries as highlighted in **<Table II-6>**. Mostly MoEYS works for a formal TVET system at the upper secondary level, but MoLVT works for non-formal and formal TVET systems.

<Table II-6> Cambodian Technical and Vocational Education and Training under Two Main Ministries

Variables	Ministry of Education, Youth, and Sports	Ministry of Labor and Vocational Training
Training Program	-Formal (from grade 10 to 12) at general and technical high schools -Ranging from one to three years in a period -Vocational subjects and supportive general subjects	-Non-formal and formal at higher education institutes and vocational training centers -Ranging from days to years in a period -Vocational subjects and hand-on skills
Target students	-Grade 9 certificate holders	-Drop-out students, returned migrant workers, displaced workers, general students, unemployed people, villagers
Student Admission Criteria	-At least holding grade 9 certificates -Filling out the application -Passing the screening process	-Filling out applications
Teacher Qualification	-Bachelor's degree/associate degree -Getting pedagogically trained for a particular year at the teacher training centers for bachelor's degree holders -Without work experience -Some associate degree holders have not been trained pedagogically because of abroad graduation	-Bachelor's degree/associate degree -Getting pedagogically trained for two years, among which one year for industrial internship -Without work experience

For a global context, the required qualifications of TVET teachers are varied from context to context according to the education law. Mostly the global context qualifications cover high academic knowledge, mastering vocational knowledge, mastering practical work, and teaching methods and techniques. This summary is illustrated in **<Table II-7>** for more understanding.

<Table II-7> Summary of Technical and Vocational Education and Training Teacher Qualifications for the Global Context

Country/ Association	Required Knowledge/Skills	Required Qualification	Source
Cambodia	Vocational abilities	Associated and bachelor's degree	-(UNESCO, 2014) -(Paryono, 2015)
Turkey	Mastering vocational knowledge	Bachelor's degree	-(Grollmann & Rauner, 2007)
Denmark	Mastering vocational knowledge	-At least five years of practical work -No requirement for prior pedagogical training certificates	-(European Center for the Development of Vocational Training, 2012) -(Grollman & Rauner, 2007)
Finland		Master's degree	(Center on International Education Benchmarking, 2019)
Indonesia	-Mastering vocational knowledge -Relevant skills	-Teaching methodology certificate -Bachelor's degree -Industrial practical work	-(Bateman & Liang, 2016) -(Kurnia, 2013) -(Malloch & Helmy, 2015)
Thailand		-Attending a two-year teacher training program -Bachelor's degree -Teacher license	-(UNESCO, 2015c) -(Potang, 2015)
Malaysia		-Bachelor's degree -No practical work	-(Mohamad et al., 2009) -(Bateman & Liang, 2016)
ASEAN	Mastering vocational knowledge	-Bachelor's degree -One-year teaching experience -Industrial practical work	-(Paryono et al., 2017)
Vietnam		-Bachelor's degree -Teaching certificate	(Bateman & Liang, 2016)
Brazil		Bachelor's degree	(Carnielli, et al., 2007)
Japan	Mastering vocational knowledge	-Bachelor's degree -Teaching certificate -Practical work for industry and teaching	-(Bateman & Liang, 2016) -(Terada, 2007)
South Korea		-Bachelor's degree -Theory and practice tests -Interview	(Bateman & Liang, 2016)
Lao		-Bachelor's degree	-(Bateman & Liang, 2016)
Unites States	Participation in the professional development program	Bachelor's degree	-(Lynch & Ruhland, 2007)

Singapore		-Interview -Examination -Lesson demonstration -Industrial practical work -Teacher license	-(Center on International Education Benchmarking, 2019) -(Sg, 2012) -(Paryono, 2015)

Out of the global context for the qualifications of TVET teachers, a summary of literature found and proposed as highlighted in **<Table II-8>**. Practical work is a prominent component for this literature, but mastering vocational knowledge, labor market knowledge, and teaching methods can be considered.

<Table II-8> Summary on the Proposed Qualification of Technical and Vocational Education Teachers

Proposed Qualification	**Source**
-Mastering vocational knowledge	(Grollman & Rauner, 2007)
-Mastering vocational knowledge -Teaching methods and techniques -Mastering practical work	(Bateman & Liang, 2016)
-Mastering practical work -Labor market knowledge	(UNESCO, 2013b)

The answer to the only one research question is the competency components for technical and vocational education teachers. Therefore, the competency components are the central phenomenon for this study. To learn more about the competency components from literature, **<Table II-9>** shows the summary of the major relevant literature. Mostly the literature focuses on teaching methods and techniques and, mastering vocational knowledge as major components.

<Table II-9> Summary on the Competency Components and Sub-Components for Technical and Vocational Education Teachers

Component	Sub-Component	Source
-Mastering vocational knowledge -Teaching methods and techniques -Class management		(Diep & Hartmann, 2016)
Mastering vocational knowledge		(SkillActive, 2019)
	-Supporting students to upgrade their vocational knowledge -Class management -Cooperating with communities and stakeholders	(Grosch, 2017)
-Mastering vocational knowledge -Setting academic expectations -Instructional methods and techniques -Assessment/evaluation methods -Class management -Cooperating with communities and stakeholders		(Green, 2004)
-Mastering practical work -Mastering vocational knowledge		(Mou et al., 2018)
Core component	-Technology knowledge -Upgrading vocational knowledge	(Potang, 2015)
Professional component	-Class management -Assessment/evaluation knowledge -Research competency -Technology knowledge -Upgrading vocational knowledge -Curriculum and textbook development -Administration for learning -Cooperating with communities and stakeholders	
Functional component	Instructional material and preparation development	
Upgrading vocational knowledge		(Aprilio et al., 2019)
Mastering vocational knowledge		(General Directorate of Education, Vocational Training and Learning Innovation, 2010)
Evaluation/assessment knowledge		(Bauer, 2007)
	-Mastering vocational knowledge -Technology knowledge -Teaching methods and techniques	(Ismail et al., 2017)

	-Foreign language competencies	
Core component	Mastering vocational knowledge	(Bateman & Liang, 2016)
	-Mastering vocational knowledge -Research competency	(Grollmann & Rauner, 2007)
	-Creative skills for students learning -Teaching methods and techniques -Technology knowledge -Mastering vocational knowledge -Class management	(Minghat & Yasin, 2010)
-Teaching methods and techniques -Mastering vocational knowledge		(Arifin et al., 2017)
-Assessment /evaluation methods -Teaching methods and techniques -Technology knowledge -Administration work -Upgrading vocational knowledge		(UNESCO, 2011) (Soysouvanh et al., 2012)
	-Upgrading vocational knowledge -Technology knowledge -Foreign language competency	(Rychen & Salganick, 2001, 2002 as cited in Peklaj, 2015)
-Teaching methods and techniques -Assessment/evaluation methods		(Ayonmike et al., 2015)
-Mastering vocational knowledge -Teaching methods and techniques -Instructional material preparation		(Lynch & Ruhland, 2007)
-Vocational abilities		(Seitawan, 2017)
	Assessment/evaluation methods	(UNESCO, 2013b)
-Teaching methods and techniques -Class management -Instructional material preparation		(Phakkdey, 2016)

In particular, a study was undertaken in Indonesia identified four components with some sub-components for TVET teachers at the upper secondary level. The summary is presented in **<Table II-10>**. However, these studies mainly focused on teaching methods and techniques for teachers as part of pedagogical abilities. This might be due to the essential drawbacks of the TVET system in Indonesia because of teachers' teaching capacities. Therefore, the government pays high attention to this factor to develop the TVET system.

<Table II-10> Summary of Competency Components and Sub-Components in Indonesia

Component	Sub-Component	Source
Teaching methods	-Teaching methods and techniques -Technology knowledge -Assessment/evaluation method -Instructional material development and preparation -Curriculum and textbook development	-(Kurnia et al., 2014) -(Malloch & Hemly, 2015)
Personal	-Integrity -Professional commitment	
Social	-Flexible skills for a lesson and student characteristics and environment -Demonstrating work ethics -Upholding code of ethics of the teaching profession -Cooperating with communities and stakeholders	

To be specific for the mix of vocational and academic abilities, pedagogical abilities, and administrative competencies with supporting sub-components highlight the summary, as shown in **<Table II-11>**. Mostly, it focuses on pedagogical abilities and administrative competencies; it might be due to a heavy focus for each country context.

<Table II-11> Summary of Sub-Components and Attributes for Vocational Abilities, Pedagogical Abilities, and Administrative Competencies

Sub-Component	Attribute	Source
-Technology knowledge -Class management		(Paryono, 2014)
-Upgrading vocational knowledge -Technology knowledge -Class management		(Ismail & Mohammed, 2015)
Entrepreneurship skills		-(Paryono et al., 2017) -(Marsono et al., 2017)
Upgrading vocational knowledge	-Foreign language competencies -Cooperating with communities and stakeholders	(Brewer & Comlyn, 2015)

Class management		(Amiruddin et al., 2016)
-Class management -Technology knowledge -Creative skills for students learning -Mastering practical work		(Murgor, 2013)

Vocational abilities are one of the major components of TVET teachers' competency components. Regarding component *vocational abilities*, Imail and Mohammed (2015) identified two sub-components covering technology knowledge and vocational knowledge. These two sub-components are too few for TVET teachers' competency components to enhance their competency levels.

Cambodian TVET teachers are the target participant for this study so that their information serves as a baseline beacon for exploring their competency components; the summary of them is shown in **<Table II-12>**.

<Table II-12> Summary on Cambodian TVET Teachers' Current Competency Components

Component	**Source**
-High academic knowledge -Teaching methods and techniques -Vocational knowledge -Technology knowledge	-(Sothy et al., 2015) -(UNICEF, 2018)
Upgrading vocational knowledge	(Phakkdey, 2016)

III. Research Methodology

The research methodology was used as a crucial tool to explore a research question because to ensure empirical and scientific results, the following mechanisms such as (1) research methods, (2) data collection, and (3) data analysis, can be considered as follows:

1. Research Methods

To answer a critical research question, the qualitative approach was employed in letting the components and sub-components grounded in the data. The purpose of qualitative research is to explore the authentic situation and experiences of the target participants. The data collected by a semi-structured interview. The interview purpose was to identify the components of TVET teacher competencies in Cambodia. The researcher relied on interviews to record the participants' experiences in their original words and impression (Creswell, 2012).

Data was collected and hand analyzed by the researcher simultaneously. For manual analysis of data, the researcher read data and divided it into codes (Creswell, 2012). Coding is conceptualized as a process of searching for evidence for components and sub-components (The University of Auckland, 2019).

Code is the cluster of sentences that represents a salient topic extracted from visual data, being more specific than sub-components and components. It captures the relevant and succinct essence of visual data grounded from the participants' quotes. A Code captures a sole idea grounded from the dataset being conceptualizing as the building blocks that combine to create sub-components and components, multiple, codes are combined to create sub-components or components (The University of Auckland, 2019).

Component is the main element or piece of the whole part of something. A component

captures a recurring pattern across the dataset categorized around a central concept and describing the different facets of that sole idea (The University of Auckland, 2019). It is a dominant or big idea that can be merged into sub-components that support a whole component.

Sub-component is a small part of components. They are the elements of the components describing specific knowledge and skills for performing a specific job. A sub-component shares the same central emerging ideas as the theme or category but focuses on one notable piece of ideas (The University of Auckland, 2019).

Attribute is a descriptive and smaller part of sub-components. It can be a phrase describing actions for implementation under the purview of sub-components or items.

2. Data Collection

The study stressed on TVET institutes which deliver the course of any particular trade ranging at least one-year period to their students by technical and vocational education teachers whose degrees are at least bachelor's degrees. To get the data saturation and answer a research question substantially, the suitable research setting for the study includes the following criteria:

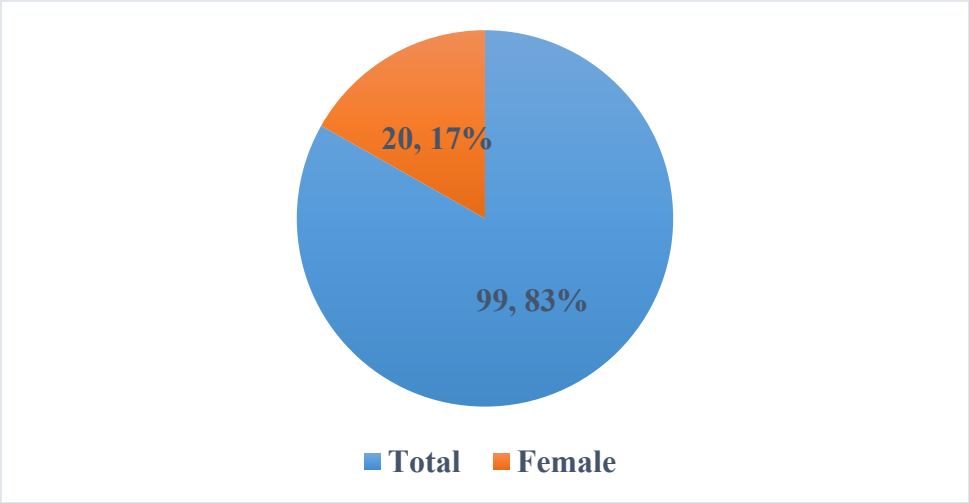
- The institute/school selected consists of higher education levels and secondary school levels
- The institute/school locates in five separate provinces/municipality (Phnom Penh, Kandal, Takeo, Kampong Chhnang, and Battambang)
- The institute/school has technical and vocational education teachers who graduated from different academic degrees such as bachelor's, master's, high academic knowledge, and doctoral degrees

- The institute/school delivers the courses ranging from a one-year training program to the doctoral degree programs
- The institute/school has different teachers who graduated from local universities and from overseas universities (one participant graduated master's degree from India, and another one graduated a doctoral degree from Japan)
- The institute/school is under the supervision of three different government ministries and one NGOs
- The institute/school delivers different trades such as ICT, electricity, social work, agronomy, animal science, electronics, construction engineering, mechanics, etc.
- The institute/school has different periods of instructional services for teachers ranging from six months to 19 years.

To obtain qualitative data, 12 participants (N=12) as technical and vocational education (TVE) teachers from eight different TVET institutes were selected from a pool of volunteered participants from diverse backgrounds countrywide. The participant ages range from 27 to 47-year-old (M=35). A few participants might be selected for qualitative research (Creswell, 2012). The 12 participants that were selected for the sample cover five different provinces (total 25 provinces and municipality), under supervision of three technical government ministries and one NGOs (Ministry of Education, Youth, and Sports; Ministry of Labor and Vocational Training; Ministry of Agriculture, Forestry, and Fishery; and Saint Paul Foundation). The sample size for qualitative research may range from 1 or 2 to 30 or 40 participants (Creswell, 2012). The participants were selected for the study because the participants have to (1) earn at least bachelor's degrees in the current teaching trades; (2) currently teach particular trade at public, private or NGOs TVET institutes; (3) volunteer to be interviewed with extensive

background on TVET; and (4) be at least six-month service at their affiliated institutes. One female participant has a teaching experience of six months, but she worked for industry for over one year, meaning that she has known some aspects of TVET. The 12 participants were selected because they agreed to be interviewed, and they were interested in the topic on TVET teachers' competencies.

The participants as TVET teachers are from diverse backgrounds attending this study. The descriptive statistics reveal age, sex, marital status, degrees currently taught, degrees earned, current affiliation, service period, graduation institutions, and years of graduation as shown in **<Table III-1>**. The researcher selected the participants purposively to engage different academic backgrounds ensuring that they were competent because the researcher could not identify which one was competent or not. Participant selection criteria cover from bachelor's degree holders to doctoral degree holders with the work experiences from six months to 19 years, and some of them graduated from Japan, Thailand, and India. Moreover, five of them graduated with Master's degrees and one graduated doctoral degree. Because TVET is newly established, particularly under MoEYS, there are a total of 99 technical education teachers, among which 20 is female countrywide, as shown in **[Figure III-1]**. TVET field has been started to be popular since 2015, under some ODA project implementations. Only one female teacher was decided for an interview because there are a few female teachers, and among them, only one agreed to be interviewed. After the instructional time at school, female teachers go home for household work because as Cambodian culture, the wife has to do all housework. As an instructional norm, all teachers are required to teach 16 hours a week for upper secondary teachers so that after their service period, they go out of schools.



[Figure III-1] Number of Technical Education Teachers Under MoEYS

<Table III-1> Demographic Information of the Participants (N=12)

Pseudonym	Sex	Age	Marital	Degrees taught	Degrees earned	Current Affiliation	Service Period	Graduated institution
Chanthou	M	36	Single	Short-term courses, C1, C2, C3, and bachelor's degrees	Bachelor's in IT	National Institute of Vocational Training (Public) (Battambang Province)	9 years	Royal University of Phnom Penh (Cambodia)
Chantha	M	27	Married	C1, C2, and C3	Bachelor's in electricity	Regional Polytechnic Institute Techo Sen Battambang (Public) (Battambang Province)	1 year	National Technical Training Institute (NTTI) (Cambodia)
Vichet	M	29	Single	Bachelor's degree	Master's in Social Work	Saint Paul Institute (NGOs) (Takeo Province)	Over 1 year	Royal University of Phnom Penh (Cambodia)
Dara	M	46	Married	Bachelor's and associate degree	Master's in electronics	National Technical Training Institute (Public)(Phnom Penh)	16 years	National Technical Training Institute (Cambodia)
Sok	M	40	Married	Bachelor's degree	Doctoral degree	Prek Leap National School of agriculture (Phnom Penh) (Public)	Nearly 2 years	Kobe and Nagoya University (Japan)
Vichea	F	27	Single	C1 and C2	Bachelor's degree	Preah Bat Sihamni General and Technical High (Kampong Chhnang) (Public)	6 months	Royal University of Agriculture(Cambodia)
Makara	M	38	Married	Bachelor's degree	Master's in IT	Industrial Technical Institute (Phnom Penh) (Public)	Nearly 1 year	Sikkim Manipal University (India)
Piseth	M	31	Single	Bachelor's degree	Bachelor's degree in electronics	Regional Polytechnic Institute Techo Sen Battambang (Public)(Battambang	Nearly 3 years	National Polytechnic Institute of Cambodia (Cambodia)
Sopheak	M	47	Married	Bachelor's degree	-MPA -Bachelor's degree in animal science	Prek Leap National School of Agriculture (Public) (Phnom Penh)	19 years	Asia Europe University (Cambodia)
Nida	M	30	Married	Bachelor's degree	-MBA -Bachelor's degree in construction engineering	National Technical Training Institute (Public) (Phnom Penh)	Nearly 1 year	Cambodia University of Specialty (Cambodia)
Vuthy	M	38	Married	C1, C2, and C3	Bachelor's degree in Industrial Technology	Hun Sen ROTA Ksach Kandal General and Technical High School (Public) (Kandal)	8 years	Thailand
Sara	M	32	Married	C1	Bachelor's degree in auto mechanics	Regional Polytechnic Institute Techo Sen Battambang (Public) (Battambang)	4 years	National Polytechnic Institute of Cambodia (Cambodia)

Notice: C1: one-year training course; C2: two-year training course; and C3: three-year training course; MBA: Master's degree of business administration; MPA: Master's degree of public administration

After receiving institutional review board approval from the university, the researcher embarked on collecting data by going to Cambodia directly. The participants were accessed through a consent letter signed by advising professor. The researcher went directly to TVET institutes with the consent letter shown to each TVET institute management to ask for their permissions to make an appointment with participants for interviews.

12 participants were interviewed using the interview protocol as shown in **(Appendix 1>**. The qualitative interviews are a key method for a grounded theory (The University of Auckland, 2019). The interview notes meaning covers eight items. For instance, some items encompass (1) demographic information; (2) goals of technical education curriculum at upper secondary level; (3) required competencies of teachers to perform well instructional activities; (4) current competencies possessed to transfer to students competently; (5) instructional tasks used to reach the standards; (6) criteria to reach quality teaching standards; (7) how to become a competent teacher; and (8) required teachers' qualifications to deliver a quality teaching service to students.

Before interviewing the participants, a few earlier minutes were provided for each participant to read the Khmer version to let them be self-prepared; and the researcher introduced the participants about himself and purposes of the interview to build trust from participants and to get original data. The interviews identified the technical and vocational education teachers' competency components during experiencing and engaging in the technical and vocational education field over time. Questions in an interview protocol flow from broad to narrow (Grudens-Schuck, Allen, & Larson, 2004). The individual interview was conducted in the quiet and separated rooms arranged by the institute management without any disruption. Moreover, all interviews were audio-recorded and translated verbatim by the researcher.

To ensure the content validity of the interview note, the interview protocol was developed by MoEYS (2015) and existing literature. The interview is a basic mode of inquiry

for primary data (Seidman, 2006). MoEYS (2015) covers the meanings of the goals of the technical education curriculum at the upper secondary level. The data captured the participants' views, experiences, and perceptions (The University of Auckland, 2019). Furthermore, in qualitative research, the researcher is a research instrument (Lincoln & Guba, 1985; Patton, 2002; Kong, 2009). The period of semi-structured interviews for each participant ranged from 38 minutes to 85 minutes. The English version of the interview protocol was translated into Khmer language version with handwriting by one typical participant before starting the first interview because English is the second language for the participants. The translated version from English to Khmer of the interview protocol was edited and validated by one particular Ph.D. candidate who studied at Chulalongkorn University in Thailand to ensure the reliability and thorough understanding of the interview protocol because the researcher is Cambodian who work actively in the TVET system, and he agreed to check them.

In other words, all transcribed notes of Khmer versions were translated into English versions, but they were edited and validated by one particular Ph.D. candidate who studied at Chulalongkorn University in Thailand. The Ph.D. candidate checked and verified words by words and sentences by sentences between Khmer and English versions to ensure reliability. Checking and verifying processes lasted for over three weeks in totals. After collecting data from the first five participants and transcribing, the researcher sent back to the participants for revising; and then researcher started translating immediately from Khmer to English versions. Right after translating, the Ph.D. candidate started checking and verifying. During checking and verifying, he identified some errors in vocabularies and grammars, such as technical teachers, vocational teachers, TVET teachers, components, categories, themes, and phrases. Only one particular person checked the translated version of transcribed notes for validation because the researchers is a Cambodian and works actively in the TVET system for years so that the researcher can conceptualize and understand the translated version well.

To protect the confidentiality and following research ethics, a pseudonym was used for each participant. For example, the false name *Vimean* was replaced by the fictitious name *Chantha* as a pseudonym. The false name *Saroeun* was replaced by the fictitious name *Vichet* as a pseudonym. The original and personal identities directly from the participants might undermine the research results. Therefore, these are the ethical way to mask the participants' identities. Finally, their phone numbers were also masked.

After collecting and transcribing data before translating into an English version from the first five participants, member-checking was employed to each participant letting them check and verify their spoken words with the reality. Member-checking contributes to the trustworthiness and credibility of data (Lincoln & Guba, 1985; Seidman, 2006).

All 12 research participants were contacted directly by the researcher through a phone call for member checking because during interviewing researcher asked each participant for their phone numbers. Khmer version transcribed notes were sent to the participants through social media such as *Telegram*, *Line*, and *Messenger* for verifying their answers. And others were sent by Email. During one week as a deadline of returning the revised versions of Khmer transcribed notes, the participants sent back with the highlighted words and phrases for the researcher's revision. Finally, the researcher fine-tunes all Khmer versions of transcribed notes to be ready for translating into English versions.

3. Data Analysis

Open coding was employed to identify components and sub-components (Creswell, 2012). Patterns were identified through a conservative process of data coding, and component creation and revisions finally (The University of Auckland, 2019). Constant comparison was employed between codes and codes, sub-components and sub-components, and components

and components to find out the data patterns for salient sub-components and components.

The transcribed texts consisted of a total page of 66.5 with a format of font 11, the margin of top and bottom: 0.7 and left and right: 0.7. Specifically, a hand analysis may be preferred to analyze a small database and can locate text patterns easily (Creswell, 2012).

Some concurrent data collection and analysis begin with data familiarization before moving to open coding and then the more interpretive stages of component formation through grouping open codes and defining the component (The University of Auckland, 2019). Each transcript was analyzed, compared, and contrasted incident by incident, and paragraph by paragraph to explore single ideas for open coding. For this stage, line-by-line coding and constant comparison were used. The massive array of words, phrases, and paragraphs had to be cut down to what is of most significance (McCracken, 1988; Miles & Huberman, 1984; Wolcott, 1990 as cited in Seidman, 2006). Coding is a form of exploring the succinct and relevant texts allowing the researcher to index the text into sub-component and components subsequently (The University of Auckland, 2019). Consequently, 623 codes and 68 sub-components emerged from data. During constant comparison and contrast, salient components emerged until the data saturation meaning that no new components and sub-components grounded from the existing data. After collecting data from five participants, the researcher started analyzing data simultaneously.

To ensure that the data analysis was systematic, rigorous, and consistent, the researcher followed the following steps: (1) the researcher read the data from the dataset to be close and familiar with its contents; (2) the researcher indexed the text to generate succinct codes and to code the entire dataset exploring important patterns of the data that can be answering the research question; (3) the researcher examined the codes and collated data to explore specific features; (4) the researcher checked the candidate sub-components to be refined and split, combined or discarded; (5) the researcher made analysis of each component and sub-

component deciding on informative names of each component and sub-component; and (6) the researcher weaved the data extracts, and conceptualizing the analysis in comparison with existing literature (The University of Auckland, 2019). The language was used in this study are coherent with the analysis process with a good fit between what the researcher claimed and what the data showed (The University of Auckland, 2019). Finally, the coding process was thorough, inclusive, comprehensive that components were checked and re-checked and back to the dataset for reviewing with enough time allocation (from February 2018 to March 2019) without rushing a step.

After comparing and contrasting between components and components, and sub-components and sub-components grounded from data consisting of four major components such as vocational and academic abilities, pedagogical abilities, administrative competencies, and support and understanding of learners (Creswell, 2012). In general, from two to six components are about right for a doctoral dissertation (The University of Auckland, 2019). Specifically, 30 sub-components were identified to support each component to answer the research question. Finally, the researcher identified a few components ranging from five to seven major components (Creswell, 2012).

A total number of 16 participants were contacted for interviews. Data collection and analysis was concurrent to let the major components and sub-components grounded from an original dataset. After collecting and transcribing data from the first five participants, the researcher started analyzing data simultaneously. And the results were incomplete in terms of a majority voice for each component and sub-component. Therefore, 12 research participants were decided.

Furthermore, theoretical sampling was employed to compare among different people from different backgrounds (different ages, different genders, different academic degrees, differently graduated majors/trades, different marital status, different levels/degrees taught,

different periods of instructional services, and different years of graduation), different locations (five separate provinces/municipality), different government ministries working for TVET (three different ministries and one NGOs), a mixed type of institutes/schools (public and NGOs), different institutes/schools (ranging from general and technical high schools to higher education/vocational training institutes), and different graduation countries for participants (local and overseas) to ensure the data saturation and diversity. Data collection and analysis occurs until the theoretical saturation to exhaust all components of theories. Finally, sub-components and sub-components grounded from data inductively.

IV. Research Findings

Research findings were grounded from the participants' data during an interview, observing their behaviors, and interaction with them. The findings emerged as subsequent sub-headings consisting of (1) overview of research finding; (2) vocational and academic abilities; (3) pedagogical abilities; (4) support and understanding of learners; (5) administrative competencies; (6) knowledge-integration competencies; and (7) summary of research findings.

1. Overview of Research Findings

After creating exhaustive descriptions of each component supported by direct quotes and thick descriptions of participants' lived experiences, overarching components emerged. The following excerpts illustrate those components, and sub-components.

The experiences and reflections of these technical and vocational education teachers show the dynamic process of exploring the competency components. Teachers from various settings and contexts with diverse academic backgrounds led to the emergent competency components and sub-components. The components, and sub-components emerged as the competency cluster integrated into a comprehensive component that explains the phenomenon of teacher competency components (Strauss & Corbin, 1998; Creswell, 2012). Consequently, five components, 30 sub-components emerged from the data apparently, as shown in **<Table-IV-1>**.

