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## **Solutions for the improvement of regional TVET quality in the wake of ASEAN Economic Community (AEC)**

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### **Abstract**

The establishment of ASEAN Economic Community (AEC) in 2015 with the intention of creating a single regional market and integration of ASEAN into the global economy has posed many challenges for the countries in the region. Labour mobility is still hampered due to differences in qualifications, language barriers, and the lack of uniformity in standards within the region. Playing an important role in providing trained labour resources, TVET in ASEAN also encounters many challenges regarding the assurance of training quality, the mutual recognition of qualifications at regional level, the lack of quantity and quality of TVET teachers and instructors, the lack of cooperation between TVET and the industrial sector, the standardization and harmonization in TVET across the region, and the difficulties in making policies and in governance. Based on the information of the current situation as well as the existing instruments of TVET in ASEAN, this paper suggests some solutions to deal with the mentioned issues. Some examples to be noted are fostering the implementation of cooperative training model (CTM), developing regional/ national standards of in-school teachers and in-company instructors, developing Regional/ National Vocational Qualification Framework, setting Regional/ National Occupational Skill Standards, and establishing Regional/ National Institutions of TVET Accreditation.

**Key words:** *National Vocational Qualification Framework (NVQF), Regional Vocational Qualifications Framework (RVQF), cooperative training model (CTM), in-company teacher, in-school instructor, vocational teacher education (VTE).*

### **1 Background**

For a people-centered sustainable development, many countries in Asia have taken part in regional congresses, which promote the development of TVET and VTE. The Hangzhou Declaration 2004 with 68 participants from 