<Table IV-1> Table of Competency Components, and Sub-Components for Cambodian Technical and Vocational Education Teachers

Codes	Sub-Components	Components
Engaging in the professional development programs; being passionate to have learning behavior; being committed to attend the training workshop for own professional development; being adhesive to learning behavior; being passionate to upgrading current professional knowledge; mastering learning skills for workplace application successfully; being passionate to ge trained for own professional development; mastering learning behaviors; being passionate to learn globally technical education system in comparison with Cambodian context for further development; being passionate to attend the training workshops; exhibiting learning behaviors	Upgrading vocational knowledge	Vocational and academic abilities
Mastering practical skills; possessing technical skills professionally; mastering practical work for their instructional actions; Mastering practical skills for students learning; mastering skills proficiently; being passionate to learn how to operate relevant instructional equipment for instructional practice; mastering application skills to become a teacher; possessing skills professionally; mastering practical skills clearly; mastering practical skills; mastering industrial work experiences substantially; being proficient in practical skills	Mastering practical work	
Mastering vocational knowledge appropriately; mastering vocational knowledge precisely; intensifying own vocational knowledge constantly; mastering vocational knowledge for instructional enhancement; mastering vocational knowledge clearly in both practice and theories; mastering vocational knowledge; mastering vocational competencies sufficiently; mastering vocational knowledge; mastering clear subject matters; being competent in technical knowledge	Mastering vocational knowledge	
Possessing high academic knowledge for own majors; earning high academic knowledge; possessing high academic knowledge for quality service deliveries; possessing high academic knowledge to be teachers; earning high academic knowledge for own instructional majors; earning high academic knowledge; earning high academic knowledge; earning high academic knowledge; earning high academic knowledge; earning high academic knowledge	High academic knowledge	
Developing the curriculum; comprehending the curriculum development knowledge exceptionally; being proficient in curriculum development knowledge; being competent in curriculum development; being competent in knowledge of curriculum development; mastering curriculum development knowledge; mastering knowledge of curriculum development; being competent in curriculum development knowledge; mastering knowledge of curriculum development	Curriculum and textbook development	
Mastering teaching methods appropriately; teaching students in an effective and professional way; mastering teaching methods sufficiently; teaching students with a fair manner; mastering responsible behaviors for own teaching performance; mastering learning skills for workplace application successfully; mastering teaching skills; mastering teaching competencies effectively; mastering teaching skills; being competent in teaching skills; being proficient in transferrable skills; instructing students how operate equipment starting by checking first	Teaching methods and techniques	
Making lesson plans appropriately; mastering lesson plan preparation skills; being adhesive to lesson	Lesson planning	

plans for instructional hour success; engaging students' learning by telling a relevant story; mastering lesson planning skills; mastering lesson planning to enable students learning something effectively; mastering knowledge of making lesson plan; mastering lesson planning skills		Pedagogical abilities
Mastering instructional material preparation skills; mastering the process how to develop instructional materials effectively; mastering teaching aid development skills; mastering knowledge of instructional material development; being competent in knowledge of instructional material development; mastering instructional material development skills; preparing practical materials for work safety	Instructional material development and preparation	
Managing the class effectively; managing the workplace effectively; managing the classroom effectively; managing the class effectively; mastering class management skills; mastering class management skills	Class management	
Possessing evaluation knowledge for improving instructional outcomes; measuring teaching quality by testing students learning; mastering test development skills; mastering assessment skills for students learning; being proficient in testing skills for students learning; being proficient in evaluation skills to measure students learning; being competent in evaluation skills; mastering testing skills to justify the efficiency	Assessment and evaluation methods	
Training skills; training students to be effective and efficient for their instructional majors; training students to get immersed in general knowledge relevant to technical education; training students to get a job at the company; training students the skills to meet their regional needs; mastering training skills; mastering training skills; mastering training skills	Training methods	
Mastering psychological knowledge supporting students learning; mastering psychological knowledge precisely; mastering psychological knowledge to perceive students' different characteristics and academic levels; mastering psychological knowledge; mastering psychological knowledge; being competent in psychological knowledge	Educational psychology	
Executing flexibility according to own competency levels and needs; adapting to academic environment thoroughly; adapting the lesson difficulties to students' academic levels appropriately; adapting professional knowledge levels to the curriculum guidelines; adapting skills learnt from schools to the skills required by the industry; being flexible to the students' knowledge levels; teaching students adapting to the availability of practical equipment; mastering flexibility skills	Flexible skills for lessons and student characteristics and environment	
Exhibiting creative ideas for their instructional performances; mastering creative skills; mastering creative skills; mastering creative ideas in learning something new; mastering creative behaviors; being flexible to the students' knowledge levels;	Creative skills for students learning	
Supporting students to be employed; supporting students to get a job; guiding students to work with a private sector to get experiences before applying to be a teacher; helping students to be employed after graduation; supporting students to work successfully at the industry; supporting students to bet employed; assisting students to be employed after graduation	Supporting students to be employed	Support and
Communicating with garage owners for student internship; enabling students to do practicum; inspecting students working at the internship sites; doing practicum; challenges for doing practicum;	Facilitating student internship and practicum	

doing an internship at the farm; student practicum is important		understanding of learners
Communicating with garage owners for student internship; enabling students to do practicum; inspecting students working at the internship sites; doing practicum; challenges for doing practicum; doing an internship at the farm; student practicum is important	Facilitating student internship and practicum	
Supporting students to be self-employed; enabling students to run their own businesses; supporting students to be self-employed; influencing students to run their own businesses; enabling students to run businesses; influencing students to run their own businesses by opening a farm	Supporting students to have entrepreneurship skills	
Recruiting competent students to pursue further studies; recruiting teachers professionally; engaging in teacher recruitment processes for training quality enhancement; recruiting bachelors' holders as technical education teachers objectively; recruiting competent teachers to get trained abroad; recruiting teachers objectively; recruiting competent teachers to get trained in advanced countries effectively;	Recruiting and selecting new teachers and students	Administrative competencies
Planning the budget allocated by the government effectively; planning the budget for teachers' development programs; allocating the government budget sufficiently for instructional purposes; mastering requesting the government budget for school operation; allocating required materials/equipment for instructional performance; being competent in accounting skills for allocating school budget transparently	Instructional resource and budget planning	
Following instructional standards; being alert to relevant regulations for instructional improvements; being alert to required regulations effectively; being adhesive to the government format in terms of how to write administrative letters; mastering measuring skills as a technical standard; being adhesive to competency standards by completing all required tasks; being alert to Cambodian qualification framework in order to practice it effectively; being adhesive to the government standards for effective implementation; being alert to regulation	Being adhesive to educational standards and regulations	
Being adhesive to Teachers' professional ethics code; being adhesive to teachers' professional ethics code attentively; teaching following to the teachers' professional ethics code; being adhesive to teachers' professional ethics code; being adhesive to teachers' professional ethics code effectively for students learning; being adhesive to teachers' professional ethics code to enable students to have positive attitudes; being adhesive to teachers' professional ethics code	Being adhesive to teachers' professional ethics	
Cooperating with seasoned teachers to learn something; asking experienced teachers to learn something; cooperating with the company; contacting qualified teachers to teach; teacher candidates cooperate with lead teachers during practicum; schools have partnership with factories; communicating with the community	Cooperating with communities and stakeholders	
Managing an instructional time; managing time for instructional deliveries; Managing time; managing instructional time; managing instructional time; managing quality training; mastering time management skills; managing instructional time	Time management	
Science subject knowledge; educational philosophy; knowledge of upper secondary level; educational philosophy; general education knowledge; regional context; educational philosophy; philosophy knowledge; higher education knowledge; risk management	General knowledge	

Learning entrepreneurship skills exceptionally; mastering entrepreneurship skills by linking with own instructional majors; mastering entrepreneurship skills by integrating it into teaching students; being competent in entrepreneurship skills; mastering entrepreneurship skills; mastering entrepreneurship skills	Entrepreneurship skills	Knowledge-integration competencies
Mastering the knowledge of labor market needs; being competent in knowledge of labor market needs; mastering knowledge of labor market needs; mastering knowledge of labor market needs; mastering knowledge of labor market needs; mastering knowledge of labor market needs; mastering knowledge of labor market needs	Labor market knowledge	
Catching up with technological innovation; mastering computer skills supporting instructional tasks; being competent in computer skills supporting instructional purposes; being alert to technology knowledge supporting instructional tasks; mastering technology knowledge; being proficient in technology knowledge; being competent in technology knowledge; being competent in computer skills; mastering technology knowledge; mastering technology knowledge	Technology knowledge	
Being competent in foreign language skills; being competent in English language competencies; being competent in English language competencies; being competent in English language skills; mastering English language skills; mastering foreign language skills	Foreign language competencies	
Market survey skills; mastering research competencies firmly; mastering research competencies professionally; mastering research competencies; mastering research competencies; mastering research competencies; mastering research competencies; being competent in research competencies	Research competencies	

Vocational and academic abilities defines the practical capacities of TVET teachers to master a trade or a job. They cover knowledge and skills which can be obtained through hands-on experience at schools. Knowledge which was learned from teachers was transformed into skills by constant practice in the real setting. After possessing knowledge and skills, teachers can transfer knowledge and skills that students can understand and learn for their productive knowledge. The process of transferring, which is called *pedagogical abilities*, is techniques and skills to enable students learning. S*upport and understanding of learners* is a primary driver that teachers and students closely work to understand mutually. In particular, teachers understand student characteristics, abilities, and talents to support them to learn something. Therefore, four components formulate a circling process of teacher competencies. To support these three processes, *administrative competencies* covers the process of how to make the three aforementioned components happened. They manage and facilitate learning processes and interactions between teachers and students. Finally, the component *knowledge-integration competencies* is the supportive knowledge and skills that teachers should master to accelerate the TVET system quality. These knowledge and skills are integrated to in pushing up vocational and academic abilities in addition.

2. Vocational and Academic Abilities

The component refers to the abilities of TVET teachers they possessed to apply them to perform their instructional tasks successfully. This component covers four sub-components consisting of (1) upgrading vocational knowledge; (2) mastering practical work; (3) mastering vocational knowledge; and (4) High academic knowledge.

2.1 Upgrading Vocational Knowledge

The sub-component *upgrading vocational knowledge* is the main focus for the majority of Cambodian TVET teachers because they prefer doing further study to upgrade their academic degrees to be possibly promoted and to get larger salaries. In other words, Cambodian society highly appreciates the people earning high academic degrees. This component has one sub-component called *upgrading vocational knowledge*. To prove this sub-component, seven participants prefer to do further studies/education according to their self-assessment results. This component covers one sub-component consisting of *upgrading vocational knowledge*.

Teachers should attend continuous training courses to update their current knowledge and skills. The professional development program refers to, but not limited to, study visits, training programs, attending the workshop or conference, and upgrading academic degrees. 11 participants mentioned this topic. For example, **Chantha** stated that "…like me, after graduating my bachelor's, my teaching capacity was poor. Normally, studying in Phnom Penh, some of my friends were the same as me; studies were not competent enough for us." Likewise, **Makara** mentioned the studies at universities during his time could not apply to the work setting competently. This showed his ambition to do further studies for his existing degree. **Chanthou** stated that "…teachers have to be trained constantly to have to be sufficiently competent [in their trades],…" The pursuit of knowledge enables people to be curious about what unique but relevant. Teachers should be self-motivated to learn and develop their existing degrees and knowledge. **Nida** realized his academic limitation that "Before if we didn't obtain any degree, we could not do further studies. But now they [students] can do further studies from one grade to another until arriving at a doctoral level." **Dara** also raised that "It is good …for some advanced countries that offer this track [technical education] to students to study…and teachers to further…" **Sara** expressed his feeling to update his existing knowledge,

"We have to update ourselves. We have to study…" People appreciate their academic limitations because they want to be more competent and qualified even though they got high academic degrees. To express this statement, **Vichet** said that "Some teachers who earned high academic knowledge want to study a higher one." But if their skills applied at the work setting are not appropriate, it enables them to seek specific training. **Sopheak** argued that "There must be training courses or seminars to train to make them [teachers]…mm…if they are invited to attend any training or seminars,…" Mostly the MoEYS invites trade teachers to attend the professional development program such as training courses, workshops, or study visits locally and internationally. However, because of limited qualified trainers, MoEYS delivers a few programs for teachers. **Vichea** complained that "The most important point is there are a few [training workshops] focusing on my trade." **Piseth** who has done his self-assessment academically said that "…and another one is the teachers' capacities themselves." Finally, **Vuthy** working as a TVET teacher at general and technical high school reported that "By my ideas, teachers' teaching competencies are still limited."

No matters what modes of learning (informal, formal, and non-formal) and no age limits for lifelong learners, it is still important for all people to survive successfully in society. When they become teachers, they have to be cooperative because they must be mandatory for them to be a member of the professional learning community for their subject matters.

2.2 Mastering Practical Work

Practical work is so critical for developing countries because it works with equipment operation and installment. The equipment availability and operation are the challenges for TVET teachers that are the reason why all 12 participants mentioned the importance of practical work as one of the desired requirements for TVET teachers. To illustrate this, **Chantha**

reported that “There is a lot of equipment that the school didn’t have…even though some teachers didn’t know how to operate them as well. They [teachers] didn’t know…because they have never studied them.” **Makara** mentioned that “…before applying for a teacher position, they [teachers] should be competent in practices.” Keeping practice in a real setting constantly enables people to learn hand-on skills gradually. **Chanthou** argued that “What should we comply with…what we practice in a real setting?” Practicing at a real setting by exposing oneself to daily work might make people master those tasks skillfully from day to day. **Nida** raised an example of the agriculture teacher to practice agricultural tasks daily. He also reported that,

> *“…, but their skills …if they are required to make a farm to plant vegetables…some agriculture teachers are not successful in planting vegetables…not successful in raising chicken… Because knowledge focuses on one theory…when they do real practice, there is no real practice for this or that lesson/unit.”*

Subsequently, agriculture teachers have to know how to breed and to plant trees. **Sopheak** stated that “…yes, teachers…how to breed the chick.” Consistently, **Vichea** who is a female agriculture teacher just has been teaching at a general and technical high school for six months, expressed her thoughts that “To fill out…another one is we need work experiences…yes…experience working in our field/trade.” Furthermore, **Piseth** thought that “For this knowledge that I mentioned if possible, they [teachers] should start practicing it.”
If trade teachers do not keep practicing their tasks, their knowledge and skills are fuzzy. To prove this, **Dara** noted that “…because this subject is divided into two parts: theories and practice. For practice, it means that teachers…” Likewise, **Sara** discussed the importance of practice for TVET teachers that teachers at his school didn’t practice as high as 70 percent yet.

If teachers have never practiced the equipment, how can students learn their lessons? **Vichet** intensified this that "Their certificates [teachers] are based on their technical skills earned." Compared with the TVET system in advanced countries, Cambodia is far behind them. **Sok** stressed that "…but in advanced countries, those who have good experiences [practice] or who is outstanding, …mmm…" Finally, **Vuthy** argued that "…because we studied to possess skills [practice]."

2.3 Mastering Vocational Knowledge

Vocational knowledge is so critical for teachers so that teachers have to master it to deliver quality theories as a basis for practice. To support this statement, 10 participants raised their concerns. For example, **Vichea** stated that "Hard skills are our subject matters [vocational knowledge]." **Dara** also asserted that "The first one is our vocational knowledge…" If TVET teachers possess vocational knowledge well from their schools and from exposing themselves to learning theories and concepts, they can cultivate students' interests easily. **Chanthou** expressed the importance of vocational knowledge that "Both challenges affect each other. It is …if we…the vocational knowledge is important, but…mmm…" Transforming theories to practice can enable teachers to master vocational knowledge. **Chantha** reported that "Relating to the trade of construction or electricity, they haven't possessed it clearly including both practice and theories." But **Piseth** raised the importance of technical competencies as part of vocational knowledge for teachers that "Another one…mmm…if we have technical competencies…" In Cambodia, some teachers who graduated from different trades are entitled to teach another trade without qualification because of the enormous lack of teachers so that their vocational knowledge is deficient. **Sopheak** emphasized that "…and their major [vocational knowledge] has to be matched with the trades that they are currently teaching."

Teachers have to be qualified themselves to possess their vocational knowledge before lecturing students ensuring that everything is ready academically and productively. **Sok**, who is an agriculture professor who graduated his doctoral degree from Japan, mentioned that "For being effective, first, teachers have to be qualified themselves [in their vocational knowledge] …after that it ensures that students will be qualified." After graduating a long time ago with practicing and exposing oneself to professional development programs, the vocational knowledge might stagnate. To prove this, **Vichet** noted that "…our vocational knowledge has gone…forgetting…" Likewise, **Vuthy** mentioned that "…there might be problems for their vocational knowledge." Possessing high competencies might make the class environment practical and constructive. **Nida** commentated that "Before teaching students, teachers must possess enough competencies for their fields or majors that they will teach students."

2.4 High Academic Knowledge

The sub-component earning high academic knowledge covers a range of from the qualification of bachelor's degree to a doctoral degree as a TVET teacher. Consequently, among 12 research participants, six earned bachelor's degrees, five earned master's degrees, and one earn a doctoral degree as part of high academic knowledge. Among them, 10 participants expressed their feelings that teachers have to earn high academic knowledge before delivering lectures to students. For example, **Sara** reported that "Normally, teachers are ahead of students academically…" If teachers possess high academic knowledge, students learn a broad body of knowledge without limitation. **Maraka** stated that "If they earn a high degree, more knowledge gain is preferable." Teachers have to earn at least one degree higher than the degree that they teach students to academically dominate students. **Nida** noted that "…if we mention the certificate level…meaning that they [teachers] must obtain the certificates one level higher than the level that they will teach. It is the first one and…" Bachelor's degree is a qualification

requirement for being a Cambodian teacher. **Vuthy**, who studied bachelor's degree in industrial technology in Thailand in 2013, expressed his feeling that "In our country context, at least a bachelor's degree…" Similarly, **Vichet** stated that "…but there is a variety of disciplines /majors…of bachelor's degrees…" Earning a high academic degree is prestigious in Cambodian society; and if they are a teacher, they are respectful and a hotbed for students. **Sok** mentioned that "…they [teachers] must graduate from technical universities or institutes before being a teacher…" **Sopheak**, who earn a master's degree in business administration, but he has been teaching animal science for 19 years because he graduated his bachelor's degree in animal science from a particular university, said that "Their certificates/degrees should be higher than the degrees that they currently teach students…" **Chantha** also supported this statement by raising that "To be a competent teacher, teacher qualifications are at least a bachelor's degree,…" **Dara** stressed the importance of teacher qualifications that "…teachers must obtain broader knowledge than students." Finally, **Vichea**, who had industrial experience at the factory for a typical period of years right after graduating her bachelor's degree in agriculture, noted that "For teachers, I think that at least bachelor's degree holders are good enough for being teachers."

3. Pedagogical Abilities

Pedagogical abilities refer to the ability of teachers how to transfer their vocational knowledge and practical work to the learners in an instructional manner. This component comprises ten sub-components including (1) curriculum and textbook development; (2) teaching methods and techniques; (3) lesson planning; (4) instructional material development and preparation; (5) class management; (6) assessment and evaluation methods; (7) training methods; (8) educational psychology; (9) flexible skills for lessons and student characteristics and environment; and (10) creative skills for students learning.

3.1 Curriculum and Textbook Development

Curriculum refers to the academic contents and outlines that teachers use to teach students ensuring that education and training are measurable and structured. Because teachers teach students directly following the curriculum guidelines so that they must be competent in developing the curriculum. The competencies are embedded in the curriculum that requires teachers to translate into instructional languages and tasks. Consequently, TVET teachers must be aware of it. To prove this, nine participants highlighted their thoughts. For example, **Sok** stressed that "…and the curriculum has to be updated every year." **Chantha** also asserted that "If we refer to curriculum development meaning that whether to control the quality well…strengthen the quality of both documents and knowledge." The teacher can inject different concepts and theories into the curriculum ensuring that students will learn something after graduating. The curriculum in some countries contains religion studies to advise students to be good to each other, for example. **Chanthou** reported that "…was added to the curriculum at primary, lower secondary, and upper secondary levels. But I have seen Buddhism was injected into the curriculum in Thailand…" To catch up with technological innovation, the curriculum has to be updated regularly and developed by teachers. **Dara** stated that "We update the curriculum every year, but sometimes we revise it every two years… every two years, we make new versions completely…" Likewise, **Vuthy** raised his concerns that "For curriculum develop, teachers should know how to develop the curriculum because teachers have to …teachers can't follow only the outdated curriculum anymore." Every time if MoEYS tends to develop or update the curriculum, MoEYS invites teachers who teach those trades or subjects to attend a seminar for a couple of days, but this process constantly moves forward until coming out with a final draft. **Sopheak**, who used to attend the curriculum development seminar at Kampong Chheuteal high school, noted that "…because the curriculum development seminars held in Kampong Chheuteal previously mentioned this." Specifically, he said that "…and in

terms of writing textbooks, we also care for it." Even though some teachers do not attend the curriculum development workshop, they have to be alert to the curriculum and translate it during their instructional hours. **Vichet** mentioned that "I think this curriculum goal is right, but I wondered that when we determine…" **Nida** added that "…the third one is capable of developing curriculum." Following the curriculum guide, enhances teachers' instructional activities by providing teachers with substantial time for preparation, for example, lessons, instructional materials, activities. **Makara**, who graduated with his master's degree in IT from India, reported that "Following the curriculum for their effective instructions,…"

3.2 Teaching Methods and Techniques

There is a variety of teaching techniques that teachers are currently applied for their instructional activities like inquiry-based learning. To cultivate students learning, teachers elicit a prerequisite question. **Vuthy** reported that "the internal process means that we [teachers] teach students…our professional ethics…mmm…fairly teaching students… we raise a question to relate it to the lesson that will be taught." Before operating equipment, teachers introduce students to follow the safety rules as **Sara** said that "And before using each equipment, what should we inspect?...before plugging to the socket, what should we inspect?" Teachers engage students learning by applying a storytelling. **Chantha** commented that "After engaging them the storytelling, we turned their feelings back to our lessons." Quality teaching depends on teachers' capacities and techniques applied in the classroom. **Vichea** stated that "Teaching is quality or not…mmm…depends on us [teachers]…and techniques…" Similarly, **Nida** raised his ideas that,

"…it enables teachers themselves to possess those competencies as well…and another competency that I have just told you is the main competency that teachers must possess to take them to teach students, but another one is their main competency…"

Knowledge transfer is important for teachers to ensure its quality to students. So that **Sok** argued that "Teachers' knowledge used to transfer to students with quality is not enough…mmm…generally speaking throughout the country, not only for agriculture trade, it is not enough because at the Royal University of Agriculture,…" **Sopheak** explained the techniques that a good teacher performed upon arriving at the class. He added that "The good teacher…when he/she enters the class, he/she writes down his/her names with his/her background…, for example, his name is Mr. A. How many credits are there for this subject? Equalizing how many hours?" If teachers perceive themselves that teaching is difficult, it means that they know how to teach students appropriately. **Dara** said that "…it will be difficult for them [teachers] to teach." The student-centered approach is the popular one in Cambodia, especially for TVET teachers because it enables students to perform the activities themselves under a constant guide from teachers. **Piseth** argued that "…for technicians, it should be modified from teacher-centered methods to student-centered methods…" He also raised his teaching experience that "For me, for freshmen [year 1 students] that…mmm…teachers write the lessons on the whiteboard for students to copy…that is ok,…" Finally, **Vichet** commented that "I must possess how to transfer my technical knowledge to my students."

3.3 Lesson Planning

There are different formats for lesson planning as two columns or three-column formats issued by different ministries in charge. **Vichet** noted that "In fact, lesson plans should be like this, like that…" Before teaching, teachers are legally required to make their lesson

plans ready for teaching; and the ministry inspectors always go to school to check their lesson plans whether there are academically proper. **Makara** realized that "And regarding lesson plans and lessons, they [students] are far behind them." Preparing the lesson is the duty of every teacher before teaching so that **Piseth** stated that "…so that how can we prepare the lesson?" Also, **Dara** spoke repeatedly about the lesson plans that "…because they must make lesson plans." Lesson plans are the process and transition from teachers to students ensuring that their prior objectives, activities, and outcomes will be achieved after a period of teaching. **Sopheak** discussed this by raising that "We must have lesson plans for teaching…" There are different models for making lesson plans that teachers can employ. **Nida** compared those models by mentioning "…the second one is to make lesson plans…for lesson plans, there are lesson plans for traditional and modern styles,…or lesson plans as well." Teachers make lesson plans following the curriculum and course outlines that are ready for them. **Chantha** said that "First, we prepare our lesson plan…mmm… but before having a lesson plan, we must have course outlines. Inside the course outlines, we prepare each lesson plan for each lesson. For example, for one lesson,…" Practical activities for demonstrating some tasks can be included in the lesson plans to enable students learning the reality after studying theories. **Sara** expressed his belief that "For some points of the lessons, we need to add some inputs and insights into the lesson in teaching…and practice." Every teacher has to teach students following the prepared lesson plans. Finally, **Vuthy** stressed that "It means that they [teacher candidates] must teach students following their lesson plan for one hour."

3.4 Instructional Material Development and Preparation

Seven participants mentioned the essence of instructional material development as one of the main teachers' duties. Regardless of human and non-human materials, they can be used to promote teaching and learning activities. To support this statement, **Vuthy**

emphasized that "…it also helps teachers to master how to produce instructional materials." Teaching aids might support teachers teaching activities enabling students to perform the reality. **Chantha** noted that "I used to study the development of teaching aids and …" Some teachers requested the budget from school to buy instructional materials for performing their instructional activities, but **Vichea**, who is a novice teacher at general and technical high school, spoke about her beliefs that,

> "*For developing instructional materials, I think it is important for students to gain… For studies, if we have no instructional materials, it is difficult for them to catch up with …because the lesson is imaginary…we can develop a simple material, for example, the materials for raising eel. Unnecessary to spend much money to make the material, we have just taken lace and fishing net…"*

Repeatedly **Nida** talked about the instructional materials that "…consisting of lesson documents, instructional materials…" The instructional materials must be ready in class before starting the lesson to support teaching. **Sopheak** stressed that "And during teaching, they [teachers] must have instructional materials to support their taught subjects." Likewise, **Dara** raised the importance of teaching aid development for teachers that "This is important…we added this subject [teaching aid development]…" The safety should be considered before enabling students to operate the equipment as part of practical materials. **Piseth** reported that "…a majority of teachers don't take more attention to the preparation of practical materials because work safety is ok…" PowerPoint slides are also considered as instructional material for teachers, he also added that "…don't only read the slide presentation. Within the slide presentation, it contains real practice…mmm…All video clips are produced shortly and succinctly."

3.5 Class Management

Another duty of teachers is class management ensuring that all academic activities during their instructional period are orderly, organized, productive, and focused. Class management is so critical for the Cambodian context because some teachers only read the lessons to students to copy and to listen so that the class environment is untidy. **Dara** emphasized this concept that "It is important for teachers to be aware of how to manage the classroom. If we don't know if [class management], it is difficult for students to study." The workplace for teachers is classroom managing and teaching students to be productive. **Sok** noted that "To manage the workplace well, …" To manage the class effectively, teachers have to know the class and student characteristics well. Then, they might prepare something to be ready for it. For example, **Vichea** noted that "If we know student conditions, it means that we improve the class management." However, the teachers and students have to be cooperative in instructional processes. **Chantha** said that "For this point, teachers and students relate to the class management. But class management is important. For example, if we manage students within classes well…so this point is also important in controlling students." To engage students learning, teachers have to manage the class effectively. **Vuthy** raised his experience that,

> *"It means that during an instructional hour, teachers must manage the class effectively to engage students to turn to studies…mmm… Therefore, managing a class is important. For example, to manage one class before starting a class, …"*

To manage the class effectively, the number of students for each class should be sufficient as set by an educational norm. But some classes are growled because of a limited number of trade and subject teachers in some areas. Finally, **Vichet** reported that "Thinking that if we teach more with a large number of students and feel exhausted…"

3.6 Assessment and Evaluation Methods

To check teaching effectiveness after teaching students, teachers are mandated to provide students monthly tests and semesterly tests. There are a variety of tests that teachers might choose such as placement tests, progress tests, achievement tests, etc. **Vichet** noted that "As my habit, firstly I rely on school evaluation…formal evaluation…" He also provided tests to check students learning progress by mentioning "…I test them by giving a test, a quiz to measure their knowledge. And another one is an examination. As usual, I used these tools…they are normal…but the school test/exam is official." Assessment is employed to test students learning progress by comparing the knowledge before learning and the knowledge after learning. **Vuthy** said that "Assessment of learning…assessment for learning…is important…mmm… after teaching students, we have to give them a test to gather results and we have to evaluate it…what is the result? What level of results? What should we do it?" Teachers have to develop test items to measure students learning. **Chantha** stressed that "To know that my teaching is good quality, the first thing is to test students …test…if we deliver them a practical test,…" Similarly, **Nida** asserted that,

> *"Some teachers don't know that after finishing a course, whether their students are competent or not…they [teachers] know nothing…but there is a variety of methods. Whether teachers use these methods or not. One simple way is to test students to know whether they [students] are competent or not."*

Sok expressed his challenge in measuring students learning after teaching by raising that "It is difficult to measure whether my teaching is quality or not. Firstly, teaching …mmm…what percentage do students understand?" **Sopheak** raised his ideas about pre-tests

and post-tests for measuring students learning. He also noted that,

> *"…they have to take that test. We know that whether our teaching actions are qualified by applying our evaluation system. We make students take a test…pre-test, middle test, or post-test. We make students take a monthly test or oral test to measure their understanding levels whether they [students] can catch up our teaching or not."*

Even though during teaching practicum for teacher trainees, lead or core teachers have to evaluate teacher trainees performing their instructional actions. **Dara** stressed that "Lead teachers have to evaluate the teacher candidates the mastery of teaching after two or three weeks of teaching. And there were two times of evaluation: evaluation from the lead teacher and evaluation from the core teachers." Finally, **Piseth** said that "We should test what had been invented whether it is correct or not."

3.7 Training Methods

Training is more practical for a hands-on skill lasting for a short period informally. Mostly it refers to adults as a job focus. Seven participants expressed their ideas as important factors for teachers to be trainers. **Piseth** noted that "For example, competency-based training…what percentage of teachers are aware of it. And it relates to the willingness to disseminate to other stakeholders…" **Dara** also mentioned the training program that he has ever delivered that "…mmm…and it [human anatomy] is not considered as a relevant subject for our training program…" The capacity of teachers is not only teaching students within the class but also training trainees or adults to be productive as well. **Nida** reported that "We train our people to become,…" The training courses can be for teacher trainees at teacher training

centers to enable them to build hand-on skills. **Chantha** asserted that "For me, if relevant to general knowledge if the training focuses on…" Similarly, trainers train teacher trainees to effective academically because some of the participants are teacher trainers. **Vuthy** raised his concerns that "I think we can't train teacher trainees to be both effective and efficient. We can't ensure both [effective and efficient]." If the training capacity of teachers is qualified, students might be employed by the company after graduation. **Makara** argued that "We train students to be employed by companies…" Training is flexible to the regional need so that teachers or trainers might target training topics to that need. **Chanthou** stated that "We have to think about what skills we should train our students to be competent in. We have to train our students on this skill to meet the regional need."

3.8 Educational Psychology

Educational psychology focuses on instruction toward success between teachers and students during one instructional period. It is the process that teachers apply to enable students learning using different persuasion techniques. Every teacher has to possess educational psychology because it is one subject for teacher training courses. To cultivate students learning, **Makara** commenting that "…and personal psychology is development for teachers…" Teachers can apply psychology to perceiving students learning behaviors. **Chanthou** reported that "…you study psychology…mmm…every discipline…" Furthermore, students' academic levels can be estimated by applying educational psychology during learning. **Chantha** stressed that "Psychology is applicable for students studying…not affecting…it is one of the important subjects because teachers have to know students' psychology…and we can estimate the students' knowledge through psychology." **Dara** also noted that "…, I think that this subject is within psychology so that we cut and insert it…into psychology…" It is an important subject

for all teachers before getting the teaching profession. **Sok** emphasized that "It is an important point relevant to psychology for teachers." Teachers can identify which students understand the lessons and which one does not understand the lesson without asking them directly by applying educational psychology. Sometimes students are shy of telling teachers the truth that they don't understand the lessons. **Vuthy**, who has been teaching for over 5 years, said that "Psychology is the subject that teachers should know. Only seeing students…mmm…teachers can identify those who understand or not understand the lesson."

3.9 Flexible Skills for Lessons and Student Characteristics and Environment

Eight participants mentioned flexible skills in teaching students adapting the lessons to student characteristics and academic environment. It means that teachers can deal with challenges quickly and appropriately without errors or mistakes. To support this argument, **Sok** raised his ideas that "We have to adjust to the surrounding environment,…" The knowledge level of students is a major concern for teachers that should be considered because teachers can't inject all the things that they know. **Vichea** stressed that "We have to be flexible to the knowledge level of students and …" In other words, teachers should adapt their lesson and knowledge levels to the curriculum that they will translate to students. **Chantha** noted that "…what teachers know has to be adaptable to the curriculum." Teachers can formulate the lessons being appropriate to the students' academic levels and characteristics. **Vuthy** said that "…to teach adaptable to the lessons during one instructional hour and it also complies with the student's knowledge level." Furthermore, **Sara** reported that "Therefore, we have to be flexible and …" Different trade teachers have different knowledge levels and different characteristics according to their capacities learned from schools. **Vichet** noted that "I think something needs to be flexible if we stress on only one thing because teachers have different disciplines/skills." The knowledge and skills that teachers learned from schools might not match with the needs

of labor markets in Cambodia so that teachers have to familiarize their instructional competencies to the work setting when settling down to it. **Chanthou** commented that "And task 4 and task 5 that we had learned from school were not used."

3.10 Creative Skills for Students Learning

Creativity enables teachers to invest much time and efforts in inventing something unique for their trades. In other words, creativity is the ability to turn imaginary concepts into reality. To prove this saying, **Dara** noted that "Normally people wish to know something new, novice…" A hidden pattern can be explored as a new phenomenon for practical uses. **Piseth** said that "…to come out with a new, unique and good ideas…and put those ideas into practice together…" Teachers and students always need something different from the repeated ones to entertain the classroom, but it depends on the teachers' capacities. **Sopheak** raised his ideas that "What we want something new/unique…" However, students need new and updated equipment for practice to interest them in demonstrating the theories. Teachers also need new theories or methods of inventing something. **Chantha**, who is an electricity teacher teaching in Battambang province far away from Phnom Penh City, noted that "We wanted something new relating to motor…" To explore something new, teachers study the process and know-how to explore it to find out the reasons and methods employed. After that, they start exploring it themselves following those methods and models. **Sara** intensified this by mentioning "First, we study what had been explored or created…secondly, we have to try to explore something new, updating our existing knowledge." Teachers' ideas should not stagnate because they are an initiator, creator, and facilitator. **Vuthy** added that "Teachers must have an inventive idea…" Finally, **Vichet** commented that "Then, I think if teachers have no creative ideas, …mmm…in order to have a creative idea for them."

4. Support and Understanding of Learners

Teachers play tremendous support in cultivating students learning and helping them to succeed in their studies. This last component focuses on motivating, influencing, and perceiving students' needs and characteristics to help them to achieve their career goals. There are four sub-components including (1) supporting students to be employed; (2) supporting students to upgrade their vocational knowledge; (3) facilitating student internship and practicum; and (4) supporting students to have entrepreneurship skills.

4.1 Supporting Students to Be Employed

The most wanted purpose of students is getting employed after graduation to make some money to back up their expenses. Similarly, teachers are happy to hear that former students get hired with decent jobs. In doing this, teachers provide students with several job information, interview processes, and work culture when they transition to the work setting. **Chanthou** noted that "…the students will be employed …after graduation." If students learn by heart, the memory skills will be reduced gradually, but **Nida** raised his concerns that "I think that their capacities will b reduced when they [students] start working in a real setting…they work out of their learned skill so that it is deleted…" Getting an industrial experience is one of the priorities that students want to experience to get paid for their further studies and supporting their families back. **Makara** illustrated this by raising that "…students…with a private sector first to get industrial experiences…" **Vuthy**, who teaches at general and technical high schools, wanted his students to pass an entrance examination to get trained as a lower secondary school teacher after their graduation. He was happy to hear that information by saying that "We had three students passing their entrance exams to be the candidates of lower secondary school

teachers." To be hired at the company, students have to be competent in professional knowledge and practical work. **Vichea** noted that "…if they need students for employment, they [companies] need those who are knowledgeable…? **Sopheak** also pushes up students to work after graduation by saying that "…they [students] can work for others and…" Students who are studying year 2 or year 3 can be employed up to their capacities and practical work so that they can work and study simultaneously. **Piseth**, who is an electronics teacher, used to support students in seeking a job successfully mentioning "In Phnom Penh, sophomores [year 2 students] can be employed…" After working for a while at the real setting, teachers motivate students to do further education for their professions.

4.2 Supporting Students to Upgrade Their Vocational Knowledge

Upgrading vocational knowledge refers the act of continuous learning and further education after graduation from schools for a particular period. Regardless of any means of supporting students, teachers diversify several ways of study paths for their considerations after graduation. **Dara** said that "And students who graduated from grade 8 and they can apply for further studies until getting a certificate that is equivalent to general certificate of grade 12." **Sok** also added that "…mmm…and they [students] don't want do further studies…" Teachers might stress the importance of education to students that each of them has to achieve a quality of education with high academic knowledge. **Chantha** stated that "For all solutions toward careers, teachers have to educate …mmm…to add educational points to students." Lifelong learning is part of continuous learning that people learn for life regardless of learning modes (informal, formal, and non-formal). **Vuthy** commented that "Lifelong learning is that students to further studies…" The labor market in Cambodia is competitive now if students don't pursue their further education to get high academic degrees. **Makara** reported that "…they [students]

have to do further studies in their trade [ICT].” Cambodia qualification framework opens a study path for students to do further studies up to doctoral degrees after graduating from their TVET courses. Thus, **Nida** stressed that “…meaning that it opens the entrance and exit between vocational and technical subjects and general education subjects linking with higher education…then they [students] can learn for life.” However, if they can’t afford to pursue their further education, teachers give them options to do self-studies. **Vichet** added that “This is a way that students can learn themselves…”

4.3 Facilitating Student Internship and Practicum

All TVET students are required to do an internship program, but TVET teacher trainees are required to do both internship and practicum to expose themselves to the reality of work. An internship is an opportunity to learn industrial experience, and practicum is the chance to learn teaching experience before becoming a TVET teacher. **Sara** dispatched some of his students to do an internship program at one particular car garage. He said that “And we know that this typical garage [owner] is ok so that we could assign some more students.” **Nida**, who is a construction engineering teacher teaching TVET students and TVET teacher trainees, used to manage student practicum at some particular schools. He added that “…and do practicum for a certain period…” Some students, who have done their internships getting the internship fees, didn’t want to be back to school to complete their remaining credits. Teachers also inspect them working as interns and lobby them to be back in school. **Makara** reported that “…and to inspect them [students] working at their workplace as well. We tried to lobby them to turn back to schools.” **Vuthy** realized the importance of practicum to learn the reality for students, by saying that “Practicum should be put…mmm…and we have to do practicum to better understand our skills.” **Chantha** recalled his challenged during his internship at school. He

also added that “What challenges did we meet? There were a few challenges for my practicum…” **Sok** enabled his students to do an internship at some farms because he is an agriculture teacher. He also noted that “…in fact, when they [students] do an internship to some areas or farms…mmm…” **Chanthou** used to facilitate student practicum and internship simultaneously during teaching by saying that “Teaching practicum …oh…practicum…for every training, the practicum is very important. If there is no problem…all the experiences that we have learned…” Sometimes schools and industries don’t contact each other for internship programs. He emphasized that “As I said, sometimes schools didn’t contact the industries, then we didn’t know whether industries want interns or not…”

4.4 Supporting Students to Have Entrepreneurship Skills

Entrepreneurship is a process of creating one’s own business by investing time, money, and efforts in getting successful. There are a lot of small and medium enterprises (SME) operating in Cambodia enabling students to take a risk to run their own business after being back from an internship program. Teachers motivate students to run their businesses to apply the knowledge and skills that they have learned from schools. **Piseth** stressed that “…students…and having no ideas to run their own business.” **Sopheak** also stressed that “…they [students] can be self-employed in the future.” Being self-employed can start from a small shop or store of providing services to the customers. **Vichea** raised her ideas that “meaning that not only being self-employed for them [students],…” Making a living by running business is one of the options that students can choose out of working for others. **Chantha** noted that “It is correct meaning that after gaining knowledge at the upper secondary level, they are known to run businesses for making a living appropriately.” **Vuthy** also reported that “…and others [students] were self-employed.” Mostly agriculture students run their own

businesses by opening a farm. **Nida** mentioned his ideas that,

> *"It means that they [students] can create their own business…for example, if they study agriculture, they can make their own business with the agricultural field…unnecessary to work for others, being capable of making their own living easily. They can make living standards by raising a chicken or growing vegetables."*

5. Administrative Competencies

The administrative competencies are the supportive competencies to enable TVET teachers to master their vocational abilities though performing their pedagogical abilities to students learning. There are 12 sub-components including (1) recruiting and selecting new teachers and students; (2) instructional resource and budget planning; (3) being adhesive to educational standards and regulations; (4) being adhesive to teachers' professional ethics; (5) cooperating with communities and stakeholders; and (6) time management.

5.1 Recruiting and Selecting New Teachers and Students

Recruitment and selection processes refer to recruiting new teachers and selecting new students for enrollment by interviewing or enabling them to take a test. Teachers are required to engage in this process every beginning school year. Recruiting new teachers means finding the best talent for their schools so that they can do the job productively. Normally, before starting a new academic year, teachers screen the student application one by one to identify the outstanding and academically appropriate students to study the course. Then, the students are enabled to take a placement test. Regarding recruiting new teachers, **Sok** argued that "…we

have to recruit individual teachers to teach each trade at a particular institute." **Vuthy** also raised his concerns that "To recruit teachers, at least a bachelor's degree should be considered to be a technical education teacher…" **Vichet** raised his ideas that "…throughout the country…we gather a large number of teachers…" For teachers, before dispatching them to get trained at any training program national or internationally, the department head or head teacher selects the competent ones among a pool of teachers competitively for their trade. **Makara**, who is a department head of IT trade, stated that "That is the reason why I have just sent my teacher to study in Japan to attend a training course for two weeks." Similarly, **Dara** stressed that "Every year, we dispatch teachers to get trained in South Korea, Malaysia, Singapore, Indonesia…each training lasts from one week to one month." Recruiting teachers objectively is so critical for Cambodia because it is up to the management decision after recruiting them from a pool of the best talents. **Chanthou** added that "If possible, we recruited teachers with different trades from taught trades needed, …" **Sopheak** is also a department head who always involves in recruiting new teachers at his institute commenting that "…and two teachers/professors are applying for this position [teachers at this school],…" Teachers have to actively involve in selecting students for enrollment to ensure their sufficient competencies for the upcoming courses. **Sara** reported that "Among 100% of students, we had only 30% that is strict and competent."

5.2 Instructional Resource and Budget Planning

All teachers are required to plan the budget to buy instructional materials for their instructional activities every school year. The budget is allocated by the government to each professional learning group of technical and vocational education teachers. To prove this statement, **Vichet** reported that "…there must be budget support for teachers' instructional

actions…the return on investment and expenses on them [teachers] will be much as well." Every beginning academic year, the school management provides teachers with some instructional materials and facilities for their instructional performance. **Chanthou** said that "What materials should be provided for performing? And what does it consist of for each phase?" Before providing teachers with instructional materials, they have to request to the school management. **Makara** expressed that "If they wanted to be competent, it is ok. We may request the budget…" There must be at least one teacher for each professional learning team for technical subjects who are in charge of budget allocating and accounting. **Dara** noted that "…accounting for the school budget,…" Normally, the government budget is not enough for teachers' instructional implementation, but they must use that amount by sharing with other teachers. **Sopheak** commented that "It is not enough completely because we are in the government organization so that the budget support is limited." **Sok** also stated that "…including budget support and capacities for teachers…"

5.3 Being Adhesive to Educational Standards and Regulations

To be formal and common countrywide, teachers have to comply with the regulations, guidelines, and acts made by the government. These documents act as a compass for better instructional action at school. To support this argument, **Vichet** reported that "For example, if they [teachers] teach at high school level, their instructional action should follow…" Cambodia qualification framework is a common standard for all relevant ministries in charge of TVET to follow regarding credit number, study paths, training levels, and learning outcomes for training and education. **Nida** commented that "…and Cambodia has issued Cambodia qualification framework [CQF]…for all ministries to follow…" Structures and guidelines are very important for teachers to follow to ensure that they comply with the government vision. **Sopheak** stated

that “We used to follow this type [structure] subsequently.” **Chanthou** also added that “Normally, competency standards…we only talk about whether they [teachers] are capable of completing tasks.” Even though writing the administrative letters for internal and external relations, teachers have to follow the government formats and guidelines to ensure that everything is legally controlled. **Chantha** said that “They [government officers] instructed us to make a format following the government format set for us…they instructed us how to write it [administrative letter].” Before putting into practice, the government disseminates those relevant standards and regulations for teacher consideration and implementation. **Piseth** noted that “For some legal documents or guidelines for teachers…the dissemination is limited to teachers for school implementations.” Every school has to follow the guideline and regulation as a legal practice. **Data** reported that,

> *“Now the standards are put into practice at only three massive schools as I mentioned previously. After that they will spread it [standard] out to other schools…but some massive school in provinces are required to follow the standards such as regional training centers, provincial training center.”*

To do something academically and legally, teachers ask whether any standard or regulation issued by the government comes out for school implementation or not. If not, they will not do it. **Makara** said that “…so that there are no standards for measuring it…” Finally, **Sok**, who graduated abroad, added that “I graduated from abroad…and following it [regulations] to work, but others didn’t follow it…what should I do?”

5.4 Being Adhesive to Teachers' Professional Ethics

Before getting a teaching position, teacher candidates are required to attend the course on teachers' professional ethics to ensure that all novice teachers will be adhesive to it strictly. It can protect the right of students during studying. **Chantha** proved this by saying that "Professional ethics are the subject that I have studied before. They are important in educating teacher trainees." **Chanthou** expressed his concerns that "We need professional ethics…first, it relates to the attitude, politeness, respectfulness." Those ethics ensure that their educational activities keep them from unbiased during performing their instructional tasks. **Vichet** stressed that "…teachers' professional ethics code, …" If teachers strictly follow them, teachers can't exhibit their particular favoritism toward any typical students during performing their jobs. **Sopheak** stated that "And teaching and wording must be followed and adhesive to the professional ethics." The ethics determine teachers' responsibilities during performing their instructional activities to students. **Vuthy** said that "Professional ethics…should be considered…teachers must have good professional ethics." **Dara** also highlighted this that "Professional ethics…we still retain and follow it." Therefore, all teachers must bear in mind to follow professional ethics at all costs to provide quality education in an unbiased manner. **Sok** reported that "…but our society doesn't enable teachers to respect the professional ethics appropriately."

5.5 Cooperating with Communities and Stakeholders

Out of teaching and working at schools, TVET teachers act as a key player in cooperating with the stakeholders consisting of private sector representatives and villagers for student internship and employment, peer teachers to share and learn from each other, parents

to be aware of students' academic progress and activities at home, etc. To prove this statement, **Vichet** said that "…sitting chatting with other teachers…or asking for something from other seasoned teachers…" Talking and asking experienced teachers can intensify knowledge and skills. **Chantha** stressed that "…just saying that we were newcomers, we didn't know when should we start the lessons? We had to ask teachers or school staff at this school." The company is one of the key stakeholders that teachers should communicate with. **Makara** mentioning "At that time, we cooperate with the companies,…" **Sok** used to study and work in advanced countries so that he can recruit qualified teachers for his school. After contacting qualified teachers to teach at his school, the salaries for them are too small to make a living so that qualified teachers decided to teach at the private schools to get more pay. He argued that "But if we do like this, we have to offer them [students] a big salary…" During the practicum, teacher trainees work closely with lead teachers to learn teaching skills from lead teachers by asking or observing their instructional activities. **Dara** stated that "They [teacher candidates] cooperated with lead teachers by asking them [lead teachers] at what lessons they had taught." The private-public partnership (PPP) can be enhanced though the cooperation between teachers and companies through student internship programs. **Piseth** commented that "Therefore, technical schools start networking with the private sector as a partnership. For the cement factory, the factory contacts the technical school…" Farmers and agriculture teachers are always kept in touch closely. Finally, **Chanthou** stated that "So, we enable farmers to plant at the place where do they bring the product to sell at?"

5.6 Time Management

Cambodian TVET teachers have second or third part-time jobs out of their instructional services with the government to earn additional benefits for their living. Some of them are part-time lectures at private schools, repair shop or car garage owners, farm owners,

motor-taxi drivers, trainers, or private technicians. **Piseth** reported that "We will not spend more time, but asking whether we have time or not." However, when they have different part-time jobs, it is difficult for them to manage their time for their main job; sometimes some of them are late for their instructions. **Sopheak** noted that "Then, time…punctuality for teachers…" Similarly, **Vichea** said that "…we spent plenty of time in…instruction…" Punctuality for classes is important for teachers in Cambodia, but some of them still are late for their classes so that students are bored with waiting for them. **Chantha** stressed that "…punctuality for teachers is important…" **Vuthy** also added that "…, punctuality for teachers is important…" But some teachers devote their time all day and night for their instructional work because they are single. **Makara** proved that "…because I spent my whole time to work at school day and night." Teachers might seek an appropriate opportunity to develop their professions by attending training courses outside to move upward professionally. **Vichet** emphasized that "…so we take an opportunity toward higher level too."

6. Knowledge-Integration Competencies

This component covers the knowledge and skills which are integrated into teacher competencies. Out of vocational knowledge, teachers need to master these supportive integration competencies to broaden their instructional perspectives. This component embraces six sub-components consisting of (1) general knowledge, (2) entrepreneurship skills, (3) labor market knowledge, (4) technology knowledge, (5) foreign language competencies, and (6) research competencies.

6.1 General Knowledge

This sub-component covers the knowledge of the general education system ranging from kindergarten level to higher education level that links to technical and vocational education. Some general education subjects might be included to support technical and vocational education. For example, Physics is a subject supporting electronics and mechanics. **Sok** said that "…they [students] think that they can't move academically to a higher level [higher education]. …mmm…like that…it is like science, …not general education.". He also perceived the experience from other countries that "…like an experience in Japan and other countries for vocational education." Philosophy is a source of knowledge that teachers should be aware of. **Vuthy** raised his ideas that "Educational philosophy…I didn't study it. Pre-history of TVET…teachers should know it…mmm…should study it…especially they [students] are poor at…mmm…Maths and Physics because after graduating three years, …" He also added that "…in writing any administrative letters, teachers must know how to write it. Human anatomy…it is unnecessary…relating to the health…it is irrelevant to technical education." **Makara** talked about the foundation knowledge at high school by commenting that "And grades 10, 11, and 12 are the foundation for them…" Comparing another country context can enable teachers to advance their current instructional status. He said that "Korea, Japan, and China need that major [ICT]." Educational philosophy refers to the visions that teachers set to cultivate students learning. **Dara** argued that "And education philosophy is too broad for this curriculum." And he added that "…encompassing the system and process of administrative management…" Students who study general education track can't choose to study technical education track so that **Vichea** reported that "…and general education students can't choose technical skills yet, but we absorb them [general education subjects] with those skills…" It has to be connected between technical and vocational education and general education. **Vichet** stressed that "…and there is another competency related to general knowledge because of

something…if needed to push up…" Besides this, the global and regional contexts on technical and vocational education that are relevant to own contexts should be compared to find out the bad and good points. He added that "…we catch up with ASEAN standards for our trades…" **Piseth** reported that "…because students must understand ASEAN and communication…with ASEAN [members] knowing neighboring countries…general knowledge about their countries and neighboring countries." Scholars' saying and theories can be related and considered for application if they are relevant. **Chantha** said that "Educational philosophy is studying the scholars' saying/theories. We raised the theories and arguments of some scholars and their interpretations to them. If focuses on studies and raising one theory to educate people." **Chanthou** also added that "This is…just…the additional knowledge for us to think where was each philosopher originated from? What did they do to be a philosopher? This is what I didn't know either." Out of this knowledge, he commented that "Some teachers must learn the process of writing administrative letters as well. They have to know or to study administration." If the students at general and technical high schools, after graduating they will go to higher education so that teachers have to be aware of the basis of higher education knowledge to guide and orientate students for further studies. **Sopheak** commented that "Nowadays the higher education department prepares this stream for students' consideration." However, during operating equipment, students and teachers have to be careful. Finally, **Nida** noted that "…because during working, taking a risk to danger is frequent."

6.2 Entrepreneurship Skills

Some TVET teachers run their businesses by opening individual stores, shops or farms for practicing and earning more profits in addition to government salaries. Doing this, teachers can practice reality, and sometimes they expose students to their hands-on work to

provide students some fees for supporting their studies. To support this statement, **Vuthy** stressed that "Entrepreneurship development…teachers should know it because teachers can run their businesses by opening a repairing shop or selling some materials…you can do it." **Piseth** expressed his feelings to be self-employed that "For this second one, meaning that after graduating, they [students] will run their own business. I think it is good because we [teachers] all are self-employed." Additionally, **Vichea**, who used to work for a private company for years, noted that "…teachers must possess entrepreneurship…" The willingness of teachers to manage a business venture with the hope of making some profits in addition to their monthly salaries makes them take a risk to invest some money even though they have no time to manage it because running their own business is a part-time job. However, **Dara** still wishes to run his own business by saying that "For entrepreneurship for teachers…" Teachers might absorb the concept of entrepreneurship during teaching their trades by highlighting the importance and the procedures on how to run business as part of the motivation to students. **Chantha** raises his ideas that "Entrepreneurship development is concerned with business…it is important… One more thing for entrepreneurship is teaching…" Finally, **Sok**, who is an adjunct professor at several private universities in Cambodia, noted that "It makes the society worse and worse. For example, if we are poor with a low living standard, how can we advertise the process of how to run business…mmm…impossible to do it?"

6.3 Labor Market Knowledge

The demand and supply are always mismatched on the Cambodian labor market. most of the employers complain about employees' the labor market needs deficiencies during working. Likewise, TVET teachers perceive this drawback as well. To illustrate this saying, subsequent quotes and paraphrases from seven participants are shown as follows. To prove this statement, **Piseth** commented that "And if private companies or factories gather in provinces,

it will be good for technical schools…mmm…and change…for example, in Battambang province, there is one cement factory that had been built for their operation…" The technical institutes supply labor and employers demand labor that is provided by the supply side. To match the supply and demand side, teachers must perceive the labor market need and orientate their instructions and curriculum to meet the need. **Sara** mentioned that "Our technical capacity doesn't meet the market need. For the certificate level, it is ok. For C1, it is ok." The curriculum must be responsive to the market need. **Vuthy** commenting that "The curriculum should be developed responsive to the labor market." **Chantha** also noted that "So relevant to education and training, we have to meet the present labor market needs." Experienced on the market perception, **Chanthou** stated that,

> *"If there is on agro-industry [factor] to buy something…mmm…for example, one particular community has a land area of 5,000 hectares, then what will that community be transformed to. All vegetables only…then there is one factory ensuring to buy them all [vegetables]."*

The labor market need is a standard that requires academic and legal procedures to meet it. The procedures include enhancing public and private academic partnership and compensating private sectors in engaging in technical and vocational education. **Nida** argued that "…but if they [students] enter the labor market, thy need to…" Student enrollment in TVET courses can be linked with the labor market need and requirements. To prove this, **Makara** said that,

> *"…because the labor market needs have been declined as well. If the needs [of ICT graduates] decrease, students' enrollment number decreases as well. But they didn't*

know the labor market needs…not knowing ll. …But our local market also lacks it [ICT] completely."

6.4 Technology Knowledge

` Technology plays a catalyst role in supporting education quality. It is growing very fast to meet human needs and comfort. Technology covers internet knowledge and computer skills that support teachers' tasks. Information communication technology (ICT) is an essential supportive tool and catalyst in linking with technological innovation. 11 participants mentioned the importance of technology in teaching for TVET teachers. For example, **Vichea** argued that "…such as a computer for teachers to learn…it is relevant to updating new technology…for them [teachers]…" Teachers have to expose themselves to learning computer skills to catch up with new technology. If teachers are competent in technology, they can introduce students to self-study by surfing the internet for fruitful ad relevant knowledge and information. **Piseth** stated that,

"*…and more practice because technology is advancing very fast…if we don't tell them [students], they might not know websites…websites for research relevant documents or websites for good textbooks. Another one is that should introduce students to the website to study only in an important thing…"*

Every instructional thing has to follow an advancing technology. **Chantha** said that "…if it [curriculum] is not developed to catch up with the current technological innovation…out of these qualifications, think about the computer skills." Computer skills are basic and supportive skills for technical skills requiring people to possess them to settle down

successfully into the labor market. **Makara** emphasized that "Not only for ICT but also auto mechanics…we discuss the skill…ICT is a trade." **Chanthou**, who is an IT teacher graduated his bachelor's degree in IT in 2005, raised the importance of ICT in TVET that,

> *"Then, it is not difficult…meaning that studying at school…mmm…studying in the IT era…studying in a modernized way…generation 7[G7]…For example, we study Office 2016, and when we work at the company, they [companies] use Office 2010. Then it is not clear enough for them [teachers]. But if we study Office 2010, and when we work at the company, they use Office 2016."*

Technology can almost be everything for a human that humans can't distinguish between natural and artificial things. To support it, **Dara** said that,

> *"…we prepare a standard focusing on areas [industry 4.0] that are good and important because, in some developed countries, these four areas [industry 4.0] were also added. Now popularly E-learning system is the most wanted system…for example, in advanced countries, they design like that. …who specialized in IT…teachers should…"*

As a supportive skill, computer skills might assist teachers in prepare the lesson plans, but it needs not to require them to teach that skill. **Sok** emphasized that "…for example, I specialized in computer skills, but if required not to teach students…not …not…the same as an expert in IT." **Vuthy**, who specialized in industrial technology, asserted that "For technical trades, computer skills are important…how to make a board requiring teachers to be competent in computer skills. …because we have to know what technology is. If we search for some documents from the internet, …mmm…" The electronic appliances and devices are developed

radically to meet the human need for comfort. To support this, **Sopheak** stressed that "Even though electronic appliances/device are changed radically…handphones are updated from time to time." Technology is always moving ahead of us but we have to stay informed to catch up with it. **Vichet** noted that "…in order to catch up with technological growth for teachers." Finally, **Sara** said that "…it is not good because new technology is moving forward rapidly. For our teachers, we can use computers…" Therefore, technical and vocational teachers have to be linked with new technology by exposing themselves to lifelong learning starting from and incidental learning approach to deliberate learning approach to update their professions.

6.5 Foreign Language Competencies

The English language is so critical for Cambodian teachers to develop their professions because there are limited academic documents in the Khmer language. Some of them are not good at the English language. **Vuthy** raised his concerns that "…the translation is difficult to understand its original meanings and terminology." He also added that "We have to translate it…it is easy for teachers to understand…we have to translate them and…" Some of them complained about foreign language limitations that can obstruct their learning and professions. **Sara** noted that "Most of them are poor at a foreign language. We are required to absorb foreign language…" Even though the translation version from English to Khmer language, it is not sure that it is correct 100%. **Chantha** said that "There is only translation version but not ensuring that it is correct 100 percent. And the translation version is copied from one to another. English is important because all documents are in English, no documents in the Khmer language." Not only the English language that is important for teachers, but also other languages such as Korean, Chinese, etc. To prove this, **Vichea** asserted that "Out of English language…" The foreign language is one of the priorities that TVET teachers should

know for their instructional success and advancement. **Piseth** illustrated that "The priority for teacher development is English…I am also poor at it…" Finally, **Dara** stated that "…teachers…and English [language]…"

6.6 Research Competencies

Research is one of the critical challenges for developing countries requiring high expertise. However, nine teachers considered *research* as a prominent sphere for teachers' teachers. For example, **Sara** reported that "The same for teachers if no research competencies,…" Some teachers are required to survey to be aware of the students' academic perception as part of action research. To support this, **Vichet**, who graduated with his master's degree in social work, argued that "…if we survey that the labor market needs those skills/trades." Teachers should guide students on how to write a thesis and defend it successfully, but teachers have to be competent in research first. Teachers are a driving force for students pushing them to do research exploring something unique before graduating their degrees. **Nida** emphasized that "…or thesis defense for students…and the like. But whether thesis defense is conducted in groups or individual. If they [students] defend their theses in groups, it will be good because they can help each other." Undertaking research means that finding out the solution to the problem so that **Sopheak** stressed that "…but some are not modernized technologically and we need further research to explore new things." Likewise, **Vuthy** noted that "If anything new comes out, we have to research it, how to do research…what degree we reached…mmm…and it can develop our research competencies as well." **Sok**, who graduated his doctoral degree from Japan, mentioned the research methodology, dissertation, and survey by stressing that "…research methodologies for teachers. For example, to write a dissertation/thesis…. after graduating… in fact, we survey…" **Vichea**, who is a novice teacher,

highlighted her limitation in research competencies. She added that "If we do the research ourselves, we might spend more time consisting of one or two months even though we can do research, but it is limited…" Similarly, **Piseth** mentioned the capacity of the teacher to research by commenting that "Another one is that teachers themselves to do that successfully should do more research…" **Chantha** also wished to do research to explore something new by reporting that "And I have to try to do more research."

7. Summary of Research Findings

The results indicate that the competency components for Cambodian technical and vocational education teachers develop through four major components embracing vocational and academic abilities, pedagogical abilities, administrative competencies, and support and understanding of learners. Each component has some supportive sub-components. For example, the component *vocational and academic abilities* have four sub-components consisting of upgrading vocational knowledge, mastering practical work, mastering vocational knowledge, and high academic knowledge. The component *pedagogical abilities* has 10 sub-components consisting of curriculum and textbook development, teaching methods and techniques, lesson planning, instructional material development and preparation, class management, assessment and evaluation methods, training methods, educational psychology, flexible skills for lessons and student characteristics and environment, and creative skills for students learning. the component *support and understanding of learners* has four sub-components consisting of supporting students to be employed, supporting students to upgrade their vocational knowledge, facilitating student internship and practicum, and supporting students to have entrepreneurship skills. The component *administrative competencies* has six sub-components consisting of recruiting and selecting new teachers and students, instructional resource and budget planning,

being adhesive to educational standards and regulations, being adhesive to teachers' professional ethics, cooperating with communities and stakeholders, time management. Finally, the component *knowledge-integration competencies* covers general knowledge, entrepreneurship skills, labor market knowledge, technology knowledge, foreign language competencies, and research competencies.

Vocational and academic abilities have four sub-components heavily focus on vocational knowledge but some TVET teachers are passionate to upgrade their knowledge in an academic track. For example, some of them graduated with bachelor's in electronics but they do further studies in masters' degrees in business management or educational management. Pedagogical abilities cover ten sub-components because they are the transferring processes to enable students learning. The teacher might apply these processes to cultivate students' interests. Support and understanding of learners have four sub-components because out of teaching services at schools, teachers might involve in students' activities and tasks to learn about their needs and characteristics. Administrative competencies encompass six sub-components focusing on supportive tasks for instructional service delivery quality. This component plays a key catalyst requiring the involvement of relevant stakeholders such as school management, parents, general education teachers, government officers, etc. Knowledge-integration competencies include combinations of supportive skills and knowledge to vocational knowledge. Before applying vocational knowledge at the instructional setting employing pedagogical abilities, TVET teachers should be aware of this component to view the general perspectives of knowledge and skills.

V. Discussion

This section covers the meaning of the results, the reasons why the results matter, the reasons why the results could not come out as planned, and the practical actions or scientific studies that should follow. Therefore, the section denotes two headings consisting of (1) discussion on previous literature; and (2) discussion on practicability for the Cambodian context, as shown in the subsequent descriptions.

1. Discussion on Previous Literature

After developing the competency components for Cambodian TVET teachers coming out with ultimate components and sub-components grounded from 12 participants' data experienced during teaching and learning processes, one research question called *What are the competency components for technical and vocational education teachers in Cambodia?* was answered by the research participants' direct quotes and paraphrases. The apparent answers to the research question embrace vocational and academic abilities, pedagogical abilities, support and understanding of learners, administrative competencies, and knowledge-integration competencies. These may be due to the impact of social and political norms, and economic status on the participants' experiences in instructional processes in the TVET field. As novice TVET teachers embark on instructional processes, they may experience a limitation in their professions enabling them to upgrade their vocational knowledge to Master's degrees or doctoral degrees to be prestigious and to get high pay.

The competency components connect to the observations of many other competencies component of some scholars. The Cambodia qualification framework is mandatory to have five major components: mastering vocational knowledge (cognitive and psychomotor), soft skills

(interpersonal skills, responsibility, and communication) and technology knowledge (The Royal Government of Cambodia, 2012). The skills which are popular for employers are communication, problem-solving, and teamwork (National Employment Agency, 2018). This study extends The Royal Government of Cambodia's work by indicating that these appeared to more required components for TVET teachers' competencies; these may be due to the economic differences from year to year.

In Turkey, TVET competency components were mastering vocational knowledge and high academic knowledge (Grollmann & Rauner, 2007). Similarly, in Denmark, it required TVET teachers to mastering vocational knowledge and at least five years of practical work without prior pedagogical training certificates (European Center for the Development of Vocational Training, 2012; Grollmann & Rauner, 2007). However, in Finland, the qualification of TVET teachers is high academic knowledge (Center on International Education Benchmarking, 2019). This study found six major components covering the aforementioned components, except the master's degrees and practical work. On the other hand, the participants didn't speak about master's degrees, and teaching practical work and industrial practical work and its period; these saliences indicated a limitation in developing TVET teachers' competency components. One or two years of practical work might be considered with teaching and industrial ones.

The competency components for Indonesian TVET teachers covered professional knowledge, relevant supporting abilities, high academic knowledge, and pedagogical abilities (Bateman & Liang, 2016; Kurnia, 2013; Malloch & Helmy, 2015). Likewise, Thai TVET teachers are required to obtain high academic knowledge, and teaching methods (UNESCO, 2015a; Potang, 2015). Malaysian TVET teachers required at least a bachelor's degree without prior practical work (Mohamad et al., 2009; Bateman & Liang, 2016). Vietnamese TVET teachers were required to obtain at least a bachelor's degree, and pedagogical courses as part

of a teacher license (Bateman & Liang, 2016). Intensively, Carnielli et al. (2007) asserted that Brazilian TVET teachers had to obtain high academic knowledge as a minimum academic degree. However, this study extends the above work by indicating more competency components, except industrial practical work that might be considered for further research.

Interestingly, Japanese TVET teachers had to master vocational knowledge, bachelor's degrees, teaching methods as part of teacher license, and practical work including industry and teaching (Bateman & Liang, 2016; Terada, 2007). Furthermore, TVET teachers in Korea and the United States were required to obtain at a least bachelor's degree (Lynch & Ruhland, 2007; Bateman & Liang, 2016). In Singapore, TVET teachers must have industrial practical work and teacher license (Center on International Education Benchmarking, 2019; Sg, 2012; Paryono, 2015). Therefore, this study extends the above work in more detail covering different aspects of TVET teachers' qualifications and competency components.

The TVET teachers' competency components might encompass mastering vocational knowledge, teacher license, and practical work (Grollman & Rauner, 2007; Bateman & Liang, 2016; UNESCO, 2013b). Proposed by Paryono et al. (2017), the TVET teacher competency components for ASEAN might be mastering vocational knowledge, bachelor's degree, one-year practical work in teaching work, and industrial work. Practical work (teaching and industrial) is so critical for some developing countries because of TVET teacher shortages in terms of numbers and competencies.

The TVET teachers' competency components affirm Diep's and Hartmann's research (2016) on green skills in vocational teacher education in Viet Nam, measuring TVET teachers' green skills in teacher education. They found mastering vocational knowledge, teaching methods, administrative competencies, and class management for TVET teachers' competency components. Similarly, SkillsActive (2019) identified two components consisting of skills and mastering vocational knowledge. Green (2014) found mastering vocational knowledge,

teaching methods, assessment/evaluation methods, communication, and class management for TVET teachers. Practical work and vocational knowledge are the main TVET teachers' competency components (Mou et al., 2018). This study extends the above studies by indicating that these appear to components and sub-components.

Research on TVET teachers' competency component asserted the components and sub-components in the development of the competency. Potang (2015) argued that there were three components with supportive sub-components. The core component covered communication, technology knowledge, and mastering learning behaviors. The professional component encompassed developing education standards and regulations, class management, assessment/evaluation methods, research competencies, technology knowledge, upgrading vocational knowledge, and teamwork. Finally, the functional component embraced instructional material development and instructional material preparation. The studies didn't differentiate components and sub-components clearly.

The study results are consistent with research on TVET teachers' competency components. For example, Aprilio et al. (2019) found communication and upgrading vocational knowledge as the apparent components. The competency component for TVET teachers is mastering vocational knowledge (General Directorate of Education, Vocational Training and Learning Innovation, 2010). Intensively, Bauer (2017) found two competency components consisting of assessment/evaluation methods and teamwork. To enlarge Bauer's study, Ismail et al. (2017) explored four components such as communication, mastering vocational knowledge, technology knowledge, and teaching methods. The aforementioned components and sub-components were already covered by the study results.

Bateman & Liang (2016) identified two components with two sub-components. They were core component with sub-component *mastering vocational knowledge* and basic component with sub-component *administrative competencies*. However, Arifin et al.'s study

(2017) found three major components encompassing teaching methods, mastering vocational knowledge, and communication. Four competency components for TVET teachers were identified including assessment/evaluation methods, teaching methods, technology knowledge, and upgrading vocational knowledge (UNESCO, 2011; Soysouvanh et al., 2012). Likewise, Ayonmide et al. (2015) asserted two components embracing teaching methods and assessment/evaluation methods. Similarly, there were five competency components for TVET teachers such as mastering vocational knowledge, teaching techniques, communication, instructional material preparation, and reflection (Lynch & Ruhland, 2007). Seitawan (2017) found two main components covering vocational and academic abilities and admirative competencies. Finally, Phakkdey (2016) found three components such as teaching methods, class management, and instructional material preparation. All components were mentioned in the research findings so this study extends the literature in capturing more components with sub-components; these may be due to a new reform of the TVET system in Cambodia.

There are some sub-components explored by the literature for TVET teachers' competency components. Grollmann and Rauner (2007) found two sub-components including mastering vocational knowledge and research competencies. In research about TVET teachers' competencies, Mighat and Yasin (2010) explored these sub-components such as creative skills for students learning, teaching methods, technology knowledge, mastering vocational knowledge, communication, and class management. Similarly, Peklaj (2015) identified three sub-components consisting of upgrading vocational knowledge, communication, and technology knowledge. However, UNESCO (2013b) found two sub-components that were assessment/evaluation methods, and labor market knowledge. In the TVET teachers' competency components, a variety of relevant aspects are included to ensure quality service delivery.

In particular, the competency components and sub-components with supporting

attributes for TVET teachers in Lao were asserted by Soysouvanh et al. (2013). For example, there were five major components consisting of acting, educating, pedagogical abilities, assessment/evaluation methods, and technology knowledge. For example, the component *acting* includes administrative abilities, national ethics, and respecting rights and duties. And the sub-component *administrative abilities* covered following educational standards and regulations, teamwork, and integrity.

In contrast, DeFrancesco-Sias (2016) found four core competencies consisting of organizational competencies, work competencies, trust-building competencies, and customer focus in designing his competency model. In DeFrancesco-Sias's research, he found a broad perspective for graduate and undergraduate students from diverse backgrounds that had studied in South Korea. However, this study found the competency components and sub-components for TVET teachers in the Cambodian context.

The current TVET teachers' competency components in Cambodia comprised high academic knowledge, teaching methods, mastering vocational knowledge, technology knowledge, and upgrading vocational knowledge (Sothy et al., 2015; UNICEF, 2018; Phakkdey, 2016). The results of this study extend these studies by identifying four core components with 30 supporting sub-components because of time, geographical areas, different research approaches employed, and slightly increased economic status of Cambodia transitioning to a lower-middle-income country.

In other words, Soysouvanh et al. (2013) found a mixed pool of sub-components for teacher competencies in Lao. They identified cooperating with communities and stakeholders, adhesive to educational standards and regulations, training methods, supporting students to upgrade their vocational knowledge, teaching methods and techniques, mastering vocational knowledge, flexible skills for lessons, student characteristics and environment, creative skills for students learning, technology knowledge, performing administrative work, upgrading

vocational knowledge, and instructional resource and budget planning. The study covered a broad range of teacher competency components, but this study extends it further. This might be due to different TVET systems, the government supports, perception of TVET from stakeholders.

The competency model of TVET teachers in Korea covered comprehensive aspects of teachers (Yoon et al., 2013 as cited in Lim, 2019). This model covered communication competencies, counseling knowledge, management and application of information, skills in regional cooperation, professional knowledge and skills, know-how and skills of instruction, formative evaluation skills, organization skills, administration skills, tolerance in relationship, leadership, differential confrontation towards learners, achievement orientation, dynamic passion regarding learners, active in relationship, flexibility, confidence, cooperative attitude for organization, and continual self-development. On the other hand, the participants didn't speak about counseling knowledge and skills as a sub-component for teacher competencies. This salience indicated a limitation in exploring TVET teacher competencies associated with counseling knowledge and skills that teachers can provide.

The participants in this study did self-assessment to perceive their limitations in vocational and academic abilities as part of practical work. In research about TVET teachers' competencies, Ismail and Mohammed (2015) found two components consisting of technology knowledge and mastering vocational knowledge. These two sub-components already included in the study results. By focusing on both of them raised by TVET teachers, the TVET institution management can provide practical opportunities and equipment for authenticable practice.

The results are supported by previous literature suggesting three major components with some sub-components covering pedagogical abilities, personal, and social (Kurnia et al., 2014; Malloch & Hemly, 2015). The component *pedagogical abilities* includes teaching techniques, developing educational standards and regulations, technology knowledge,

assessment/evaluation methods, and reflection. The component *personal* comprises integrity, responsibility, and professional commitment. The component s*ocial* embraces communication, and flexible skills for lessons and student characteristics and environment. The results provide evidence that there is a strong interconnectedness between components and sub-components in order to make the competency components concrete.

2. Discussion on Practicability for the Cambodian Context

TVET teachers might be passionate to learn something as part of their professional development programs. *Upgrading vocational knowledge* is the act of gaining new knowledge from everything, everywhere, and everyone that is relevant and significant for professions. Two concepts should be considered for TVET teachers regarding *upgrading vocational knowledge*. TVET teachers might acquire *incidental learning* meaning that they learn something by chance, and those new things will be intensified by employing *deliberate learning*. Teachers learn things by attempting to search for or to explore things exerting all efforts and time. To achieve this sub-component, ample learning opportunities and supports can be provided such as motivation, coaching and mentoring activities.

The sub-component *upgrading vocational knowledge* is appropriate for Cambodian education reform in the short run. Most Cambodian teachers are passionate to do further studies (Phakkdey, 2016). Some training programs are conducted to meet the change process of a typical organization. For example, teacher training programs was designed to back the instructional focus of principles and theories issued by the educational authorities (Nielsen, 2007). Some TVET teachers are engineers and technicians who always do their self-assessment about their academic degree limitations because the educational reform requires education staff possess a higher degree the better in terms of pay and promotion. To tackle this issue, teachers

are self-perceived of their limitations to do further studies. However, in order to upgrade TVET teachers' professionalization in terms of skills and qualifications, it is crucial to provide teachers with substantial opportunities and supports for further studies (Nielsen, 2007).

Upgrading vocational knowledge can intensify TVET teachers' existing knowledge by upgrading their academic degrees or learning unique things, pursuing own interest in a particular subject or course, and improving own career prospects. TVET teachers have to stay informed with the most current trends in innovation (Graham, 2016). Similarly, they might take an opportunity and potential to expand their knowledge and networks and to move upwards in their careers. Lifelong learning is embedded at all levels of education ensuring that every Cambodian people have equitable access to education service that is part of further studies (Ry, 2019). Currently, a few TVET teachers earn associate degrees, some TVET teachers earn bachelor's degrees, and a few others earn higher academic knowledge in their respective majors. To be prestigious academically, most of Cambodian TVET teachers pursue further studies upgrading their existing degrees to a higher one. Mostly their tuition fees are covered by themselves. This highlights that Cambodian TVET teachers endeavor to earn a higher degree to at least a bachelor's degree. Interestingly, the national lifelong learning policy is under progress in implementation motivating and supporting all education staff to pursue their further studies to a higher degree in Cambodia.

As a member of the professional learning community, TVET teachers learn from each other during the meeting and sharing forum. For example, teachers of the agronomy who are the members of agronomy cluster have to contribute their ideas and learn from other members during the meeting and experience sharing forum in Cambodia. Therefore, the sub-component upgrading vocational knowledge is applicable for the current context of the Cambodian TVET system.

TVET teachers need to communicate as a team or professional learning communities

to share and learn from each other. They can learn from teamwork among peers, particularly a mix of novice teachers, experienced teachers, master teachers, and expert teachers. Knowledge and experience sharing forums can be provided for peer teachers. A teacher is required to be a member of the subject/trade cluster. For example, all teachers of the electronics are the members of electronics cluster of the school enabling them to have and attend the technical meeting monthly to learn and to share each other. The sub-component *cooperating with communities and stakeholders* can be workable for the Cambodian context. Mostly Cambodian bachelor's degree graduates were good at teamwork skills (Ai, 2019). Cambodian people are helpful and kind to each other, but some hesitate to share what has been learned with others because of being unconfident and not trustful in their capacities. Therefore, teamwork needs are open-minded and frankly speaking without care of being wrong.

Cooperation is a collective action of a group of people to make a collective decision for the benefits of a group. For example, the Khmer teachers' association (KTA) works for teachers' benefits and protects teachers from exploitation. To make an informed and collective decision on any particular case, all members have to vote following democratic ways as a majority. At each school, it is required by education law for all teachers to formulate the professional learning community for each subject or major in order to share, and to learn from each other, such as the professional learning community for electricity, mechanics, agronomy, or chemistry, etc. As a team, a typical group of teachers is required to call for monthly meetings to discuss some instructional challenges and experiences. Another example is the Cambodian Mathematical Society (CMS) is the learning body to share a common concern on mathematics countrywide. Therefore, teamwork can be strengthened if the members abide by the majority voices and frankly discuss the common concerns.

The sub-component *mastering practical work* can be seen in research. For example, TVET teachers might have profound practical work and know-how to transform the experience

into teaching practice in Germany (Bauer, 2007). Some ministries in Myanmar require the participants to have industrial practice and educational practice as a criterion to be TVET teachers (Euler, 2018). In contrast, some potential TVET teachers have been involved in the fieldwork directly without previous teaching practice (Carnielli et al., 2007). Most of TVET teachers have no industrial and technical practice in the areas or majors they teach (Euler, 2018). In Turkey, TVET teacher candidates can be appointed as a teacher without industry practice, but those novice teachers work as apprentice teachers under constant guidance and mentor from seasoned teachers (Boynak, 2007). However, practical work is the main driver and enabler for instructional quality. Teachers' teaching practice also contributes to pupils' performance (Lane et al., 2015). Therefore, prior practices regardless of work or teaching might help teachers to build their confidence and trust from students. According to the recent TVET system reform with some fringe benefits from the government and gradual increases of monthly salaries annually, a one-year practical work for industrial and teaching practice can be possible for the Cambodian context. Engaging the private sector by helping them to promote their products in exchange for getting practical work from them is a new trend for Cambodia in sending TVET teacher candidates to get an industrial practical work.

Practical work refers to industrial and teaching practices. TVET teachers have to obtain industry and work practice to provide a realistic learning environment (Paryono et al., 2017). On the other hand, TVET teachers should have one year of teaching practice including class observation, teaching practice, and student teaching (Paryono et al., 2017). Because of a shortage of TVET teacher applicants, relevant ministries in Cambodia recruit TVET teacher candidates from a pool of fresh graduates of associate and bachelor's degrees passing an entrance examination. Teaching practicum ranging from 3 to 6 months and an industrial internship program for one year is part of practical work (National Technical Training Institute, 2019).

Generally, vocational knowledge denotes the theories, and principles that are taught and learned by teachers and students in a specific area (Education Reform, 2016). The sub-component *mastering vocational knowledge* was consistent with the quantitative study. Content is the subject description that is to be learned or taught by students and teachers (Koehler, Mishra, & Yahya, 2007). For example, teachers should master high functional competencies (Ismail, Don, Husin, & Khalid, 2018). The vocational knowledge is a backbone for teacher competencies that had been possessed during studying at higher education institutions by exposing to real practice. According to Okoli (2017), vocational knowledge is essential for teacher education. Similarly, vocational knowledge for teaching is a practice-based principles that describes the vocational contents involved in the teaching and learning of a vocational subject (Praxis Client Conference, 2011). Therefore, vocational knowledge represents teachers' understanding of the subject contents of trades (Kleickmann et al., 2013). Vocational knowledge is the major concerns for the TVET teachers because of most them mentioned the certainty and expertise in their vocational knowledge because embarking on the teaching profession.

The quality vocational knowledge resulted from the integration of theory and practice of subject matters of trades during studying and learning at schools. To get a decent job, Cambodian youth should master vocational knowledge (MoEYS, 2019b). Exposing to practical activities including operating equipment and machinery might intensify vocational knowledge, after absorbing theoretical work. TVET teachers acquire vocational knowledge by upgrading professional knowledge either on-the-job or off-the-job training (Chua & Jamil, 2012). One of the requirements for Cambodian TVET teachers is vocational knowledge (Sothy et al., 2015; UNICEF, 2018). It is hard to enable TVET teachers to master quality vocational knowledge if the TVET system is under-developed. If teachers are poor at vocational knowledge, their instructional activities may be vague regarding demonstrating and explaining the lessons.

TVET teachers should at least earn high academic knowledge in their respective subjects to have a broad mind and perception of their fields. In Myanmar, a bachelor's or master's degree is required in order to be a TVET teacher (Euler, 2018). The sub-component *high academic knowledge* is applicable for the Cambodian context because the number of further studies for bachelor's degrees and master's degrees is increasing rapidly. Interestingly, the government motivates the teachers who have been working for years, but not yet earn high academic knowledge to pursue their studies to a bachelor's degree. The higher the academic degree, the larger the salaries and benefits. Likewise, the higher the academic degrees, the more possibility to be promoted. In contrast, in Mongolia, the qualifications for TVET teachers were not specified (Duggan, 2015).

For component *pedagogical abilities* ultimately affect students' learning outcomes. For example, pedagogical knowledge requires an awareness of cognitive and affective theories of learning and how they apply them to learners in their classrooms (Mishra & Koehler, 2008). TVET teachers are responsible for classroom teaching and practical teaching as part of teaching methods (Zhao, & Lu, 2007). Teaching and learning quality to meet the labor market needs might be promoted (UNESCO, 2015a). For the Cambodian context, to be TVET teachers, they are required to attend a teaching methodology course for one to two years. The teaching methodology is the main course for the TVET teacher training program before becoming a Cambodian TVET teacher legally (National Technical Training Institute, 2019).

Teachers should be competent enough to develop supportive and mnemonic documents for their instructions such as curricula, guides, standards, etc. The sub-component *curriculum development* meets the reality in Cambodia because most teachers are invited to attend the consultation workshop on the instructional processes to ensure their ownership and practicability. For example, curriculum development is one of the main tasks for TVET teachers (Zhao, & Lu, 2007). Cambodian TVET teacher candidates are required to attend a training

course on curriculum development, and they have to develop relevant documents supporting their instructional tasks themselves (National Technical Training Institute, 2019). TVET teachers might involve actively in the curriculum development process to meet the reality of supply-side (Euler, 2018). To ensure teacher effectiveness, the involvement of teachers in curriculum development and planning and decision making must be provided (Campbell et al., 2004). Intensively, teachers may have extensive knowledge of curriculum and knowledge of how to interpret the curriculum into instructional activities (Soysouvanh et al., 2012). Particularly, TVET teachers are required to develop and plan their lessons, curricula, and documents relevant to their instructional activities (Hellwig, 2007). Similarly, TVET teachers are often engaged in the curriculum development process being responsive to the needs of the labor market (Carnielli et al., 2007). After developing relevant documents for instructional purposes, teachers might ensure the ownership, productive and practical developed documents to stakeholders. Teachers are the end-users of documents so that they have to participate in the development process.

There is a variety of teaching techniques that TVET teachers might pick. For example, traditional lecturing, testing, narration, gaming, exercising, inquiry-based learning, etc. are applicable for instructional activities. Mostly teachers in developing countries use traditional pedagogical techniques that a teacher explaining the topic solely, and students take note of the lessons that teachers lecture (Santos, 2018). Teachers might opt for typical techniques to engage students learning. Particularly, teachers may awaken students' curiosity and interests in learning by applying these teaching techniques consisting of flipped learning, action learning, social media, and online learning tools (Santos, 2018). Enabling students to focus on identifying an area which interests them in learning is a way of learning (Santos, 2018). For the Cambodian context, a variety of techniques are currently applied such as problem-based learning, and student-centered approach.

All teachers are required to plan their lessons prior to teaching, and the format of lesson plans are set by the ministry. Lesson planning is one of the academic challenges for TVET teachers because some of them have second or third jobs outside so that they have not enough time to write down or to plan their lessons prior to teachers. Some of them teach students following the traditional methods that are the teacher-centered approach. Consequently, there are several guidelines and acts issued by the ministry introducing teachers on how to plan lessons in an appropriate manner. In some cases, the ministry officers went to schools directly to train teachers how to write the lesson plan effectively. Thus, this sub-component is applicable for the Cambodian education context.

To deliver quality teaching, TVET teachers are obliged to prepare instructional materials relevant to the topics or modules that will be taught in advance. For item *instructional material development and preparation*, it is applicable for the Cambodian context because the MoEYS has issued guidelines or acts informing teachers to prepare relevant teaching and learning materials before lecturing to ensure that everything is in place. The government provides budget support for TVET teachers who prepares and develops teaching aids supporting their instructional activities. Teachers make detailed lesson plans and prepare instructional materials prior to teaching (Campbell et al., 2004). Teachers might test and demonstrate instructional materials/equipment for student learning. Intensively, teachers might be capable of developing those instructional materials to verify learning content. TVET teachers spend much time and efforts on the material preparation to ensure their instructional activities are effective (Hellwig, 2007). Therefore, TVET teachers are required to make all academic preparations such as lesson plans, technical training environments in the laboratories, and other necessary instructional material supporting instructional processes (Boynak, 2007).

Sub-component *class management* was consistent with the quantitative study in Malaysia. For example, teachers possessed high instructional management (Ismail et al., 2018)

to assign and regulate students' assignments and work appropriately. The main teachers' work is class management to ensure the instructional processes effective (Campbell et al., 2004). A teacher has to master class management skills for managing the classrooms and students (OECD, 2005 as cited in Orgoványi-Gajdos, 2016). However, the management refers to the class management during a class hour ensuring it is effective and productive. In contrast, there was a rare engagement of TVET teachers in school management, especially in teaching management (Zhao, & Lu, 2007) because it was time-consuming for them to heavily care for instructional preparation and planning. For the Cambodian context, TVET teacher candidates are required to attend the course on educational administration and class management (National Technical Training Institute, 2019). Several directives, guidelines, acts, and decrees have been issued subsequently to teachers to ensure that the class has to be managed in a productive manner. In this regard, teachers might be well aware of students' academic potentials to position the instructional activities adapting to their levels. This sub-component is practical for the Cambodian context because there are several training courses and mnemonic documents delivered and issued by MoEYS to ensure that teachers can manage the class effectively with constant guidance from MoEYS officers and school management.

For sub-component assessment/evaluation methods, it is essential for TVET teachers to assess and evaluate students' knowledge and skills appropriately. Teaching is seen as a professional activity requiring evaluation of their impacts on students' academic achievement (OECD, 2005 as cited in Orgoványi-Gajdos, 2016). After teaching as part of monthly tests or semestral examinations, TVET teachers are required to possess teaching evaluation and assessment to ensure fairness and integrity for all students (Zhao, & Lu, 2007). All teachers have to evaluate students' academic performances in an objective manner (National Textile University, 2019). Teachers should develop their instructional assessment that supports learning following a diverse demographic characteristic of students (The Teaching Council,

2012). Intensively, teachers use the assessment results to guide instructional activities and practice (National Textile University, 2019). For the Cambodian context, there are many kinds of tests consisting of oral tests, written tests, and project presentations/defense. Teachers might be aware of the evaluation of student levels, student skills, and self-evaluation. For each test, the evaluative criteria might be ready for evaluating students' knowledge, skills and academic achievements for their project work.

According to LearnED (2018), there are four common types of assessments consisting of diagnostic assessment, formative assessment, benchmark or interim assessment, and summative assessment. They are applicable for the Cambodian context because the diagnostic assessment is like placement test as entrance examination; formative assessment is like a monthly test; interim testing is like first-semester test or mid-term test, and summative assessment is like a final test or second-semester test. The assessment provides useful feedback for the improvement of learning and teaching (LearnED, 2018). However, evaluation is performed to determine the degree to which goals are attained (LearnED, 2018). Question items and marking system can be guided functionally to get concrete results.

TVET teachers don't only teach students at schools, but they also train trainees such as villagers, drop-out people, displaced people, returned migrant workers, and unemployed people short and long-term vocational courses so that their training methods might be good with a variety of methods such as on-the-job training, simulators, role plays, group discussions, coaching or mentoring. Thus, sub-component *training methods* is appropriate for the current situation of Cambodia.

TVET teacher trainees are required to attend the course of educational psychology at teacher training centers enabling them to capture psychological concepts to perceive how students learn and how to cultivate their interests. This is one of the important courses for TVET teachers. Therefore, educational psychology pervades all TVET teachers before being

legally a teacher.

Flexible skills for lessons and student characteristics and the environment is applicable for Cambodian context because it might adapt to a different environment, management, and student characteristics. Although TVET teachers earn diverse academic qualifications such as associate degrees, bachelor's degrees, and higher academic knowledge, they are mandatory to adapt their competencies to students' competency levels. For example, TVET teachers' competency levels and programs are flexible to students' competency levels (Nielsen, 2007). Teachers have to be flexible to determine the flow and dynamics of a lesson and respond appropriately to the needs of the class (Campbell et al., 2004). Likewise, teachers have to adapt instructions/supports to students' academic and demographic differences (National Textile University, 2019). If teachers don't adapt their competencies to student competency levels, students might complain and report to the school management because they learn nothing from teachers during theory and practical teaching periods. Teachers might be capable of incorporating their subject matters into an appropriate pedagogy adapting to their expertise levels (Campbell et al., 2004). Similarly, the students are entitled to select teaching contents, and methods applicable for their capacities (Nielsen, 2007). Thus, TVET teachers have to modify or adapt their competency levels including teaching techniques, designing lesson plans, etc. to students' academic levels and needs to transfer knowledge and skills successfully.

Creative skills for students learning is what TVET teachers need to be passionate about because they are science-oriented instructors. For example, teachers must be creative in posing questions, making questions and asking students to engage them in the lessons (Campbell et al., 2004). The policy on research development in the Cambodian education sector enhances teachers with creativity and innovation in Cambodia (MoEYS, 2010). Mixing higher and lower cognitive ordered questions can be created by teachers to enable students learning.

Creativity might come naturally for some, but not all. Creative teachers are willing to

try new teaching strategies and methods for students' academic achievements (Cox, 2019). They need to create innovative ideas to diversify their students' needs and characteristics. The sub-component *creativity* is so critical for the Cambodian context because TVET teachers have to be open-minded and not afraid of failure. According to Ai (2018), the ministry of economy and finance of Cambodia launched a pilot project on entrepreneur promotion fund for those who are interested in starting small and medium enterprises (SMEs), especially TVET teachers who endeavor to create something, by allocating some amount as a loan for their new start-up. TVET teacher candidates have to attend an entrepreneurship course as part of the creativity program to assist their new initiatives and start-ups (National Technical Training Institute, 2019). Taking risks is the starting point for creativity.

The study results were consistent with Grollmann's and Rauner's study (2007) stating that in Norway, TVET teachers have to master vocational knowledge, pedagogy, and teaching techniques. Besides these required skills, TVET teachers should master administrative abilities. For example, the additional tasks for TVET teachers should be numeracy skills literacy, and technology (Bauer, 2007). Before being a teacher, the teacher candidates are required by law to get trained in pedagogical courses for one year. Teaching techniques are the crucial factor in delivering quality training courses (Carnielli, et al., 2007). Teachers using a variety of teaching techniques have a high possibility of pushing up students' academic outcomes (Campbell, Kyriakides, Muijs & Robinson, 2004). However, some TVET teachers in Cambodia have not possessed technical techniques because after graduating their bachelor's degrees abroad, they would be entitled to be TVET teachers to meet the immediate shortage of TVET teachers. However, the empirical study needed more in-depth for TVET teacher qualifications.

More intensively, research asserted that there were several sub-components for administrative competencies for the study on TVET teachers' competency components. Administrative competencies enlarge a pool of 12 sub-components for this study; this might be

due to the most supportive system. More importantly, in order to get decent jobs, Cambodian youth must possess administrative competencies (MoEYS, 2019b). To prove these, Paryono (2014) found some sub-components for administrative competencies consisting of technology knowledge, problem-solving, class management, integrity, and responsibility. As TVET teachers experience administrative competencies, they might be mature for their instructions. Ismail and Mohammed (2015) identified some sub-components such as flexible skills for lessons and student characteristics and environment, professional commitment, upgrading vocational knowledge, communication, technology knowledge, and class management. Likewise, the results were supported by Amiruddin et al.'s study (2016) that component *administrative competencies* embraced communication, problem-solving, teamwork, and class management. Also, there were seven items for administrative competencies including critical thinking, class management, technology knowledge, creative skills for students learning, teamwork, communication, and practical work (Murgor, 2013). By raising important awareness of administrative competencies on TVET teachers' competency components, TVET institution management can provide substantial opportunities and supports, and create a more friendly working environment letting TVET teachers learn and share the component *administrative competencies* through coaching and mentoring modes.

Although research has suggested some sub-components for administrative competencies, the results indicate the consistency between sub-components and attributes. For example, Brewer and Comlyn (2015) found four sub-components consisting of *problem-solving* with attributes of solving problems independently, identifying problems, and identifying and suggesting new alternatives; *teamwork* with attributes of working in groups, interacting with peers, working with the informed decision of the group, and distributing to the organization's goals, etc; *upgrading vocational academic* with attributes of being passionate to learn new things, applying different learning techniques and apply unique knowledge and skills,

and mastering independent learning, etc; and *communication* with attributes of articulating own ideas and vision, listening to understand and learn, listening and communicating effectively, and writing effectively in the language. The supporting mechanism can be provided to achieve those aforementioned sub-components and attributes successfully for TVET teachers

Every school year students take an entrance test or apply to study vocational and technical courses according to your favorite trades so that trade teachers have to write down test items or to screen new students' applications. The screening criteria include high-grade point average (GPA), good attitudes, and willingness to achieve a course. In any special cases, teachers are required to interview students directly to check their attitudes and willingness to study for more in-depth. If needed, schools recruit new teachers as part-time ones to fill out the shortage. Respective trade teachers recruit new teachers by interviewing them orally or having them to take a test. Resumes and cover letters are needed for submission for who those want to apply for a teaching profession (Saint Paul Institute, 2019). TVET teachers can be recruitment and selection committee members which are officially appointed by the ministry to regulate and process this work efficiently and objectively. Therefore, sub-component r*ecruiting and selecting new teachers and students* is applicable for the Cambodian context because TVET school s are currently employing this.

Every beginning of school year, TVET teachers have to request the budget to the finance section of schools to get the amount for their instructional task payment such as developing instructional materials, purchasing some necessary equipment and facilities, purchasing textbooks and stationaries, doing experimentation, and the amount paid for a student internship program and practicum. The field trips for students and teachers are also included. This government budget is allocated step by step for paying upon requests from teachers. The teacher head of the trade department or section assigns these tasks to individual teachers to do these. Thus, the sub-component *instructional resource and budget planning* are

practical for Cambodian TVET teachers.

The educational standards and regulations deal with being adhesive and following effectively the government regulations and the requirements that teachers, faculty, and staff must meet to be certified, trained, developed, or punished (Staff, 2019). Therefore, the sub-component *being adhesive to educational standards and regulations* is strongly applicable for the Cambodian education context.

Educational standards, strategies and action plans are educational canons requiring TVET teachers to follow to collectively achieve a common vision and goal of the government. The government issues relevant educational standards and regulations to ensure that the implementation and practice are spread out countrywide with a structured process. Then to measure the results of the implementation, teachers have to follow them all. If the standards are too complicated to implement, the government will provide orientation workshops or training courses to instruct teachers on how to implement those concepts or actions. For example, the disseminating workshop is required to all stakeholders, particularly teachers who are end implementers for educational strategic plan 2019-2023 (ESP) before putting into practice countrywide. After understanding and being aware of the process and techniques on how to do, teachers will be able to implement them successfully.

The sub-component *being adhesive to standards and regulations* was consistent with Cambodian standards on education requiring TVET teachers to be aware of and to follow those policies, guidelines, acts, or strategies to support the goals and visions of the government and ministry in charge. TVET teachers might be aware of, and follow the educational policies, standards or supporting instructional processes (Soysouvanh et al., 2012). The government guidelines orientate teachers to move forward in the right direction to achieve an upper-middle -income status in 2030 and a high-income status in 2050. Therefore, TVET can’t work independently without the care of government’s goals and visions.

TVET teachers' integrity is positive things that exist based on professional ethics and law of conduct to ensure that everything is fair, objective, and impartial. Integrity in teaching involves being mindful of own values about teaching (List, Eaton, & Glanville, 2015). Similarly, integrity is the quality of being honest that requires TVET teachers to possess for their instructional activities and events within and outside the classrooms. Cambodian teachers' professional ethics ensure that all education staff has to exercise integrity during performing their instructional activities (The Royal Government of Cambodia, 2008). However, integrity for TVET teachers will be developed and absorbed overtime during teaching and learning.

One of the ethical values of teachers is integrity that honesty, credibility and morality are embedded (The Teaching Council, 2012). Every teacher has to possess integrity for all instructional activities to ensure the quality of education and training service delivery. Teachers exercise integrity through their professional commitments for their instructional activities as mentioned in teachers' professional codes of ethics (The Teaching Council, 2012). Integrity can be absorbed step by step in TVET teachers' mindset because of gradual increases in their monthly salaries and some fringe benefits from the government like the social health care system.

Responsibility is a duty to deal with something or somebody to complete a required task. TVET teachers' peers, management, students, and community can be accountable for teachers for their responsible tasks. For example, teachers have many responsibilities including preparing lesson plans, educating students, assigning and evaluating homework and assignments, grading tests, documenting students' academic progress, cultivating students' interest in education, and planning educational activities and events (Teacher Job Description, 2019). Out of these, TVET teachers should be a good listener and learner with in-depth knowledge of teaching best practices. To be a competent professional in TVET, teachers are required to complete these tasks and duties including attending parent-teacher meetings. A

teacher is obliged to provide professional advice to parents for improving student learning (OECD, 2005 as cited in Orgoványi-Gajdos, 2016). Teachers might comply with agreed national and school policies and guidelines for the purpose of promoting student education and training quality (The Teaching Council, 2012). Another responsibility of a teacher is to vary instructional roles in relation to contents and purposes of instruction, and students' learning needs (National Textile University, 2019). To enhance their professional practices, teacher have to be self-learned and developed constantly (The Teaching Council, 2012). The sub-component responsibility is relevant to the Cambodian TVET context. Cambodian teachers are required by teachers' professional ethics to perform their instructional responsibilities at all costs (The Royal Government of Cambodia, 2008). Following these aforementioned responsibilities and duties for teachers, Cambodia has had the teachers' professional ethics that all teachers are obliged to abide by because it is a professional law of conduct.

Professional commitment for TVET teachers cares for the heart. Heart refers to the professional consciousness possessed by teachers during studying or working. Teachers devote and contribute all their efforts and time to make things happen in a smooth and quality manner. Quality education can't be reached without efforts of dedicated and committed teachers (Razak, Darmawan, & Keeves, 2009). Committed teachers care for their students' development, struggle how to interest students' learning, and cultivate students' curiosity (Mart, 2013). In other word, sometimes teachers' professional commitment to their instructions is contributed to critical comments for stakeholders such as policymakers, employers, students, and parents (Razak et al., 2009). Professional commitment is difficult to be reached. Teachers' professional commitment is emphasized because of an internal force emerging from within teachers themselves (Park, 2005 as cited in Razak et al., 2009). Cambodian teachers must make the professional commitment as mentioned in the teachers' professional ethics (The Royal Government of Cambodia, 2008). Teachers' professional ethics play a critical role in enhancing

teachers' instructional tasks being mandatory for all teacher candidates to attend this training course (National Technical Training Institute, 2019). However, providing constant supports might raise TVET teachers' professional commitment including the motivation from the management.

The logical way to the problem-solving is to seek supports and consultation from outside before making a final decision (Kovač, 2019). Supports and consultation are the preliminary stages before acting. Cooperating with communities and stakeholders for sharing and learning is applicable for the Cambodian context. Therefore, to solve problems successfully, TVET teachers might cooperate well as a professional learning community.

Time management is sensitive to the Cambodian teachers. Some of them have second or third part-time jobs out of the government teachers to make additional money. Most of them can be part-time lectures at the private TVET schools, part-time private technicians, shop owners, or part-time NGO officers. Sometimes, they are late for classes or absent from classes without prior information to schools and students. Thus, this sub-component might be workable for current Cambodian status.

Knowledge-integration competencies are supportive skills and knowledge which are integrated into vocational knowledge to view general perspectives of the TVET system. This component is critical for the Cambodian TVET teachers because most of the TVET teachers heavily focus on vocational knowledge.

Administration work is a supportive task for TVET teachers such as writing a request letter to the school management, to the ministry management, or to NGO for communication. These tasks start with teachers for the benefits of their departments and sections. Moreover, regional and global context knowledge such as ASEAN, European Union, etc. can be understood through a collaborative network between schools and schools. For example, some Cambodian TVET teachers attend some TVET workshops, dialogues, or meeting for TVET

harmonization. Therefore, sub-component *general knowledge* might be appropriate for the Cambodian TVET system in a short run.

Teachers also support students to have entrepreneurship skills by enabling them to run their own business after graduation or during studying. As part of the project on entrepreneur promotion fund (EPF), which is allocated by the Ministry of economy and finance to promote young entrepreneurs who want to take risks involving in running their small and medium enterprises in Cambodia. The fund provides some amount for young entrepreneurs without an interest rate or without returning that amount if their businesses go bankrupt. Not only students can request this budget for their start-up, but also teachers can do it.

Some TVET teachers have not perceived labor market needs and requirements so that their training contents and modules could be vague in Cambodia. The TVET training program can be designed to meet the new emerged trends of the labor market (Carnielli et al., 2007). The TVET curriculum needs to be aligned with the industry needs (Al-Refaei, 2019). Therefore, the sub-component *labor market knowledge* is a provocation message to TVET teachers in Cambodia to be academically ready to perceive the labor market demand before designing the lesson plans and teaching techniques. The strategic goals of the industrial development policy 2015-2025 are to transform the labor-intensive economy of Cambodia into an industrial driven one so that technical and vocational education has to be labor market-based, especially TVET teachers must perceive the labor market need (The Royal Government of Cambodia, 2015).

Specifically, the demand and supply of labor must be matched to make training and education successful. TVET teachers have to be aware of any kinds of jobs available on the Cambodian labor market such as mechanic, electrician, web developer, tour guide, etc. Out of these, teachers must know the kind of jobs that are the most wanted or least wanted by employers. The salary ranges also should be known for each specific job. Coming from this

specific information, TVET teachers can develop the curriculum and lesson plans to ensure that the graduates will be employable after graduating. Thus, the component *labor market knowledge* is significant for Cambodian TVET teachers.

Sub-component technology knowledge was consistent with research. For instance, Wei, Piaw, Kannan, and Moulod (2016) studying teacher ICT competencies to 417 teachers in Malaysia employing a survey approach identified their high ICT competencies. The majority of teachers possessed basic ICT competencies (Michael, Maithya, & Cheloti, 2016). Technology plays as a catalyst supporting instructional qualities, especially for technical and vocational education. TVET reforms focus on competency-based training, vocational competencies for teachers, as well as technological competencies (Nielsen, 2007). Particularly, TVET teachers have to be aware of basic ICT in instruction (OECD, 2005 as cited in Orgoványi-Gajdos, 2016). Knowledge of technology becomes an important part of overall teacher knowledge supporting vocational knowledge (Mishra & Koehler, 2006). Technological knowledge is the TVET teachers' crucial competency to produce instructional methods (Chua & Jamil, 2012). One of the indicative strategies of Incheon Forum was to provide teachers with effective technological skills, social media, and social networks for students' academic successful outcomes (Incheon Declaration, 2015). In other words, TVET teachers might be capable of integrating the application of technology into the curriculum (Soysouvanh et al., 2012). However, Davis (2012) found that the use of technological instruction was limited in students' academic achievement increase. Thus, technology is a supportive instructional tool, but teacher competencies are a key catalyst ensuring quality service delivery.

To support this sub-component, the policy and strategy for ICT in education was issued by the ministry of education, youth, and sports. The integration of ICT in teaching, learning, and knowledge sharing across the education sector have to be intensified to transition to the 21st-century world of work for Cambodian society (MoEYS, 2018), especially for students and

teachers. The ICT course is one of the basic courses for TVET teacher training programs (National Technical Training Institute, 2019). Therefore, e-learning and online courses can be provided to support offline classes to enhance education service delivery.

Technology can shape and change the physical world making education easier and accessible to a variety of student characteristics. Also, technology can simplify the way students learn. There are a wide range of technology in education that can be accessible such as computers, microphones, ceiling mount LCD projectors, megaphones, wireless mousse with zoom capability, DVD player/recorder, headphones, projector screens, projection maker boards, cassette and record players, photocopiers, wireless presentation system, and USB webcam (Ramey, 2012). Ramadan, Chen, and Hudson (2018) using a quantitative research approach to 168 TVET teachers in Sudan found that VET teachers' competency component was ICT skills. The appropriate way to expose TVET teachers to technology practice is to send them to experience industrial work directly (Chua & Jamil, 2012). However, these kinds of technology are applicable and accessible for the Cambodian school context because the ICT application at schools is under progress.

Foreign language is a means of communication. Teachers are required to do much work, but among them, communications with parents and stakeholders are more important (Campbell et al., 2004). Communication skills are crucial for teacher education (Okoli, 2017). Teachers' relationships with students, peers, and the public are good signs of communication building trust (The Teaching Council, 2012). Teachers are responsible for the partnership with educational professionals and researchers as part of communication skills for the development of a theory of education (Campbell et al., 2004). In other words, teachers spend time with parents in consultation about the student's work in the purpose of improving students' learning, especially for high levels of economic and social disadvantaged groups (Campbell et al., 2004). Teachers might possess excellent written and verbal communication skills (Teacher Job

Description, 2019). However, there is poor communication between schools and industries in Myanmar (Al-Refaei, 2019). Thus, the communication needs to be proactive for teachers to be active to get productive outcomes from them. For the Cambodian context, communication skills can be enhanced through providing language training programs. The popular communication modes in Cambodia are cellular phone and Facebook as social media. To enhance this sub-component, English language subject as part of the communication is being taught from grade 4 at the primary education.

Earning bachelor's degrees enable TVET teachers to possess the basics of research. Research competency plays a key role in innovating something novice for TVET teachers to bring research findings or results to students to learn. Research acknowledges the crucial importance of TVET teachers (Boyd et al., 2006). Building a research culture at Cambodian education institutions is a new initiative to engage teachers to be more creative, innovative and accountable (MoEYS, 2010). It also helps teachers to do further studies themselves to upgrade their existing knowledge and skills by comparing and contrasting with what had been done and what will be done referring to the empirical studies. Because of difficulties in writing theses or research reports as a must for graduation, most of the TVET students that will be future TVET teachers prefer taking a final examination as a requirement for graduation. This hinders a drawback for TVET teachers regarding research competencies if they don't expose themselves to any research projects.

To support this sub-component, a team of lecturers at NIE has done some solid action research training programs to upper secondary school teachers including technical and vocational education teachers who teach trades at GTHSs. As a result, some teachers found out the issues and challenges for the TVET field for the management decision. This means that the practicability of research competency is approachable for the Cambodian context.

Even though supporting students to be employed at the private company right after

graduation, teachers are also supportive of students to upgrade their vocational knowledge by motivating them to work and to do further studies simultaneously. The acts of supporting are to provide them with trusted information for their decisions, to provide them consultation about jog search and further studies, etc. They can work on weekdays and pursue their studies on weekends to upgrade their vocational knowledge. Currently, most of TVET teachers upgrade their vocational knowledge to Master's degrees and Doctoral degrees for the hope of getting more paid or prestigious in the society.

For TVET students during studying, they are required to do an internship at any factory or factory to learn hand-on skills for a particular period according to the mutual consultation between schools and industries. Trade teachers are required to facilitate and regulate student internships to ensure that everything is ready and in place safely and productively. According to better communication, teachers dispatch several students to the field; and students make some money from this work. Thus, this sub-component is applicable for the Cambodian context.

The four components are the comprehensive ones for the Cambodian context which can be implemented for the academic setting and work setting being responsive to the labor market needs. The grounded theory approach is more appropriate for exploring the competency components of Cambodian TVET teachers. Therefore, the results are harmonized for practicability.

VI.Conclusion and Implication

The conclusion verifies the match between the preliminary claim and the results. Some results can be used as a practical implication and for further recommendations. Thus, this last section covers (1) conclusive findings; (2) implication; and (3) limitation, as follows:

1. Conclusive Findings

This study explores the competency components for TVET teachers in Cambodia by letting the results grounded from the participants' data. According to the inductive inference of recorded interviews with TVET teachers in Cambodia, research findings were arranged into five major components.

The competency components for technical and vocational education teachers in Cambodia were identified answering the research question. In this regard, to ensure relevancy and practicability for Cambodian context, some conclusive remarks for each component and sub-component were raised as follows:

Vocational abilities are the main component that most of the participants mentioned because they are important for TVET teachers to possess them. The research found two sub-components for vocational abilities consisting of technology knowledge and vocational knowledge (Ismail & Mohammed, 2015). These sub-components were too few to be applicable for the Cambodian context in terms of the participants' perceptions and new education reform. The participants perceived five sub-components for vocational abilities comprising technology knowledge, vocational knowledge, general knowledge, high academic knowledge, and practical work. Regarding practicability for the Cambodian context, one strategy of Incheon Declaration (2015) was to provide Cambodian teachers with technological knowledge.

Likewise, the policy and strategy for ICT in education were put into practice across the education sector for the benefits of teachers and students (MoEYS, 2018). The vocational knowledge was developed through practicing and learning over time. Vocational knowledge is one of the main focuses of TVET teacher recruitment criteria in Cambodia (Sothy et al., 2015; UNICEF, 2018). One of the exam papers for recruiting TVET teachers is general knowledge paper covering literacy, numeracy, geography, socio-economic, administration, knowledge of health and educational philosophy, tradition, environment, etc. to enhance teacher candidates' collective skills. The sub-component *practical work* is under enhancement and progress under MoLVT because during studying the pedagogical training courses for two years, TVET teacher candidates are required to settle down their internships for one particular year at the industry as a worker or technician to learn the industrial skills directly (National Technical Training Institute, 2019).

Teachers always attend the curriculum development seminars because they implement and interpret the curriculum for students learning. However, it takes time to complete a set of the curriculum and textbooks, but teachers actively attend it regularly. Curriculum development is applicable for the Cambodian context.

In other words, the research found that teaching methodology covered teaching techniques, developing education standards and regulations, technology knowledge, assessment/evaluation methods, and reflection (Kurnia et al., 2014; Malloch & Hemly, 2015). Furthermore, in Lao teaching methodology embraced instructional material preparation, learning process, and motivating (Soyvouvanh et al., 2013). There is a slight difference from the research findings; this might be due to different TVET perceptions from stakeholders, different supports to the TVET system, different TVET system, and different economic statuses. However, to be a TVET teacher, the graduates are required to get trained pedagogical courses ranging from one to two years according to the legal requirements set by different ministries in

Cambodia. Specifically, teaching techniques assessment/evaluation methods, and instructional material preparation are a few subjects of the pedagogical training courses for TVET teacher candidates. Practically, there are several guidelines and directives issued by MoEYS to teachers introducing them to some teaching techniques such as inquiry-based learning, action learning, etc. as supportive documents for their instructions. All types of Cambodian teachers are required to develop test and exam items for monthly tests and semestral tests for students every academic year, and their test items are up-to-date from year to year to meet the technological innovation. The instructional material preparation is one of the teachers' instructional responsibilities for Cambodia, but they need to be sure that relevant things are in place such as lesson plans, subject specification books, teaching content books, meeting diaries, scorebooks, parent meeting books, etc. Every school year, MoEYS inspectors go to check their instructional material preparation at their schools directly to ensure everything is ready for their instructions. Thus, the component and sub-components are feasible for the Cambodian context.

To orientate and guide TVET teachers professionally, MoEYS and MoLVT have issued a massive pile of relevant policies, standards, legal frameworks, directives, and guidelines for their implementations to ensure that everything is formal and common countrywide in Cambodia. Every school year, technical departments in charge of TVET go to visit and check the effectiveness of education standards and regulations implementation directly at schools. For example, the department of vocational orientation under MoEYS went to GTHSs to check the guideline and standard implementation effectiveness (Department of Vocational Orientation, 2019). However, MoEYS and MoLVT always invite TVET teachers to attend the workshop or seminar developing the curriculum, teaching mnemonic documents, instructional guidelines supporting their instructions from various TVET schools in Cambodia. Hence, developing and following educational standards and regulations is technically appropriate for the Cambodian context because nowadays both ministries are implementing them constantly.

The labor market knowledge is a provocative message for TVET teachers in Cambodia because it is critical. Research proposed labor market perception as a core component for TVET teachers' competencies (UNESCO, 2013b). The industrial development policy (IDP) 2015-2025 highlights the key points for TVET teachers to perceive the labor market needs in order to integrate them into their instructions (The Royal Government of Cambodia, 2015). MoLVT developed the national employment policy 2015-2025 and vocational training and labor development strategic plans 2014-2018 to support the labor market knowledge to TVET teachers. Therefore, this sub-component can be implemented with some supporting mechanisms and frameworks.

Administrative competencies skills cover communication, technology knowledge, problem-solving, class management, critical thinking, integrity, and responsibility (Paryono, 2014). Furthermore, Ismail and Mohammed (2015) found that there were eight sub-components for administrative competencies consisting of problem-solving, flexibility, professional commitment, upgrading vocational knowledge, teamwork, communication, technology knowledge, and class management. Those sub-components are not enough for Cambodian context to transform to the knowledge society because nowadays Cambodian academic society focuses more on research and development (action research, etc.).

Particularly, TVET teachers might be creative for their majors because they might attend an entrepreneurship course for one semester during teacher training programs to assist their new initiatives and start-ups (National Technical Training Institute, 2019). In addition, the entrepreneur promotion fund (EPF) that has been provided and supported financially by the Ministry of economy and finance assists those who are creative to come out with something new and innovative to run their businesses. As part of upgrading vocational knowledge, TVET teachers maybe the members of the professional learning communities for their respective subjects or majors. The communities mandate its regular meetings to discuss issues and

challenges and to share knowledge and experiences with each other in Cambodia. TVET teachers might develop themselves as reflective practitioners over time (Campbell et al., 2004). Work in teams as a collective decision and work is prolific in Cambodia because there are a lot of professional teams, associations, societies, and organizations building a bond of trust for their collective benefits. Cambodian society is plagued with social media as part of communication such as Messenger, Telegram, Instagram, Line, What's up, Viber, Wechat, and so on. In a recent academic year, the English language was put into practice to students from grade four to enhance their communication skills. Cambodian teachers' professional ethics requires teachers to exercise integrity, responsibility, and professional commitment to their performed tasks (The Royal Government of Cambodia, 2008). Intensively, TVET teacher candidates are obliged to attend the course on educational administration and class management (National Technical Training Institute, 2019). Finally, the policy on research development in the education sector creates the research culture among academic institutes targeting teachers (MoEYS, 2010). Likewise, action research has been spread out to all teachers by providing training courses by NIE lectures. Therefore, all 13 sub-components of soft skills may be applicable for the Cambodian context because there are some supportive policies and mechanisms.

Upgrading their academic degrees can be a target for Cambodian TVET teachers in the short and long run (Phakkdey, 2016). In reality, Cambodian society highly values high academic degree holders such as master's or doctoral degree holders because they might get more paid, prestigious, and promotion to a higher-ranking position later on. On the hands, the national lifelong learning policy issued by MoEYS prioritizes all kinds of teachers to pursue their further studies to upgrade their current academic degrees by allocating appropriate opportunities and resources for them. For example, TVET institute management arranges an appropriate schedule for those who studies master's degree on weekends. Thus, upgrading

vocational knowledge is so relevant to the Cambodian context supporting the government's ambition to transition to an upper-middle country in 2030 to transform the country to a knowledge society.

Teachers are always with students and support them upon requests. For example, teachers provide jog information, business information, counseling service, vocational guidance, etc. The Cambodian saying states that "teachers are the students' second parents". Thus, the component *support and understanding of learners* is applicable for the Cambodian context.

2. Implication

Employing the grounded theory approach to explore the competency components for TVET teachers in Cambodia, the findings contribute significant implications for taking actions and measures. The study provides a holistic approach for TVET teacher development for the stakeholders' considerations to leapfrog a labor-intensive economy to an industry-driven one successfully. Actions and measures can be implied from the research findings for further consideration consistently subsequently.

Similarly, the institutions should integrate administrative competencies into the curriculum and provide additional attention to practice to support vocational knowledge. Administrative competencies play an integral part in enabling students to possess vocational abilities (Ai, 2015). Thus, relevant administrative competencies should be compiled as resource books or mnemonic documents for TVET teachers reading and learning.

To improve TVET teacher competencies, research grants should be provided. Research on teacher education can be strengthened by providing the sufficient research grant (Sahlberg, 2010). For example, awarding research grants to lecturers/teachers in the field of TVET should

be formulated (Paryono, 2015). TVET research and inter-ASEAN research cooperation taskforce should be formulated (Aprilio et at., 2019). Research-based teacher education is applied to enable teachers learning (Sahlberg, 2010). However, the limited budget support for the TVET sector is a big concern for TVET development and initiatives (Bateman & Liang, 2016). The grant and budget support might play as a key catalyst in engaging teachers' academic performance. Finally, the policy on research and development in Cambodia should be putting into practice effectively under constant supports and guidance.

Some TVET teachers are creative and innovative in head and heart, but their driving forces like financial supports are a constraint. This enables them to hesitate in beginning investment in a start-up project. However, since 2018 a pilot project launched by the ministry of economy and finance provides full financial support for a new initiative in small and medium enterprises (SMEs) as part of entrepreneurship skills, which focuses on supporting a new start-up (Ai, 2018). This pilot project should be disseminated countrywide to all TVET teachers through a radio commercial program, TVET commercial spots, advertisement bans, leaflets, brochures, as well as an awareness-raising campaigns like national forums or workshops.

TVET teachers should be a critical thinker for their instructional actions to reflect on the key concepts as part of action learning. It is the process of learning from previous actions by taking time to investigate, and reflect, to get insights, and consider how to take further action (Weinstein, 1999). The process of learning can be replicated over time to intensify TVET teachers' competencies.

TVET teachers have to adapt their competency levels and characteristics to the differences in various academic settings. For this context, they should familiarize themselves with students' characteristics and academic levels as well as academic settings as part of throughput flexibility enabling students to be skillful and competent (Nieuwenhuis, Nijhof, & Heikkinen, 2002).

As a real-life problem solver, it is critical for TVET teachers because sometimes the real problem is not the consequence of humans, beyond their scopes and capacities. For example, teachers can't operate a machine because of the electricity cut or the machine itself is out of order. These factors are out of the control of humans. However, TVET teachers should be a problem solver to perform their instructional tasks for students' learning. The problem can be dealt with by using analytical and cognitive thinking as a matter of locating the correct solution so that several problems can be solved with a variety of solutions (VanGundy, 1987).

TVET teachers themselves must be curious to learn and to be developed academically. Teachers must strive to deepen and update their existing competencies on an on-going basis (Tampere University of Applied Sciences, 2016). Teachers should endeavor to attend the training courses with open hearts and desire constructively learn from each other.

Reflection requires people to think back and forth about what they have done for the purpose of providing their constructive feedback. Changing our current performances requires learning new things of behavior that articulate more accurately our professional, social and cultural environment and norms (Tucker, Price, & Diedrich, 2010). Doing it, substantial opportunities and supports should be provided particularly by TVET institutes in allocating appropriate time for them. Practicing over time can inspire TVET teachers to learn something from it under coordination and support from the management. Thus, TVET teachers should be an action learner and reflective practitioner.

To enhance teamwork skills for TVET teachers, the institute management should strengthen the existing professional learning communities for each subject/cluster. For example, issuing a format or guideline for the meeting, discussing topics, and mock teaching to each other for constructive feedback and experience sharing among the team members. To be specific, the discussing topics should cover empirical study results on instructional practices, student work, teacher work, student trends, teaching and class management, and mock teaching

to each other. However, to ensure this such discussion smoothly, a professional or expert should guide and mentor them constantly during discussing. In other words, once teacher candidates exit training programs and enter the classroom, they typically teach and work under the guidance of a trained mentor who has time and incentives to coach them (Center on International Education Benchmarking, 2019). An open dialogue helps teachers to remove uncertainty and to explore their strengths and effectiveness (Buzzing, 2004). One of the most popular vehicles to support and retain new teachers is mentoring (Carter & Francis, 2000; Feiman-Nemse, 1996; Huling & Resta, 2001 as cited in Cho & Kwon, 2002) because new teachers are often confronted with multiple responsibilities and challenges that are unfamiliar to them (Cho & Kwon, 2002). Regular mentoring intensifies teachers' professional development enhancing teachers' competencies. Therefore, TVET teachers can possess and learn real competencies and experience collectively by doing this regularly over time.

To best facilitate teacher development, professional learning communities or communities of practice should be formulated with a regular meeting basis to share knowledge and experiences among TVET teachers. Schools should be treated as the community of practice for all students and teachers (Advisory Committee on Teacher Education and Qualifications, 2003). This kind of community should be formulated for ASEAN TVET teachers to share experiences, discuss common challenges, and implement joint projects (Euler, 2018).

TVET teachers should be a good listener and communicator verbally and non-verbally. In doing this, the communication through electronic means and languages play a key role in enhancing their competencies. Electronic equipment and appliance should be installed appropriately for teacher learning. A language training course should be adhesive for individual TVET teachers as part of their professional development programs.

Regarding integrity, responsibility, and professional commitment, the teachers' professional ethics code should be strengthened by putting into a strict practice. To tackle this,

the best performer, medium performer, low performer, and unperformer will be identified for public consideration and awareness. Intensively, career ladders should be created to developing teachers' current competencies and establish culture and organization that supports professional development programs (Center on International Education Benchmarking, 2019). Teachers at the upper levels of the teacher career ladder serve as mentors to novice teachers and lead teams in the process of observing lessons, improving their practice and instructional materials, reviewing assessment data, doing school-based research (Center on International Education Benchmarking, 2019).

It is crucial to increase teachers' earnings to attract competent people into the instructional profession and to raise teachers' work which leads to high professional commitment (Grollmann & Rauner, 2007). Particularly, TVET teachers' salaries should be higher than other academic teachers' ones because TVET teachers encounter difficult, dirty, and dangerous jobs in their work settings (Ai, 2015). Recognition and rewards should be provided for outstanding teachers (Hang, 2015). In addition, they have to be smart, expertise, and diligent. For example, TVET teachers possess a head, heart, and hand. *Head* means knowledgeable, and expertise; *heart* means professional commitment and consciousness; and *hand* means know-how with work experiences (Ai, 2015). Thus, the monetary support for teacher development, large salaries, and supportive working environment should be provided for education quality (Sahlberg, 2010).

Learning can occur when teachers make sense of a subject to learners and understand learners' characteristics and need well. Supporting and motivation are primary drivers that help learners to interpret a subject into their own words for long-term memory, as a learning process. Thus, teachers should engage closely in students' learning processes to support and assist them in time when needed.

If pedagogical abilities such as teaching methods, assessment and evaluation methods,

lesson planning, curriculum development, and instructional material development should not be focused at each TVET higher education institution, the student academic outcomes will be limited. Consequently, the legislative framework should be required for TVET teachers to enhance their capacities in pedagogical methodologies by willing to attend relevant training courses (Cambodia Ministry of Labor and Vocational Training, 2017). The instructional development and contents should be emphasized on content mastery and curriculum that teachers will be expected to teach, how to evaluate results on student learning, research methods, and teaching techniques (Center on International Education Benchmarking, 2019). On the other hand, the implementation of new curricula and the introduction of new pedagogical approaches should be applied (UNESCO, 2013a). Therefore, TVET teacher training programs should focus on enhancing the quality of instructional and technical skills (UNESCO, 2018).

To keep track of updating their knowledge and innovative technology, all teachers have to take continuing career-long professional development programs (Day, 1999). Technology plays a supportive role in pushing up TVET teachers' pedagogical and vocational knowledge. Therefore, TVET teachers' pedagogical, technological, and vocational knowledge will be reached if teachers themselves and other stakeholders prioritize the TVET field.

The implementation of the competency-based model is the empowerment of TVET teachers which should be the solution to intensify teachers' vocational knowledge and skills (UNESCO, 2013a). Pedagogical content should be integrated into vocational knowledge for TVET teacher training with broader knowledge (Felix & Joachim, 2006). On the other hand, close links with industry contribute to the relevance of the teacher's vocational knowledge and skills (UNESCO, 1997). Therefore, TVET teachers should possess a tremendous command of the vocational knowledge they teach (Felix & Joachim, 2006).

TVET teachers themselves should work to gain hand-on experiences in the industry

for a period right after graduation before moving to the teaching profession. Vocational and technical education should be closely attached to the private sector in Cambodia (Khemarin, 2012 as cited in Paryono, 2015). The teachers with years of practical work with industries are very important for TVET (Mou et al., 2018). Teachers' experiences and knowledge affect the students' interest, motivation, and levels of academic achievements (Day, 1999). In this regard, employers should provide an appropriate working environment which involves teacher candidates letting them learn fruitful skills and knowledge. Competency might be developed from on-the-job training exposing to a variety of workplace activities (Trinder, 2008).

Vocational and pedagogical knowledge of teachers should be updated by attending the professional development program (Day, 1999). Specifically, vocational capacity development at each level for TVET trainers should be formulated (Cambodia Ministry of Labor and Vocational Training, 2017). In order words, TVET teachers' professional development programs reflect teaching and learning qualities (De-Paor, 2018). TVET teacher development plays an integral part in ensuring effective instruction which includes knowledge, skills, and attitude being responsive to the changing labor market needs (Yonemura, 2011). However, for TVET teachers who are not so fortunate, it is fundamental that technical officers facilitate the process and requirement about how to access this type of program. Particularly, the therapeutic system like an online platform can be customized to the TVET teachers' unique circumstances or vulnerability groups such as too rural, poor, etc. that are unable to access the program in person.

Professional development programs for TVET teachers should be provided regularly to upgrade teachers' academic degrees and to support school-to-work and work-to-school transition. To motivate competent teachers to perform well, they should be compensated sufficiently in financial rewards (Madhur, 2014). Likewise, in-service teacher training is needed for TVET teachers to acquire the required competencies ensuring that they have a good

understanding of workplace settings (UNESCO, 2013a). TVET teacher training centers should be transformed and upgraded into centers for teacher development (Hang, 2015). Particularly, TVET management should provide substantial opportunities for educators to enhance their skills and knowledge as part of the professional development (Williams, 2009).

Institutions of higher education in TVET can take concrete actions for positive change, possibly offering tuition reductions, and scholarships to attract TVET teachers in terms of their further studies. TVET teachers should engage in ongoing professional learning opportunities during their professions as life-long learners (Department of Education and Training, 2004). Broadly speaking, teacher supports should be provided through an opportunity to do further studies, training workshops or conferences, in-service inspection, study visits, and exchange programs, and mentoring and counseling programs (Hang, 2015).

On a systemic level, the government may advocate for professional organizations nearby to take the circumstances of disadvantaged groups of TVET teachers into account by providing training levy when formulating credentialing requirements for professional development programs. By facilitating and providing such programs, professional organizations may be likely to attract a mixed pool of TVET teachers with diverse backgrounds and perspectives. All educational staff should be allowed an opportunity to attend several training events required for promotion to a higher level and/or for meeting conditions for the announced licensing system (European Union, 2013).

The school-industry partnership might close the perception gap in terms of skill needs and skill provision to improve students' practice through internship programs, study visits, special lecture deliveries, apprenticeship, technology-sharing programs, and other agreements for a purpose of enhancing TVET teachers' perception of labor market needs. Particularly, the recognition program to award outstanding and active industries that engaged in TVET development should be formulated to push up this partnership successful (Aprilio et al., 2019).

Concerning the educational reform, all teachers have to be considered for quality enhancement. The government should take an avid interest into TVET to make it responsive to the needs of the industrial sector (Billett, 2011). To prove this, incentives like taxation benefit would assist the process of industry linkage (UNESCO, 1997). The quality of TVET teacher training institutions should be strengthened by linking theory with opportunities to intern in the industry (Cambodia Ministry of Labor and Vocational Training, 2017). Furthermore, TVET teacher competencies should be enhanced according to the demand-driven bases (Nielsen, 2007). Finally, TVET should be linked with the private sector in Cambodia (Khemarin, 2012 as cited in Paryono, 2015).

Overall teacher competencies serve as the framework promoting students' cognitive, affective and social processes (Peklaj, 2015) if it is implemented effectively under mutual coordination between individual teachers, institutions, and the government. The potential young people might be attracted to teaching because teachers' work is an independent and respected profession (Sahlberg, 2010) if these aforementioned components and sub-components for TVET teachers' competencies will be tackled and solved. TVET quality can be enhanced by the following research findings.

Over time, TVET teacher admission will be popular among competent young professionals. Among other factors, motivations including extrinsic and intrinsic ones should be considered to attract qualified candidates to be TVET teachers (Euler, 2018). If TVET is growing and diversified for student enrollment, the shortage of TVET teachers will be the problem. To tackle this issue, TVET teacher education is opened to high school graduates but it is also reserved a quota for practitioners with inadequate academic qualifications (Bauer, 2007). The recruitment requirements for TVET teacher training should be removed to enlarge a pool of TVET teacher candidates at TVET teacher training centers to meet the increasing number of student enrollments. But to be the government TVET teachers legally, TVET teacher

candidates have to take a competitive examination. This examination will select qualified TVET teachers from a pool of candidates. Therefore, TVET teachers' competencies can be qualified and competent.

The competency components for TVET teachers play an integral part of enhancing teacher qualification to reach the required level to achieve productive outcomes for students. Competency components can be used to test the training effectiveness and to point out training gaps for efficiency and productivity (Trinder, 2008). Due to the alarming rate of educational reforms, particularly TVET teachers are mandatory to meet the minimum standards. In some advanced countries, the teacher competency components are in place to ensure the teachers' appropriately academic qualification. However, in Cambodia soft skills, teaching methodology, hard skills, education standard/law, further studies, and labor market perception are the compounding factors in leveraging teachers' academic quality. Cambodia focuses on upgrading its TVET teachers' academic qualifications to higher degrees (Paryono, 2015). Policymakers, curriculum developers, and technical experts in developing countries are now concentrating on developing teacher competency components as part of teacher recruitment criteria. On the other hand, the competency components are different from country to country according to cultural and socio-economic contexts. This leads to various components and inconsistent in insights. Despite new efforts to the teacher competency components, more research is needed to develop a comparative study that will compare and contrast the components to find out the common insights.

The ambition to transition to an upper-middle income country by 2030 pushes Cambodia to shuffle its economy by providing a variety of TVET programs. That is why the competency components are applicable for the Cambodian context responsive to the educational reform. The competency components are a guide to actual teaching activities (Hager, 1995). By all accounts and with proven results, it is no wonder that the competency

components for TVET teachers were considered by relevant technical ministries to have been the remedy for TVET in terms of quality enhancement in Cambodia. Therefore, the students attending formal vocational training courses earn more wages (Kumar, Mandava, & Gopanapalli, 2019) to achieve the government ambition if the research findings on the TVET teachers' competency components can be implemented successfully by relevant stakeholders.

The top skills that most employers need in Cambodia are a foreign language, technical and practical skills, oral communications, problem-solving, and teamwork skills (National Employment Agency, 2018). These skills need to be intensified by TVET teachers during teaching and learning processes. To transform knowledge into practice, theoretical knowledge and practical skills are integrated (Euler, 2018). However, to enhance these skills to students as part of competency components, TVET teachers have to adapt and familiarize their competencies and characteristics to meet the minimum requirements of the found competency components. Consequently, their competency levels will be increasingly proficient over time if they engage actively in developing and upgrading their knowledge. Thus, Cambodian TVET teachers' competencies will be qualified enough being capable of comparing them with the neighboring countries' ones.

The competency components for TVET teachers can be radically implemented by relevant technical ministries in charge of TVET fields. It will, however, take time, money, and concerted efforts to achieve a fruitful outcome. Awareness-raising programs on technical education such as making concerts/performances or show, posters, comedies, commercial spots on TV, pubic advertisements, offering discount prices for those who work for TVET, would help interest the public in worthwhile pursuits. Disseminating the importance of the competency components to the public would help them to be ready academically.

More job opportunities for TVET students, especially those funded by state and local communities, would offer stable incomes for them as well as productive labor for the

community. Consultation meetings among technical ministries in charge of TVET to avoid overlapping tasks and budget, and facility and equipment sharing for student practice would help promote inter-organizational activities that would enhance government organization closeness, helping TVET management and administrators, technical officers, and faculty to focus on their specific tasks at each hierarchical level, instead of arguing for budget and activities for individual implementation. If these programs can be possibly implemented, we will undoubtedly see an increase in TVET quality, pushing up the economic growth complying with the industry development policy 2015-2025 (IDP) goal to move from labor-intensive economy to industry-driven economy. Finally, the competency components will support the government's rectangular strategic plans for overall reforms of the Cambodian labor market (Heywood et al., 1992) achieving an upper-middle-income country status.

Reflecting the conclusion, the proposed actions should be taken as follows:

- To ensure that TVET teachers perceive the labor market demands integrating them into their instruction, the government should integrate the overview of labor market needs into teacher education programs (Batholmeus & Pop, 2019).
- Relevant ministries in charge of TVET management should sit and debate to find out the common solution and try to complement the deficiencies. The major tasks of each TVET implementer, especially the ministry of education, youth, and sports (MoEYS), and the ministry of labor and vocational training (MoLVT) should be clarified in terms of provision, supervision and funding of TVET (UNESCO, 2013a). Moreover, the ways to enhance TVET are the improvement of pedagogical research quality and eliminating overlapping activities of relevant institutions (Hellwig, 2007). The ministries in charge should set rigorous entry requirements for TVET teacher candidates such as written tests, interviews, and micro-teaching (Center for International Education Benchmarking, 2019).

- Ministries in charge should offer an opportunity or support for TVET teachers to attend the professional development programs to upgrade their academic degrees. MoEYS should sponsor teachers who intend to do further studies (Hellwig, 2007). The government should put more resources for TVET development as a fund to upgrade teachers' professions (Lucas, 2007). Moreover, municipalities should ensure that each teacher can attend relevant professional development courses (Sahlberg, 2010). The federal legislation provides more funds to assist TVET teachers' professional development programs (Lynch & Ruhland, 2007). Thus, the government should issue the law enabling TVET teachers to attend an intensive training course at industrial settings to intensify hand-on skills (Paryono, 2015).
- Ministries in charge should formulate knowledge and experience-sharing forum in in terms of teaching methodologies for TVET teachers
- Ministries in charge should provide a budget scheme for TVET research action for teachers and interested scholars. Reward systems should be considered. For example, reward systems for outstanding teachers in Cambodia are salary increase, certificates of recognition, scholarships/training, and promotion (Innotech, 2010).
- TVET teachers should actively involve in the professional learning communities to to learn and share knowledge and experience with each other (Carnielli et al., 2007). Vocational teachers need continuous professional development in terms of teaching aspects (Gorman & Hamilton, 1975). The professional development programs for TVET teachers might extend the professional skills to meet the current criteria of their teaching career (Bauer, 2007).
- Technical departments in charge should involve TVET teachers in developing related guidelines, standards, and curriculum as a message informing them to be aware of and to follow them

- Teachers should endeavor to upgrade the academic degrees and desire to learn new things. Improving the competencies of currently serving teachers is a priority (Center on International Education Benchmarking, 2019). TVET teachers should be self-awareness for improving their own practices and competencies for the purposes of enhanced instruction (Nielsen, 2007). On the other hand, TVET teachers should be trained in teaching techniques and aid, information technologies, and how to produce teaching materials (Harry, 2006). Finally, teachers should acquire leadership and management which are the key catalyst for education effectiveness (Campbell et al., 2004).
- Teachers should work for a certain period right after graduation before embarking on academic careers to possess hand-on skills. However, learning from students is also crucial for teachers. The feedback from students to teachers regarding instructional methods enables teachers to make important changes (Innotech, 2010).
- Teachers should attend any communities or programs organized by the ministries or departments in charge to learn, to share, and to follow and to implement them effectively. Furthermore, teachers should formulate a professional team for sharing, developing, and planning the instructional contents and modules in consultation with other colleagues for mutual growth professionally (Nielsen, 2007).
- The government regulations on TVET in collaboration with industries should be formulated to enhance the relevance and quality of TVET service delivery (Aprilio et al., 2019). The national training board (NTB) should coordinate and harmonize relevant TVET ministries to ensure the TVET service delivery quality (UNESCO, 2013a).
- The government should make teaching attractive, first-choice job with continuous development by improving teachers' professional and social status, working conditions

and supports (Incheon Declaration, 2015). To attract competent persons into the teaching profession, the government should provide financial and social benefits to teachers (Hang, 2015) because the different terms of remuneration, and promotion can be a major challenge of frustration for TVET teachers (Euler, 2018).

- Each university offering teacher education programs should ensure updated and coordinated mobility and transfer of students across institutions (Sahlberg, 2010).
- TVET teachers should provide constant support and assistance to students when needed to help them achieve their career goals by engaging closely in students' activities.

Finally, to reach a universal goal of education for all, teachers teach, students learn, and governments act (UNESCO, 2017). Training and supporting teachers in classrooms reflect an effective way to improve the teaching profession (Hang, 2015). The communities, societies, and NGOs assist and support, and complement the drawbacks to productive outcomes. For example, non-governmental organizations (NGOs) organized teacher training programs to meet the shortage of teaching workforce for the labor market (Carnielli et al., 2007). Particularly, teachers make a tremendous contribution and concerted efforts to the improvement of student academic outcomes, which should be considered and supported by school leaders, government authorities, parents, peers, and surrounding communities (Incheon Declaration, 2015). Teacher contributions and efforts can strengthen their current competencies pushing up students' academic outcomes if they perform follow them repeatedly. As a result of skilled workers produced by TVET institutes, the knowledge society can be inspired and government ambition can be achieved for societal benefits and property.

3. Limitation

The findings of this study have to be seen in the light of some limitations. Firstly, one participant was a female teacher among 12 participants. Secondly, all participants were from public and non-government organizations (NGOs), without private sector involvement. However, this qualitative research explores the experience, and perceptions of TVET teachers on their current competencies. To generalize research findings, quantitative research should be undertaken including TVET teachers from diverse academic and social and cultural backgrounds.

One female participant was accessed during data collection. This resulted from too few female teachers (20 out of a total of 99 teachers under MoEYS) who have involved in TVET because it offers a 3-D job comprising difficult, dirty, and dangerous. On the other hand, the Cambodian context inspires female people to prefer office work to TVET work. During an interview, only one female teacher volunteered to be interviewed by the researcher. Even though she had six-month teaching experience, she had an industrial experience for over one year. Cambodian TVET system has proliferated since 2015, and some teachers prefer to move out for better living standards. In other words, most female teachers who complete their teaching service of 16 hours a week, they go out of school for household work. According to the government regulations, those who earned from at least associate degrees can be recruited as TVET teachers, but in a recent decade, TVET teachers have been upgrading their academic degrees to higher academic knowledge to catch up with technological innovation. That is why most of TVET teachers earned bachelor's degrees for the target population for this study. This means that a pool of associate degree TVET teachers doesn't represent the countrywide TVET teachers. Finally, because of TVET sector requiring more investment and efforts such as school building, equipment installation, school facilities, school space, instructional materials, private

and public partnership, and budget support for student activities such as internship, apprenticeship, and study visits, almost no private sector involves in TVET course delivery from one-year to three-year program. Therefore, the aforementioned research drawbacks are considered to be acceptable on the results because those are the minority of each group being impossible to represent the whole population.

The grounded theory approach, however, may get the direct quotes and letting the investigated participants to interact flexibly to the question and interview protocol, and researcher. The grounded theory is used to generate a component and sub-component; and it provides a better understanding of the real situation for a limited sample size (Creswell, 2012). In other words, many vocational schools/centers are providing vocational training programs for less than one year. Most of them are currently delivered by the private sector. Therefore, another grounded theory approach should be conducted targeting those teachers to testify their TVET perceptions of teachers' competency components as future research.

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Appendices

<Appendix 1> English Interview Protocol

1. Demographic Information: What is your name (optional)? Sex? Age? Academic degree? Currently teaching trade? Graduated teaching trade? Graduation year? From what school/institution? Your teaching school/institution name? Location? How long have you been teaching at this school/institution? Marital status? Contact information?
2. How do you think about the goals of the curriculum on technical education at upper secondary level in Cambodia? (Ministry of Education, Youth, and Sports, 2015)
    - To develop a harmonized character and mature sense of self-identify and more autonomy, judgment and more responsibility in their vocational and social lives
    - To enable students to master technical and professional knowledge, practical skills, and attitudes for employment and self-employment
    - To develop critical and creative thinking skills for daily lives and lifelong learning
    - To be competent in communication, cooperation, and conflict resolution developing Cambodian tradition and culture.
3. What kinds of competencies do you need to perform well instructional activities to achieve a desired outcome of students in the sense of the above mentioned goals?
4. Until now do you think that your current competencies (knowledge, skills, and attitudes) are good enough to transfer to students? Why?
5. What instructional tasks should be accomplished to the standards?
6. How do you know that your teaching activities have quality?
7. How do you become a competent teacher?

8. By your own ideas, what qualifications should technical education teachers have in order to deliver a quality service to students?

Thank you so much!

<Appendix 2> Khmer Version of Interview Protocol

១. ព័ត៌មានប្រជាសាស្ត្រ

តើអ្នកមានឈ្មោះអ្វី? (មានជម្រើស) ភេទ? អាយុ? កម្រិតសិក្សា?
តើអ្នកកំពុងបង្រៀនមុខជំនាញអ្វី?

តើអ្នកបញ្ចប់ការសិក្សាទទួលបានសញ្ញាបត្រលើមុខជំនាញអ្វី?
តើអ្នកទទួលសញ្ញាបត្រនៅឆ្នាំណា?

តើអ្នករៀនចប់ពីសាលា ឬវិទ្យាស្ថានណា? តើសាលាដែលអ្នកកំពុងបង្រៀនមានឈ្មោះអ្វី? មានទីតាំងស្ថិតនៅឯណា? តើអ្នកបាននឹងកំពុងបង្រៀននៅសាលានោះរយៈពេលប៉ុន្មានឆ្នាំ ឬខែ?

តើអ្នកបានរៀបអាពាហ៍ពិពាហ៍ហើយឬនៅ? សូមផ្តល់ព័ត៌មានទំនាក់ទំនងៗ

២. តើអ្នកគិតយ៉ាងដូចម្តេចអំពីគោលដៅកម្មវិធីសិក្សាផ្នែកអប់រំបច្ចេកទេសនៅកម្រិតមធ្យមសិក្សាទុតិយភូមិនៅកម្ពុជា?

- បណ្តុះស្មារតី និងអត្តសញ្ញាណឱ្យស្គាល់ខ្លួនឯង មានភាពម្ចាស់ការ សុភវិនិច្ឆ័យ និងការទទួលខុសត្រូវក្នុងជីវិតការងារ និងជីវិតសង្គម
- ជំរុញឱ្យសិស្សទទួលបានចំណេះដឹង ជំនាញ និងឥរិយាបទជំនាញ និងបច្ចេកទេស ដើម្បីអាចស្វែងរការងារបាន និងប្រកបរបរចិញ្ចឹមជីវិតបាន
- បណ្តុះជំនាញត្រឹះរិះពិចារណា និងច្នៃប្រឌិត ដើម្បីប្រកបរបរចិញ្ចឹមជីវិតប្រចាំថ្ងៃ និងរៀនពេញមួយជីវិត
- បណ្តុះស្មារតីឱ្យមានបំណិនខាងទំនាក់ទំនង ការសហការគ្នា និងដោះស្រាយជម្លោះ ដើម្បីអភិវឌ្ឍវប្បធម៌ និងប្រពៃណីកម្ពុជា

៣. តើអ្នកត្រូវការសមត្ថភាពប្រភេទណាខ្លះ ដើម្បីបង្រៀនសិស្សឱ្យទទួលបានលទ្ធផលល្អស្របតាមគោលដៅដែលបានកំណត់ខាងលើ?

៤. រហូតមកដល់ពេលនេះ តើអ្នកគិតថាសមត្ថភាពបច្ចុប្បន្នរបស់អ្នកដែលរួមមានចំណេះដឹង

បំណិន និង ឥរិយាបទ គ្រប់គ្រាន់ហើយឬនៅ ក្នុងការផ្ទេរទៅឱ្យសិស្ស? ហេតុអ្វី?

៥. តើមានការងារបង្រៀន និងរៀនអ្វីខ្លះដែលគួរតែបំពេញបន្ថែម ដើម្បីសម្រេចតាមស្តង់ដារមួយ ជាក់លាក់?

៦. តើត្រូវធ្វើដូចម្តេច ដើម្បីធានាថាសកម្មភាពបង្រៀនរបស់អ្នកមានគុណភាព?

៧. តើអ្នកត្រូវធ្វើដូចម្តេច ដើម្បីក្លាយជាគ្រូដែលមានសមត្ថភាព?

៨. តាមគំនិតយោបល់របស់អ្នក តើគ្រូផ្នែកអប់រំបច្ចេកទេសគួរមានលក្ខណៈសម្បត្តិអប់រំអ្វីខ្លះ ដើម្បីអាចផ្តល់សេវាដល់សិស្សប្រកបដោយគុណភាពខ្ពស់?

សូមអរគុណ

<Appendix 3> Vuthy's Transcribed Note (50 Minutes)

Students who study technical education must have three domains: knowledge, skill, and attitude. Then it is referred to the attitude that students have to know their personal identities and personal responsibility in social lives, and can live together. Annually after graduating, students possess their personal skills and some found jobs at companies, and others were self-employed.

Skill…..for example….studying a skill….mmm…when teaching students on how to mount an amplifier, after finishing this topic, students initiated to do something new following what teachers had taught them. Therefore, students can do other things as well. And students can apply their learnt knowledge to the real setting. For example, if students want to use this amplifier, they can use it directly, without buying from the market. It means that students can mount an amplifier themselves and can use it as the same as the market sells.

In order to enable students have an inventive idea, teachers teach students the main idea….and if students want to have it similar it. We just inspect it …mmm…..with the different model. Lifelong learning is that students do further studies…mmm,,.during studying, they do more research. Technological innovation is growing fast, so we have to catch up with it. We have to know technological growth. If anything new come out, we have do research on it, how to do research…..what degree we reached…mmm….and it can develop our research competencies as well.

I think it is good. It enhances good communication, cooperation. If students have high academic degree then they have a good cooperation and we develop our national culture and tradition because if we have a lot of resources, it makes our country more developed as well. To have a lot of resources, …mmm…we have to train students to be aware of their own cultures.

To deliver a good teaching, teachers have to obtain their individual competencies clearly. For example, they possess an electronics, they must have a clear picture and understanding of electronics. Secondly, they must have a psychology that is important to transfer knowledge to students. For example, during teaching …mmm…they must know what percentage students can understand. Then, the rest of them, teachers seek other methods to explain them to better understand the lesson. Another one is that teachers must possess pedagogy clearly because it relates to making a less plan with clear outlines with teaching activities…mmm…there are a lot left, …mmm…but I can think of three main domains.

It is right that help teacher trainees to possess teaching methods appropriately during one teaching hour following a pedagogical rule. It means …mmm…that they must teach students following their lesson plan for one hour.

Teachers must have an incentive idea in producing instructional materials to teach students, …mmm…producing them with an easy way in order to enable students easily to understand. Someday teachers produce another one easily….it also helps teachers to master how to produce instructional materials.

Teachers must follow a pedagogical rule. For example, during one instructional hour, what teachers should do? They should prepare lessons for one instructional hour dividing lessons into topics……mmm…lesson plans.

Then teachers have to prepare a lesson plan to teach adaptable to the lessons during one instructional hour and it also complies with the students' knowledge level. It means …mmm…that whether we prepare this lesson plan to teach matching with the students' capacities.

It means that during an instructional hour, teachers must manage the class effectively in order to engage students to turn to studies. Therefore, managing a class is important. For example, to manage one class, before starting a class, we ask students to recall the prior lessons to engage them……mmm…we provide them with one particular example….mmm…not go deeper into the lessons yet. We raise a question to relate it to the lesson that will be taught. Then students are interested in the lesson. If students are not interested into the studies, we have another method to engage them…mmm…We can show them the benefits of lessons. We set the lesson objectives….so we highlight students with our objectives to engage them in our lesson.

The teachers must have good professional ethics internally and externally. The internal process means that we teach students……mmm…our personal professional ethics…..mmm…teaching students with teaching impartiality to every student…with justice to every student including giving marks with justice to every student. Externally, teachers can't do something out of order…we must obey professional ethics strictly. It was called teachers are a million of honors. Then it makes teachers with a good honor.

It is right to educate students to have a good attitude, can live in society with good cooperation, can live together, can help each other.

I think we can't train teacher trainee to be both effective and efficient. We can't ensure both

(effective and efficient).

Psychology is the subject that teachers should know…mmm…. Only seeing students…teachers can identify those who understand or not understand the lesson.

For curriculum development, teachers should know how to develop curriculum because teachers have to develop a curriculum responsive to the…mmm… growing labor market needs. Teachers can't follow only the outdated curriculum any more.

Teachers must be competent in pedagogy because they must have a lesson plan…..transferring knowledge to students. To develop teachers' capacities, first, for example, my capacities are limited. We have to update our knowledge constantly and do research more often. And others ….MoEYS has to develop teachers' capacities because our constant knowledge can't stay the same again and again. New technology comes out more often ….mmm…if anything new comes out, MoEYS should call for teachers to be trained.

Teachers have to know how to produce instructional materials because it helps students to easily understand the lesson. For example, if we teach one electric appliance, we must demonstrate it to students. If we don't have anything to show them in explaining lessons, it is difficult for students to understand the lessons. It is necessary that …mmm…teachers have to produce instructional materials. For technical trades, computer skills are important because they relate to many topics of electronics. For example, how to draw a circuit, how to make a board requiring teachers to be competent in computer skills.

Entrepreneurship development……mmm.….teachers should know it because teachers can run their own business by opening a repairing shop or selling some materials…you can do it.

Community development ….mmm…it should be one topic for consideration. For example, a dissemination program to students to study technical education track. After graduating from technical education with technical skills, students seek a well-paid job and it helps develop the living standard of their individual community. Another one is that a lot of students are interested in studying technical education.

Total quality management …mmm…I'm not sure of it…because….

Educational philosophy..I didn't study it.

Practicum should be put…..mmm…because we studied to possess skills and we have to do practicum to better understand our skills.

Professional ethics……mmm…should be considered…teachers must have a good professional ethic. Teachers should know administrative affairs….in writing any administrative letters, teachers must know how to write it.

Human anatomy……it is unnecessary relevant to the health….it is relevant to the technical education.

Assessment of learning…assessment for learning….is important…..mmm…after teaching students, we have to give them a test to gather results and we have to evaluate it….mmm…what is the result? What level of results? What should we do to it?

Pre-history of TVET…..teachers should know it……should study it because we have to know what technology is.

By my ideas, teachers' teaching competencies are still limited. First, there are a few documents for technical education so that teachers have no documents to do research ……..mmm…If we research some documents from internet, we have to translate it. If we have Khmer documents, it will easily understand them….mmm…but if we have English documents, we have to translate it and the translation is difficult to understand its original meanings and terminology. It must have sufficient documents for doing research. Secondly, we have to train some teachers the pedagogical methods because some of them didn't attend pedagogical studies because MoEYS assign them to teach directly. …Therefore, we should enable them to study pedagogical studies to let them to know teaching methodologies. And another one is we have to update and develop teachers' capacities to meet new technology.

I think my instructional activities are not standardized currently…mmm…In order to know that our teaching is quality, we have to possess our individual knowledge/skill well. Do we know the lesson that we will teach well or not before teaching? It is also relevant to the document brought to teach…..mmm…whether it is good or not. If we are clear about these things, the quality will be reached. For example, regarding the curriculum, teachers develop their capacities but they didn't attend any training to develop their capacities…mmm…not good.

To recruit teachers, at least high academic knowledge should be considered to be a technical education teacher. For example, our students who graduated from technical education applied to be a lower secondary school teacher. It is difficult for them when to become a teacher student; there might be problems for their knowledge. …mmm…We had three students passed to be lower secondary school teachers. In our country context, at least bachelor's degree with

pedagogical studies.

To be a good teacher, they must possess a clear knowledge, pedagogy, psychology, professional ethics, punctuality, and lesson plans. If teachers know only some limited elements of knowledge, they can't teach other elements out of their limits. The curriculum should be developed responsive to the labor market. ….If we have students to practice at the factory for example, the order system of machine, we have to develop the curriculum adapting to the practice that the factory requires. …Next time, students who choose to study technical education should take an entrance exam because some of them were poor at general subjects,…mmm… especially they are poor at Maths and Physics because after graduating three years, they will get the equivalent certificate and they can take an exam to be a teacher, but if they are poor, how can they take an exam. If they are good at……mmm…if they don't want to work at the company, they can apply to be a teacher.

<Appendix 4> Vichet's Coding Note (49 minutes)

Codes	Statement
Developing the curriculum (Vichet1)	(Vichet1)I think this curriculum goal is right, but I wondered that when we determine……
Influencing skills(Vichet2)	(Vichet2)…..or we must enable students to make more choices……
Supporting students' decision making(Vichet3)	(Vichet3)…..students when they make decision on anything…mmm…they must consider thoroughly and have enough information before deciding…..mmm….before making decisions on anything…….
Guiding students to choose trades(Vichet4)	(Vichet4)When they [students] decided to choose one particular trade that their competencies of choosing anything from childhood was in a low level. For example, if they decided to choose this trade, and….
Helping students to achieve their career goals(Vichet5)	(Vichet5)……..after graduating from high school, whether their goals will be achieved? This is my question. But for this issue, I think the goals that set were good.
Guiding skills(Vichet6)	(Vichet6)This is we have to guide them heavily ……..
Guiding students to choose trades(Vichet7)	(Vichet7)…….before they decide to choose any particular trade.
Preparing trades for students(Vichet8)	(Vichet8)I think it is right because we have prepared certain skills/trades for their choices…….
Market survey skills(Vichet9)	(Vichet9)……if we survey that the labor market needs those skills/trades.
Applying research results from the government(Vichet10)	(Vichet10)I think it is right based on research done by other government organizations before.
Limiting trades for students' choices(Vichet11)	(Vichet11)If the government limits the skills/trades for students to study that they should study this or that skill/trade in order to get a job after graduating.
Goal-setting skills(Vichet12)	(Vichet12)I think it is a goal.
Learning behavior(Vichet13)	(Vichet13)Right…..lifelong learning is good……
Training skills(Vichet14)	(Vichet14)…….if we train students from a high school level how to study, and train them about…..
Inspiring the students' commitment to learning(Vichet15)	(Vichet15)……what commitment they should study, open their hearts to study for a whole life,…..
Diversifying trades for students(Vichet16)	(Vichet16)…… This is what that we set the track for students to study …..

Decision making skills(Vichet17)	(Vichet17)……meaning if they choose to study a particular trade at high school, ……
Supporting students for further studies(Vichet18)	(Vichet18)……..they have to continue their trades for further studies.
Guiding students to shift their trades (Vichet19)	(Vichet19)If they shift their thoughts to take up another trade [vocational], it is not good for them.
Setting plans to achieve goals(Vichet20)	(Vichet20)…..the important thing is set how to achieve it [goal] ……..
Creating activities to support goals(Vichet21)	(Vichet21)The goal is broad……. …….and each goal needs in-depth activities to support it.
Possessing high competencies(Vichet22)	(Vichet22)Teachers should possess typical competencies…..
Mastering professional knowledge(Vichet23)	(Vichet23)…..such as technical competences. For example, if a teacher teaches any trade ……agriculture or for me,…mmm…..
Mastering teaching methods(Vichet24)	(Vichet24)I teach social work.
Transferring technical knowledge successfully(Vichet25)	(Vichet25)I must possess how to transfer my technical knowledge to my students.
Being flexible to students' competency levels(Vichet26)	(Vichet26)And there is a variety of student competency levels requiring teachers to be flexible to student competencies…. and flexibility is also important.
Absorbing trade standards(Vichet27)	(Vichet27)……in fact we have a common standard or a specific standard for each trade……
Absorbing general education knowledge (Vichet28)	(Vichet28). ……And there is another competency related to general knowledge because something…….if needed to push up…..
Making an appropriate decision for own activities(Vichet29)	(Vichet29)…...mmmm…….self-decision making,……..
Communicating professionally for an instructional purpose(Vichet30)	(Vichet30)…….communication, and pushing up ……
Supporting students to have an inventive idea(Vichet31)	(Vichet31)…..students to have an inventive idea……
Thinking critically how to deal with the problems(Vichet32)	(Vichet32)……so it requires …. to enable students to learn the procedure how to think, …..
Being responsible for what having been done(Vichet33)	(Vichet33)……the process how to be responsible, ……mmm… And responsibility is also important.
Communicating effectively (Vichet34)	(Vichet34)…..how to communicate with others……..
Creating something new(Vichet35)	(Vichet35)……..inventiveness on things.
Managing different activities for students(Vichet36)	(Vichet36)And the thing is we have to manage different activities that students can follow for their daily uses/practice.

Guiding students for self learning(Vichet37)	(Vichet37)This is a way that students can learn themselves……..
Thinking critically for the problems(Vichet38)	(Vichet38)……and have a basic thinking skill.
Mastering teaching methods(Vichet39)	(Vichet39)When teaching them in classes…….
Integrating instructional materials for students learning(Vichet40)	(Vichet40)……..we should integrate some lessons……..
Being adhesive to Teachers' professional ethics code(Vichet41)	(Vichet41)……..teachers' professional ethics code, …….
Possessing moral behavior(Vichet42)	(Vichet42)……possessing morality and ……
Mastering technical skills(Vichet43)	(Vichet43)…….technical skills in addition for teachers.
Mastering teaching methods(Vichet44)	(Vichet44)Another thing is we teach them effectively……..
Supporting students how to live together(Vichet45)	(Vichet45)…….how to live together…..mentioned in the four pillars of education for Cambodia……
Mastering various learning skills(Vichet46)	(Vichet46)……learning to do, …..learning to be……mmm……learning to live together……
Supporting students to apply learnt knowledge (Vichet47)	(Vichet47)The important thing is to enable students to perform all combined activities together……enable them ……
Mastering learning skills(Vichet48)	(Vichet48)…….to learn to live, to learn to gain knowledge and learn to apply knowledge for students.
Adapting to the real setting(Vichet49)	(Vichet49)……adapting to their real lives and real living conditions.
Mastering teaching methods(Vichet50)	(Vichet50)And another thing is that teaching students effectively……
Exhibiting self-preparation for teaching effectiveness(Vichet51)	(Vichet51)…….to be self-prepared because teachers……
Assisting students in setting career goals(Vichet52)	(Vichet52)…….some of them [students] don't know how to set their goals……
Managing students studying(Vichet53)	(Vichet53)……sometimes, they [students] just study it,…
Guiding students for a right trade for them(Vichet54)	(Vichet54)……..but they [students] don't know what will those trades be used for?
Supporting students to set a long-term goal(Vichet55)	(Vichet55)Whether 5 or 10 years more….what will they [goals] be? We set the goals for them [students] to view a long way ahead…
Making decision for own tasks(Vichet56)	(Vichet56)…..that is the reason that I link it with the decision making process. …….and making decision on it….and accept it….meaning that I do it …mmm……not following others by making a thorough decision on it before doing it.
Thinking strategically for own	(Vichet57)If they [teachers] view their long ways to

tasks(Vichet57)	go……
Observing for better actions(Vichet58)	(Vichet58)If we observe in general for own tasks……
Evaluating one's self for teaching qualities(Vichet59)	(Vichet59)…….it is difficult to evaluate teachers' teaching qualities……
Being passionate to learn something new(Vichet60)	(Vichet60)…mmm……because nowadays some teachers are good, outstanding……mmm……and others are limited in their competencies, but not meaning that they are poor.
Recruiting students to study trades(Vichet61)	(Vichet61)But the important thing is students……in selecting students…….it is difficult to recruit them.
Guiding students to apply for a right trade(Vichet62)	(Vichet62)Some students who applied to study trades……..
Evaluating students' competencies (Vichet63)	(Vichet63)……..some [students are poor and others are good……..especially at the private schools…… so that some are poor and some are good [competent]….. ….or if they are poor…..they become so poor [incompetent].
Evaluating students' competency levels(Vichet64)	(Vichet64)…….if they [students] are good [Competent]…….they become outstanding…..
Guiding students to study trades appropriately(Vichet65)	(Vichet65)…….they [Private schools] need students to study for benefits……..
Evaluating one's own competencies(Vichet66)	(Vichet66)But in general, I know that teachers possess enough competencies……
Engaging in the professional development programs(Vichet67)	(Vichet67)…..but their capabilities [teachers] have to be further developed……called capacity development should be continued.
Mastering teaching methods appropriately(Vichet68)	(Vichet68)If teaching even though for 10 years at school,……
Conducting self-assessment more often(Vichet69)	(Vichet69)…….we should create a principle that self-assessment……..
Exhibiting a creative skill for instructional activities(Vichet70)	(Vichet70)…….we didn't create or see something new.
Mastering professional knowledge appropriately(Vichet71)	(Vichet71)……our professional knowledge has gone away…….forgetting……
Mastering teaching methods appropriately(Vichet72)	(Vichet72)…….teaching others well but……
Planning appropriately for instructional actions(Vichet73)	(Vichet73)……..should be done for this year to achieve what……and for next year to achieve what for their actions……
Reviewing own professional skills permanently(Vichet74)	(Vichet74)……or reviewing anything relevant to their technical skills……

Reviewing own pedagogical rules for a better instructional outcome(Vichet75)	(Vichet75)…….at least reviewing the pedagogical rules…….
Learning the regional context (Vichet76)	(Vichet76)……..like ASEAN moves ahead of us……..
Mastering technical skills professionally(Vichet77)	(Vichet77)For example,…….for any technical skill that teachers……
Mastering teaching methods appropriately(Vichet78)	(Vichet78)……but we still teach the old or out-of-date concepts……so that we teach students behind their contexts, meaning that we teach students to move behind others …..
Being passionate to attend the professional development programs(Vichet79)	(Vichet79)……..a number of teachers is enough……. It is necessary. For some teachers at my school, their competencies are limited….
Possessing high academic knowledge for own majors(Vichet80)	(Vichet80)……but there are a variety of disciplines/majors……..of bachelor's degrees……
Recruiting competent teachers to be a teacher(Vichet81)	(Vichet81)…..then if possible, we should recruit more teachers. But if we recruit more teachers,….
Allocating instructional resources appropriately(Vichet82)	(Vichet82)I mention that the possibility needs of teachers. And it relates to the resource deficiency.
Comparing the expected gains with the investment cost(Vichet83)	(Vichet83)…….the return on investment and expenses on them [teachers] will be much as well.
Allocating instructional resources appropriately(Vichet84)	(Vichet84)There are a few teachers in social work.
Measuring own competencies appropriately(Vichet85)	(Vichet85)If we mention the competencies……..and degrees……mmm……..asking that …..based on what standards should we have to measure. But if we measure them based on the Cambodian standards that there are only this number of teachers……
Engaging teachers in teaching profession(Vichet86)	(Vichet86)…….throughout the country……..we gather a large number of teachers…….
Mastering teaching methods(Vichet87)	(Vichet87)……..to teach at this place [schools]……teach at that place [school]….., it is difficult……
Diversifying trades for students learning(Vichet88)	(Vichet88)……but if we limit it [trade] based on the standards that……
Possessing high academic degree(Vichet89)	(Vichet89)…….teachers should have master's or doctoral degrees for some subjects/majors……
Supporting students to study hard(Vichet90)	(Vichet90)……..then it can push up students to study hard.
Making lesson plans	(Vichet91)In fact, lesson plans should be like this, like that……

appropriately(Vichet91)	
Being capable of developing relevant standards and regulations for instructional tasks(Vichet92)	(Vichet92)…..set as the standards that cover different disciplines/skills.
Executing flexibility according to own competency levels and needs(Vichet93)	(Vichet93)I think something needs to be flexible if we stress on only one thing because teachers have different disciplines/skills.
Being capable of developing relevant standards/regulations for own instructions (Vichet94)	(Vichet94)……..but we can set a minimum standard that ……mmm……we require only that……
Evaluating own competency levels in comparison with other s(Vichet95)	(Vichet95)……some teachers have a higher competency than the predetermined competency requirement level and……
Promoting students' creative ideas(Vichet96)	(Vichet96)..…..if they [students] have something unique……. of any unique topics……..
Integrating instructional competencies with the predetermined regulations appropriately(Vichet97)	(Vichet97)….that they [teachers] want to integrate [in to the standard]……
Being capable of evaluating the competency levels(Vichet98)	(Vichet98)……and now we don't have any criteria to test whether their [teachers] integration ….. is effective or responsive or not.
Enhancing teaching methods(Vichet99)	(Vichet99)But when they teach students in ……
Exhibiting creative ideas in teaching(Vichet100)	(Vichet100)……they [teachers] invent something new …..
Being capable of evaluating relevant standards/regulations for instructional purposes (Vichet101)	(Vichet101)…..in addition to the standards that have been set……..it is good……..ok.
Executing flexibility in teaching(Vichet102)	(Vichet102)I think it should be flexible…….but flexible with a higher standard that a minimum one……..it is at least that level…….meaning flexible.
Possessing evaluation knowledge for improving instructional outcomes(Vichet103)	(Vichet103)As my habit, firstly I rely on school evaluation……formal evaluation……
Assisting students to evaluate teachers' instructional actions(Vichet104)	(Vichet104)……enabling students to evaluate……
Exhibiting reflection on own instruction (Vichet105)	(Vichet105)……and I can take it [my teaching performance evaluation results]to see real results. Secondly, I often check within class……there are two checks: effectiveness and efficiency. This is the process of checking……
Supporting students to provide	(Vichet106)To check effectiveness, I always check the progress of

instructional feedback(Vichet106)	my teaching by asking my students directly……
Supporting students to provide instructional feedback(Vichet107)	(Vichet107)…….asking them for feedback, two or three times for each semester.
Checking own instructional progress from students(Vichet108)	(Vichet108)After studying for 3 or 4 weeks, I asked them about my teaching competencies …….how was it? Could they understand? Or did they have any problems?
Initiating students' salient ideas for better instructional outcomes(Vichet109)	(Vichet109)If anything arises, tell me in advance.
Checking own instructional progress from students(Vichet110)	(Vichet110)If they delay it [providing feedback on my teaching performance] until the end of the semester, it would be late that I could not go back.
Checking efficient teaching actions from students(Vichet111)	(Vichet111)……and another one is to check the efficiency for my teaching action.
Possessing high professional knowledge (Vichet112)	(Vichet112)My view …….yes good teachers…….professional knowledge is one qualification …….because as a teacher we have to reach this level….
Checking stduents' understanding levels for own instructional actions(Vichet113)	(Vichet113)Whether my teaching progress subsequently makes them [students] understand or not……
Executing and developing test items professionally(Vichet114)	(Vichet114)…..I test them by giving a test, quiz to measure their knowledge. And another one is an examination. As usual, I used these tools……they are normal……..but the school test/exam is official.
Validating students' evaluation results (Vichet115) properly	(Vichet115)We have to recognize the result of evaluation.
Mastering research competencies for own instructional action(Vichet116)	(Vichet116)……we have a competency in research ourselves, but not forgetting… …
Being passionate in learning new things(Vichet117)	(Vichet117)…..somethings, we have to continue to develop our capacities. Then, there are some workshops, seminars……mmm……we should take a time to attend them…..
Catching up with technological innovation(Vichet118)	(Vichet118)……in order to catch up with technological growth for teachers.
Proving critics for improved instruction(Vichet119)	(Vichet119)And because some standards or regulations were not set in Cambodia,……
Providing critics for improved instruction(Vichet120)	(Vichet120)…….some teachers who have never been assigned to get anything……mmm……it is not their faults.
Providing critics for improved instruction(Vichet121)	(Vichet121)….some teachers…….never attend any training [courses]……

Exhibiting own values instructionally(Vichet122)	(Vichet122)But for me, I set my value that……mmm….. Then we do it ourselves.
Being capable of developing relevant standards/regulations (Vichet123)	(Vichet123)……even though the standards were not set for each trade ……
Comparing the global context for improved actions (Vichet124)	(Vichet124)….. we must view others……..view the outside world what have they done?
Engaging in the professional development programs (Vichet125)	(Vichet125)What training [course] do they attend to strengthen their capacities?
Planning budget for instructional activities(Vichet126)	(Vichet126)Sometimes, if the government or organization didn't motivate ……..no budget support……
Attending professional development programs(Vichet127)	(Vichet127)….we should find ourselves the place where no money required for attending the training workshops.
Being passionate to learn new things(Vichet128)	(Vichet128)…….and to learn something new from them. Not paying money, just go to visit what they are doing……
Being flexible for instructional actions(Vichet129)	(Vichet129)Out of knowledge, flexibility is another one for teachers ……
Being committed in teaching professionally(Vichet130)	(Vichet130)…….and giving love in teaching, teaching with care.
Proving students with appropriate academic feedback(Vichet131)	(Vichet131)Some work relating to providing feedback to students is necessary.
Managing the class effectively(Vichet132)	(Vichet132)Thinking that if we teach more with a large number of students and feel exhausted……
Providing constructive feedback to students evidently(Vichet133)	(Vichet133)…….if we didn't correct them [students], it would not be good. This means that we engage in that wrong doing with them.
Strengthening teaching methods constantly(Vichet134)	(Vichet134)Next, strengthening capacities…….or teaching methodologies……
Intensifying research competencies practically(Vichet135)	(Vichet135)…….and competencies in research as well.
Being adhesive to the teachers' professional ethics code exceptionally(Vichet136)	(Vichet136)And a good teacher should follow the teachers' professional ethics code…….
Performing instructional actions being flexible to the required regulations(Vichet137)	(Vichet137)……..and flexibility……..flexibility based on a minimum standard.
Mastering teaching experiences sufficiently(Vichet138)	(Vichet138)For me, I have a few experiences in teaching……I have taught at Sanfrancois for one year and taught at national institute of social work for three years……..totally for 3 or 4 years.

Immersing oneself in learning processes(Vichet139)	(Vichet139)Then I need further studies……
Mastering cooperative learning activities(Vichet140)	(Vichet140)…...sitting chatting with other teachers…….or asking for something from other seasoned teachers ……
Mastering teaching experiences substantially(Vichet141)	(Vichet141)…..what were their [seasoned teachers]teaching experiences?
Being passionate to learn something from students(Vichet142)	(Vichet142)What I have learnt a lot and my strength is that I learn from students. Learning how to teach, learning how to solve problems with students……
Executing proble-solving skills following students' different characteristics(Vichet143)	(Vichet143)…….how to solve the students' problems according to their individual characteristics.
Assigning students the appropriately academic tasks(Vichet144)	(Vichet144)For example, we assign some students to work……..
Influencing students to read intentionally(Vichet145)	(Vichet145)…….to read……but they [students] didn't read……that what should we do?
Explaining the lesson in an effective way(Vichet146)	(Vichet146)And students can't understand the lessons……..what should we do?
Being passionate to learn instructional tasks from students reflectively(Vichet147)	(Vichet147)Then sometimes, students are our teachers teaching us the pedagogy…….
Mastering teaching methods exceptionally(Vichet148)	(Vichet148)…….the process how to teach them [students] to be competent.
Doing self-assessment constantly(Vichet149)	(Vichet149)I think that we are incompetent……
Engaging in learning new things(Vichet150)	(Vichet150)…….because in order to enable teachers to be competent,……..
Attending actively in the training programs offered by the government(Vichet151)	(Vichet151)…….there must be training courses……if the government provides them with a training course, it will be good, but if no……
Providing supports for teacher development(Vichet152)	(Vichet152)……there is a budget support for teachers…….
Being passionate to to attend the professional learning programs(Vichet153)	(Vichet153)…..to do their further studies at some places…….or exchange program for teachers.
Being adhesive to the regional context in comparison with one context for constructive improvement(Vichet154)	(Vichet154)If we want our standards to equalize ASEAN standards,……..
Engaging in the training programs for	(Vichet155)…….we should attend ASEAN……such as training

professional development(Vichet155)	workshops or seminars with ASEAN more often……..and for teachers, it depends on the levels.
Possessing technical skills professionally(Vichet156)	(Vichet156)Their certificates [teachers] are based on their technical skills earned.
Being adhesive to high school education levels(Vichet157)	(Vichet157)For example, if they [teachers] teach at high school level, their instructional actions should…….
Planning the budget allocated by the government effectively(Vichet158)	(Vichet158)……there must be a budget support for teachers' instructional actions…. ……
Earning a high academic degree for their professional majors (Vichet159)	(Vichet159)……..their academic degrees should be bachelor's degrees or higher……
Being adhesive to the regional context by comparing with own context (Vichet160)	(Vichet160)…..we catch up with ASEAN standards for our trades…….
Earning high academic knowledge (Vichet161)	(Vichet161)……..and for teachers teaching bachelor's degree, they should have at least master's degrees and higher for next degrees.
Exhibiting creative ideas realistically grounded from the instructional tasks(Vichet162)	(Vichet162)…..creating new knowledge themselves, …..or they [teachers] will lack inventive ideas…….
Mastering research competencies thoroughly(Vichet163)	(Vichet163)Teachers' competencies necessitate research. In order to do research,……. Teachers who don't conduct research…….
Exhibiting creative ideas for their instructional performances(Vichet164)	(Vichet164)Then I think if teachers have no creative ideas, …mmm……in order to have a creative idea for them.
Intensifying teaching methods precisely(Vichet165)	(Vichet165)…..it is difficult for them to teach students because our goals are to educate students……..
Exerting substantial and effective opportunities to create something new(Vichet166)	(Vichet166)We should offer teachers an opportunity to create something and in order to create something we must have a means of creating……
Planning the budget for instructional purposes communally(Vichet167)	(Vichet167)……..the means of budget and support for teachers' instructional tasks…
Taking a professional attitude following the professional ethics code(Vichet168)	(Vichet168)Other qualification is attitude integrated with professional ethics.
Teaching students attentively(Vichet169)	(Vichet169)Don't do or don't teach without care even though it is the government work…..if we do like this, the quality will be problem. ……
Managing an instructional time effectively(Vichet190)	(Vichet190)…..so we take an opportunity toward higher level too.

Setting instructional goals logically(Vichet191)	(Vichet191)If our goal is wanting to go up…..
Motivating students learning by providing rewards/recognition(Vichet192)	(Vichet192)Another one is encouragement for students……there are several meanings of encouragement. Sometimes one piece of paper is an evidence of encouragement but it should be issued and given in time, not delaying…….or encouragement as a budget, and opportunity……
Being committed to be perfect in own instructional tasks(Vichet193)	(Vichet193)……..competition as an opportunity for teachers. …….
Recruiting competent students to pursue further studies(Vichet194)	(Vichet194)If they [students] meet the criteria, we should dispatch them to where……further studies…
Supporting students for their further studies(Vichet195)	(Vichet195)……..offering them an opportunity to do further studies……
Engaging in the professional development programs (Vichet196)	(Vichet196)Some teachers who earned a bachelor's degree want to study a master's degree,
Influencing students to grow academically(Vichet197)	(Vichet197)…..pushing them [students] up to grow academically……
Involving in the professional development programs(Vichet198)	(Vichet198)…….not only go to study abroad, they [teachers] can study at a local university.
Mastering teaching experiences diligently(Vichet199)	(Vichet199)Experience should be considered……mmm……..before teaching, they should have experiences in their majors.
Conducting experimentation on own majors skillfully(Vichet200)	(Vichet200)For example, agriculture teachers teach agriculture, but they have never made an experiment on agricultural elements.
Executing sufficient theoretical concepts of own majors(Vichet201)	(Vichet201)….there are some teachers teaching only theories……mmm…...called theory teachers, ……..
Performing practical activities specifically (Vichet202)	(Vichet202)……practice teachers. At least let them pass practical activities in order to let them show what they have done to students.
Being flexible to the allocated resources needed for instructional tasks(Vichet203)	(Vichet203)…….but it is up to scarcity of disciplines and it is flexible based on our resource availability.
Possessing technical experiences resourcefully(Vichet204)	(Vichet204)If they graduated abroad and we need 3 years' work experience so that we will not need them [students],….. Teachers should have an experience of 3 years……as a highest level……
Learning things from the privates sector for instructional improvements (Vichet205)	(Vichet205)…..they [teachers] will go to work for a private sector……mmm…….the government loses one human resource.

Adapting to students' different characteristics objectively (Vichet206)	(Vichet206)Generally speaking, the competency levels of all students are different so that we have to know what levels we should adapt to….

<Appendix 5> Component and Sub-Component Table for Five Participants

Chantha(61 codes)		Makara(55 codes)		Chanthou(47 codes)		Nida(41 cods)		Dara(56 codes)	
	Code		**Code**		**Code**		**Code**		**Code**
Language									
73	Mastering language translation								
74	Mastering English language							132	Mastering English language
Soft skills									
Creative skills									
145	Mastering creative skills							15	Mastering creative skills
Communication skills									
88	Mastering communication skills			69	Mastering communication skills				
Critical thinking skills									
				79	Thinking critically				
Problem solving skills									
99	Mastering problem-solving skills								
Responsible behaviors									
86	Responsible behaviors			141	Responsible behaviors	17	Responsible behaviors		
Management skills									
82	Managing instructional time effectively	146	Managing instructional time effectively						
				39	Managing quality training effectively				
95	Mastering management skills							99	Managing peer teachers
Integrity behavior									
92	Exhibiting moral behaviors/attitudes	149	Exhibiting integrity behaviors	114	Exhibiting integrity behaviors				
30	Playing a role model for student							57	Educating students to maser psychological knowledge
Commitment									
				51	Guiding students to ask questions				
						76	Mastering supportive skills		

								110	Supporting students to attend skill competition
Reflective skills									
		126	Mastering reflections skills			86	Mastering reflections skills		
Flexible skills									
178	Mastering flexible skills			98	Mastering flexible skills				
Memory skills									
		158	Mastering memory skills						
Teamwork skills									
		162	Mastering job application skills						
Decision-making skills									
37	Decision-making skills							76	Decision-making skills
Conflict resolution skills									
Cooperation skills									
123	Mastering cooperation skills			61	Mastering cooperation skills			86	Mastering cooperation skills
								129	Master a mix of vocational skills
Observation skills									
124	Mastering observation skills							84	Mastering observation skills
								13	Guiding students to have soft skills
								32	Mastering presentation skills
Inspiring/influencing students									
				125	Checking academic performance by comparing lesson learnt				
								105	Following cultures of ancestors
								34	Mastering listening skills
Commitment to working									
Technology								119	Report writing to management
Technology									
27	Mastering technology knowledge	44	Mastering technology knowledge	56	Mastering technology knowledge			2	Mastering technology knowledge

Computer/ICT									
184	Mastering computer knowledge	110	Mastering computer knowledge	57	Mastering computer knowledge			96	Mastering computer knowledge
Inter net								35	Mastering internet knowledg
								75	Mastering soft skills
						16	Being alert to risk during working		
Teaching methodology									
Lesson planning									
160	Mastering lesson planning skills	102	Mastering lesson planning skills			81	Mastering lesson planning skills	29	Mastering lesson planning skills
135	Mastering teaching techniques								
129	Promising students to answer questions								
Developing instructional materials									
83	Instructional material preparation skills					83	Instructional material preparation skills	30	Instructional material preparation skills
Pedagogical knowledge									
96	Pedagogical knowledge					101	Pedagogical knowledge	54	Pedagogical knowledge
						55	Supporting students for country development		
Psychological knowledge									
76	Mastering psychological knowledge	107	Mastering psychological knowledge	84	Mastering psychological knowledge			81	Mastering psychological knowledge
Teaching methods									
86	Teaching methods	91	Teaching methods	54	Teaching methods	63	Teaching methods	61	Teaching methods
Class management skills									
44	Managing classes effectively							52	Managing classes effectively
		166	Mastering requesting the government budget						
Training skills									
22	Mastering training skills	52	Mastering training skills	20	Mastering training skills	58	Mastering training skills	78	Mastering training skills
Evaluation/assessment knowledge									

						87	Evaluation knowledge	89	Evaluation knowledge
167	Test item development					84	Test item development	103	Test item development
Goal setting skills									
170	Instructional goal setting								
						2	Supporting students to do self-assessment		
Research competency									
						89	Mastering thesis writing skills		
137	Mastering research competency								
						90	Guiding students to defend theses		
Teachers' professional ethics code				82	Supporting students in teaching practicum				
98	Being adhesive to teachers' professional ethics code				Being adhesive to teachers' professional ethics code			69	Being adhesive to teachers' professional ethics code
Curriculum development									
97	Curriculum development knowledge	41	Curriculum development knowledge	76	Curriculum development knowledge	82	Curriculum development knowledge	42	Curriculum development knowledge
							Guiding students to have accountability skills		
		34	Inspective interns working						
Supporting, helping, enabling, and influencing students									
Internship									
				97	Mastering comparison skills				
						8	Guiding students to have judgment skills		
		69	Recommending students to change their rooms			88	Mastering protocol skills for graduation		
29	Supporting students to get technology knowledge								
			Supporting students in having conflict resolution skills					116	Inspecting teachers teaching
		32	Influencing students to respect school disciplines						

		160	Inspiring students to work hard						
Creative skills									
		77	Helping students in building trust to others						
		19	Guiding students in mastering planning skills						
15	Assisting students to have technical skills	100	Assisting students to have technical skills	2	Assisting students to have technical skills	97	Assisting students to have technical skills		
Community development									
89	Community development knowledge			37	Community development knowledge			66	Community development knowledge
		80	Supporting students in informing their parents						
				34	Helping villagers to set market prices			63	Being competent in planning skills
						3	Guiding students to have decision making skills		
		31	Prevent students from dropping out						
1	Supporting students to have self-identities	98	Supporting students to have self-identities						
		78	Assisting students' parents in providing academic outcomes						
								9	Assisting students to possess vocational skills
5	Supporting students to have responsibilities	92	Supporting students to have responsibilities			11	Supporting students to have responsibilities		
11	Supporting students to have entrepreneurship skills					37	Assisting students to have entrepreneurship skills		
				70	Acknowledging Khmer social ethics				
34	Assisting students to teach					68	Supporting students to do practicum	100	Assisting students to teach
						10	Supporting students in preventing danger		
				31	Exhibiting comparison skills				
Administration work									

				63	Comprehending administration work			73	Comprehending administration work
				127	Allocating instructional resources				
Recruiting and selection skills									
				96	Mastering assigning skills to students				
		116	Recruiting new teachers	145	Recruiting new teachers			108	Recruiting new teachers
				107	Building affective domain for work success			118	Providing teaching feedback to teachers
Supporting students in research competencies									
		36	Facilitating students' internship programs					46	Facilitating students' internship programs
Supporting students to have integrity behaviors									
				104	Guiding students to learn	64	Support students to learn		
				108	Assisting students to have integrity behaviors				
				5	Educating students to be aware of various professions				
		86	Supporting students to have teamwork skills						
						54	Supporting students to have nationalism		
						5	Guiding students to ask permission from parents		
Supporting students to have decision making skills									
Supporting students to have critical thinking skills									
13	Supporting students to have critical thinking skills		Supporting students to have critical thinking skills			62	Supporting students to have critical thinking skills		
Supporting students to learning behaviors									
51	Supporting students to have learning behaviors	136	Supporting students to have learning behaviors			44	Supporting students to have learning behaviors	6	Supporting students to have learning behaviors
Helping students to have career goals									
3	Helping students to have career goals								
		56	Supporting students to have communication skills			52	Supporting students to have communication skills		

								33	Supporting students to have computer skills
Supporting students to be employed									
		133	Supporting students to be employed	3	Supporting students to be employed	95	Supporting students to be employed		
		83	Supporting students to do household work						
		67	Supporting students to fulfill their requests						
Supporting students to choose appropriate trades									
		159	Inspiring students to love teaching profession			41	Helping students to have creative skills		
				138	Facilitating students' internships				
		169	Supporting peer teachers						
				72	Mastering hard working behavior				
		89	Enabling students to share academic achievements						
		85	Assisting students in having humor skills			50	Guiding students to have conflict resolution skills		
Standards/norms/regulations									
Being alert to standards									
101	Being alert to standards	124	Being alert to standards	135	Being alert to standards	43	Being alert to standards	109	Being alert to standards
		154	Achieving primary career goals						
Developing standards									
		122	Developing technical standards	128	Developing technical standards				
						99	Mastering predicting skills		
Mastering practical work									
71	Mastering practical work	132	Mastering practical work	34	Mastering practical work	75	Mastering practical work	31	Mastering practical work
Mastering professional/technical knowledge									
69	Mastering vocational knowledge			42	Mastering vocational knowledge	61	Mastering vocational knowledge	130	Mastering vocational knowledge
Labor market knowledge									
38	Knowledge of labor market needs	16	Knowledge of labor market needs	26	Knowledge of labor market needs	25	Knowledge of labor market needs		

		68	Helping students to have problem-solving skills						
Mastering learning behaviors									
64	Mastering learning behavior	91	Mastering learning behavior	40	Mastering learning behavior	45	Mastering learning behavior	8	Mastering learning behavior
High academic knowledge									
176	Earning high academic knowledge	140	Earning high academic knowledge			102	Earning high academic knowledge	128	Earning high academic knowledge
				85	Guiding students to know labor market needs				
Science knowledge									
				52	Mastering knowledge of quality control				
				45	Mastering talking skills			40	Mastering predicting skills
117	Evaluating teachers teaching								
General education knowledge									
		10	Being adhesive to high school knowledge					3	General education knowledge
			Helping students to manage their time						
112	Mastering philosophy knowledge			77	Mastering philosophy knowledge			82	Mastering philosophy knowledge
Entrepreneurship									
85	Entrepreneurship skills							65	Entrepreneurship skills
Human Development Knowledge									
111	Human Development Knowledge								
128	Answering students' questions	153	Answering students' questions						
28	Supporting students to have learning behaviors								
114	Appreciating instructional documents								
10	Supporting students how to live together								

Global and regional context									
		17	Being adhesive to regional/global context						
Planning skills									
		75	Assigning students to get counseling services						
		108	Mastering external skills						
		156	Exhibiting hard working behavior						
		18	Supporting students in learning TCT						
78	Guiding students to take a test	55	Assisting student to take a final exam						
								98	Allocating budget for instructional supports
168	Assigning students to work					21	Assigning work to technicians		
19	Guiding students in finding out financial supports								
				71	Mastering predicting skills			50	Supporting students in doing internship
				75	Buddhism knowledge				
				74	Human anatomy				
				73	Health knowledge				
		82	Provide students with dormitory					72	Assisting ministry officers to deliver presentation
116	Inspecting teachers teaching								
		72	Providing students with solution					101	Supporting students in learning English language
100	Controlling own anger toward students								
122	Challenging teaching practicum							4	Guiding students to take entrance exam

				7	Advising students to have positive attitude toward work	30	Advising students to have positive attitude toward work	25	Exhibiting positive attitude toward work
		35	Persuading students to go back to school after an internship					7	Students' interests on technical education

<Appendix 6> Component and Sub-Component Table for Another Five Participants

Sara (51 codes)		**Vichet(52 codes)**		**Sok(57 codes)**		**Sopheak(46 cods)**		**Vuthy(V)(50 codes)**	
	Code		**Code**		**Code**		**Code**		**Code**
Language									
89	Adapting technical terminology to the real setting							127	Mastering language translation
83	Mastering English language							70	Mastering English language
Soft skills									
Creative skills									
20	Mastering creative skills	164,	Mastering creative skills			36	Mastering creative skills	25	Mastering creative skills
Communication skills									
35	Mastering communication skills	34	Mastering communication skills	58	Mastering communication skills				
Critical thinking skills									
		57	Thinking critically	2	Thinking critically			22	Thinking critically
Problem solving skills									
72	Mastering problem-solving skills	143	Mastering problem-solving skills	61	Mastering problem-solving skills	20	Mastering problem-solving skills		
Responsible behaviors									
		33	Responsible behaviors						
Management skills									
		190	Managing instructional time effectively			89	Managing instructional time effectively	93	Managing instructional time effectively
				77	Managing workplace effectively				
								57	Mastering management skills
Integrity behavior									
		42	Exhibiting moral behaviors/attitudes	94	Exhibiting integrity behaviors			35	Exhibiting integrity behaviors

Commitment									
97	Being committed to working hard	193	Being committed to working hard						
Reflective skills									
		147	Mastering reflective skills						
				143	Doing self-assessment				
Flexible skills									
77	Mastering flexible skills	93	Mastering flexible skills	74	Mastering flexible skills			30	Mastering flexible skills
Memory skills									
28	Mastering memory skills								
Teamwork skills									
26	Mastering teamwork skills			75	Mastering teamwork skills				
60	Mastering self-preparation								
59	Mastering questioning skills								
Decision-making skills									
		29	Decision-making skills						
Conflict resolution skills									
Cooperation skills									
		140	Mastering cooperation skills						
Observation skills									
		58	Mastering observation skills	150	Mastering observation skills				
Inspiring/influencing students									
79	Influencing smart students to learn hard	197	Influencing smart students to learn hard	148	Influencing smart students to learn hard				
22	Advising students to have positive attitudes			176	Advising students to have positive attitudes				
93	Motivating students to ask questions								
				59	Guiding students to learn general knowledge				
				51	Helping students to manage budget				
						31	Mastering transferable skills		
Commitment to working									
97	Being committed to working								

Technology									
Technology									
14	Mastering technology knowledge	118	Mastering technology knowledge			52	Mastering technology knowledge	66	Mastering technology knowledge
Computer/ICT									
91	Mastering computer knowledge			116	Mastering computer knowledge			50	Mastering computer knowledge
Internet								69	Mastering internet skills
General									
4	Mastering development knowledge								
130	Interns play like a kid during an internship								
Teaching methodology									
Lesson planning									
12	Mastering lesson planning skills	91	Mastering lesson planning skills			90	Mastering lesson planning skills	24	Mastering lesson planning skills
Teaching technique						92	Mastering teaching techniques	119	Mastering teaching techniques
78	Different teaching technique								
Developing instructional materials									
						96	Instructional material preparation skills	26	Instructional material preparation skills
Pedagogical knowledge									
		75	Pedagogical knowledge	68	Pedagogical knowledge			73	Pedagogical knowledge
Psychological knowledge									
				103	Mastering psychological knowledge			40	Mastering psychological knowledge
Teaching methods									

67	Teaching methods	78	Teaching methods	66	Teaching methods	85	Teaching methods	34	Teaching methods
		25	Transferring technical knowledge	111	Transferring technical knowledge				
Class management skills									
		132	Managing classes effectively					31	Managing classes effectively
Training skills									
115	Mastering training skills	14	Mastering training skills					39	Training students effectively
Evaluation/assessment knowledge									
		103	Evaluation knowledge	146	Evaluation knowledge	68	Evaluation knowledge	64	Evaluation knowledge
		114	Test item development			75	Test item development		
Goal setting skills									
		21	Instructional goal setting						
Research competency									
131	Mastering research competency	35	Mastering research competency	82	Mastering research competency	42	Mastering research competency	13	Mastering research competency
		9	Mastering survey skills	149	Mastering survey skills				
				93	Writing theses skills				
Teachers' professional ethics code									
		41	Being adhesive to teachers' professional ethics code	92	Being adhesive to teachers' professional ethics code	98	Being adhesive to teachers' professional ethics code	61	Being adhesive to teachers' professional ethics code
Curriculum development									
		1	Curriculum development knowledge	79	Curriculum development knowledge	17	Curriculum development knowledge	41	Curriculum development knowledge
						109	Textbook development skills		
Supporting, helping, enabling, and influencing students									
Internship									
108	Checking progress during an internship								

118	Assigning interns to the internship site			60	Assigning interns to the internship site				
123	Advising students to work hard during an internship								
109	Coordinating between interns and industry site owners							59	Coordinating between interns and industry site owners
				78	Influencing students to respect school disciplines				
Creative skills									
13	Supporting students to have creative skills	31	Supporting students to have creative skills			7	Supporting students to have creative skills	4	Supporting students to have creative skills
2, 102	Assisting students to have technical skills	47	Assisting students to have technical skills	173	Assisting students to have technical skills	76	Assisting students to have technical skills		Assisting students to have technical skills
Community development									
103	Supporting students by raising alumni's experiences as a model								
126	No financial supports from schools during an internship								
94	Supporting students to do presentation								
1	Supporting students to have self-identities					1	Supporting students to have self-identities	1	Supporting students to have self-identities
70	Advising students to have prior safety								
95	Supporting students in adapting themselves to the real setting								
24	Supporting students to learn language skills								
						2	Supporting students to have responsibilities	6	Supporting students to have responsibilities
						5	Supporting students to have entrepreneurship skills	104	Supporting students to have entrepreneurship

									skills
		145	Influencing students to read						
				179	Assisting students to teach	113	Assisting students to teach		
				30	Possessing supportive skills/knowledge				
				40	Challenging difficulties in instructional actions				
Administration work									
				167	Comprehending administration work			126	Comprehending administration work
Recruiting and selection skills									
122	Recruiting a competent intern	194	Recruiting competent students						
		86	Recruiting new teachers	69	Recruiting new teachers	110	Recruiting new teachers	82	Recruiting new teachers
				173	Mastering interview skills				
Supporting students in research competencies									
16, 23	Supporting students to have research competencies							9	Supporting students to have research competencies
						108	Assisting students in writing a thesis		
Supporting students to have integrity behaviors									
3	Supporting students to have integrity behaviors								
				41	Guiding students to learn science				
						74	Supporting students to get formal recognition from society	38	Supporting students to live harmoniously
88	Supporting students to have comparison skills								
								114	Assisting students to learn general subjects

								2	Guiding students to have personal skills
						21	Supporting students to have teamwork skills		
62	Supporting students to have memory skills			182	Supporting students to have memory skills	86	Supporting students to have memory skills		
						16	Supporting students to have nationalism	15	Supporting students to have nationalism
						63	Guiding private schools to get supports		
Supporting students to have decision making skills									
		3	Supporting students to have decision making skills						
Supporting students to have critical thinking skills									
				43	Supporting students to have critical thinking skills	6	Supporting students to have critical thinking skills		
Supporting students to learning behaviors									
		37	Supporting students to have learning behaviors	44	Supporting students to have learning behaviors			11	Supporting students to have learning behaviors
Helping students to have career goals									
		5	Helping students to have career goals	102	Helping students to have career goals				
						18	Supporting students to have communication skills		
						25	Supporting students to have management skills		
Supporting students to be employed									
							Supporting students to be employed	86	Supporting students to be employed
Supporting students to choose appropriate trades									
		19	Supporting students to choose appropriate trades			111	Supporting students to choose appropriate trades		

Supporting peer teachers									
		152	Supporting peer teachers	129	Supporting peer teachers	67	Supporting peer teachers		
Standards/norms/regulations									
Being alert to standards									
		157	Being alert to standards	172	Being alert to regulations	114	Being alert to regulations		
				76	Following socio-cultural norms				
Developing standards									
		92	Capacities to develop relevant standards						
Mastering practical work									
54	Mastering practical work	156	Mastering practical work	119	Mastering practical work	51	Mastering practical work	60	Mastering practical work
Mastering professional/technical knowledge									
		71	Mastering vocational knowledge	107	Mastering vocational knowledge	103	Mastering vocational knowledge	85	Mastering vocational knowledge
Labor market knowledge									
51	Knowledge of labor market needs							96	Knowledge of labor market needs
Mastering learning behaviors									
57	Mastering learning behaviors	196	Mastering learning behavior			55	Mastering learning behavior	67	Mastering learning behavior
High academic knowledge									
30	Earning high academic knowledge	80	Earning high academic knowledge	63	Earning high academic knowledge	102	Earning high academic knowledge	87	Earning high academic knowledge
Science knowledge									
				13	Adhesive to science subject			106	Adhesive to science subject
General education knowledge									
85	Mastering general education	28	Absorbing general education	40	Absorbing general education				

	knowledge		knowledge		knowledge				
								65	Mastering history knowledge
						8	Being alert to higher education knowledge		
								58	Mastering philosophy knowledge
Entrepreneurship									
				184	Entrepreneurship skills			51	Entrepreneurship skills
125	Blamed by internship site owners								
129	Internship site owners provide interns with stipends								
47	Assigning peer teachers to work in different specialized parts								
117	Knowing the attitudes of each internship site owner								
				9	Not forcing students for money				
		83	Comparing the expected gains with the invest cost			81	Mastering comparison skills		
		133	Providing constructive feedback to students						
						97	Judging instructional challenges	78	Appreciating instructional documents
		45	Supporting students how to live together						
				28	Initiating constructive ideas				
				128	Possessing good academic background				
Global and regional context									
		160	Being adhesive to	50	Being adhesive to				

			regional/global context		regional/global context				
Planning skills									
		158	Planning instructional resources effectively			38	Planning instructional resources effectively		
				160	Planning skills				
				46	Planning budget				
				163	Mastering predicting skills				
				165	Classifying poor and advance countries after teachers' graduation				
				7	Quantities of instructional outcomes				
						62	Instructional materials for private schools		
						87	Doing self-preparation for social respects		
								99	Supporting students to take entrance examinations
						100	Techers' titles		
								63	Mastering health knowledge
								53	Disseminating the importance of technical education programs
								10	Mastering inspection skills

<Appendix 7> Component and Sub-Component Table for Another Two Participants

Vichea(41 codes)		**Piseth (66 codes)**	
	Code		**Code**
116	Mastering English language	159	Mastering English language
		143	Mastering creative skills
115	Mastering communication skills	32	Mastering communication skills
		138	Correcting old mindsets
		22	Thinking critically
85	Mastering exploring skills		
5	Mastering problem-solving skills	132	Mastering problem-solving skills
41	Mastering personal skills		
75	Managing instructional time effectively	75	Managing instructional time effectively
		70	Exposing students to learning internet knowledge
113	Being committed to working hard		
		129	Reflection skills
59	Mastering flexible skills	97	Mastering flexible skills
		126	Supporting students in doing internship
		136	Mastering teamwork skills
23	Motivating students to study hard		
		130	Mastering cooperation skills
		131	Mastering observation skills
77	Supporting students to identify the problem		
39	Supporting students to manage instructional time		
89	Mastering technology knowledge	44	Mastering technology knowledge
81	Mastering computer knowledge		Mastering computer knowledge
		65	Mastering internet skills
		4	Supporting students to take note
		152	Mastering lesson planning skills
		25	Assisting students to discuss the challenges
		154	Sharing teaching experience
		54	Mastering presentation skills
		98	Being alert to the educational challenge
68	Instructional material preparation skills	162	Instructional material preparation skills
		133	Mastering democratic behavior
		127	Students are poor to access service
			Motivating students to have meeting skills
98	Teaching methods	49, 71	Teaching methods

		13	Comparing teaching methods
78	Managing classes effectively		
		39	Mastering summary skills
		158	Mastering training skills
		120	Requesting the company to train teachers
		28	Supporting students to have communication skills
		47	Test item development
		108	Comparing teachers' teaching capacities
119	Mastering research competency	43	Mastering research competency
36	Assisting students to have cooperation skills		
		89	Mastering writing skills
48	Supporting students to teach		
27	Supporting students to have creative skills		
		68	Supporting students to have presentation skills
		164	Reading material instructions
		24	Supporting students to have teamwork skills
56	Advising students what is right and wrong		
		151	Assigning teachers to teach
		105	Enabling students to have practical skills
		15	Being competent in working with others
		16	Helping students to have critical thinking skills
34	Supporting students to have teamwork skills		
		87	Mastering guiding skills
38	Guiding students to have responsible behavior		
49	Supporting students to have communication skills		
91	Supporting students to be employed	128	Supporting students to be employed
60	Supporting students to gain professional knowledge		
		10	Influencing students to have entrepreneurship skills
		58	Supporting students to catch up explanation
		157	Being alert to regulations
		155	Supporting peer teachers
111	Mastering practical work	74	Mastering practical work
		63	Guiding students to master research competencies
46	Mastering vocational knowledge	48	Mastering vocational knowledge
		116	Knowledge of labor market needs
55	Supporting students to learn general knowledge	137	Motivating students to raise ideas
69	Assisting students to have memory skills		
92	Mastering learning behaviors	102	Mastering learning behaviors
58	Comparing context to context		
110	Earning high academic knowledge		

108	Supporting students to share their knowledge		
80	Mastering soft skills		
73	Mastering self-assessment		
72	Supporting students to practice		
63	Mastering general education knowledge		
1	Mastering technical education	33	Mastering technical education
114	Entrepreneurship skills	114	Entrepreneurship skills
21	Supporting students to have entrepreneurship skills		
		52	Appreciating instructional documents
95	Requesting government to organize a training workshop		
		112	Discriminating education areas between rural and urban
		40	Applying student-centered approach
		31	Being competent in global context
		119	Cooperating with company
		140	Supporting students to raise teachers' mistakes
		163	Guiding students how to get maintenance
		72	Assisting students to have foreign language skills
		142	Mastering meeting skills

<Appendix 8> Table of Step-by-Step Data Saturation

No.	First (5 participants)	Second (5 participants)	Third (2 particpants)
1	English	English	English
2		Language translation	
3	Creativity	Creative skills	
4	Communication	Communication	Communication
5	Responsibility		
6	Time management	Time management	Time management
7	Flexibility	Flexibility	Flexibility
8	Reflection		
9	Decision making		
10	Cooperation		
11	Observation skills	Observation skills	
12	Technology	Technology	Technology
13	Computer	Computer	Computer knowledge
14	Lesson planning	Lesson planning	
15	Instructional material development	Instructional material development	Instructional material development
16	Pedagogy	Pedagogical knowledge	
17	Psychology	Psychology	
18	Class management	Class management	
19	Training skills	Training skills	
20	Evaluation	Evaluation knowledge	
21	Test item development	Test development	
22	Research competency		Research competency
23	Thesis writing		
24		Survey skills	
25	Professional ethics	Professional ethics	
26	Curriculum development	Curriculum development	
27	Assisting students to have technical skills	Assisting students to have technical skills	
28	Community development		
29	Supporting students to have self-identities	Supporting students to have self-identities	
30	Supporting students to have responsibilities	Supporting students to have responsibility	
31	Assisting students to have entrepreneurship		
32	Assisting students to teach	Assisting students to teach	

33	administration work	Administration work	
34	Recruiting students and teachers	Recruiting students	
35	Facilitating student internship		
36	Guiding students to learn		
37	Supporting students to have critical thinking skills	Supporting students to have critical thinking skills	
38	Supporting students to have learning behaviors	Supporting students to have Learning behaviors	
39	Supporting students to have communication		
40	Supporting students to be employed	Supporting students to be employed	Supporting students to be employed
41	Following standards	Following standards	
42	Development standards	Developing standards	Developing standards
43	Practical work	Practical work	Practical work
44	Vocational knowledge	Vocational knowledge	Vocational knowledge
45	Labor market	Labor market	
46	Mastering learning behaviors	Mastering learning behaviors	Mastering learning behaviors
47	High academic knowledge	High academic knowledge	
48	General education knowledge	General education	
49	Philosophy		
50	Entrepreneurship	Entrepreneurship	Entrepreneurship
51	Advising students to have Positive attitudes	Advising students to have Positive attitudes	
52		Problem-solving skills	Problem solving
53		Integrity	
54		Commitment	
55		Teamwork	
56		Influencing students to work hard	
57		Teaching techniques	
58		Teaching methods	Teaching methods
59		Supporting students to have creative ideas	
60		Supporting students to have research competencies	
61			Supporting students to have teamwork skills
62		Supporting students to write theses	
63		Supporting students to have memory skills	
64		Supporting students to have nationalism	

65		Helping students to have career goals	
66		Supporting students to choose appropriate trades	
67		Science subjects	
68		Panning instructional resources.	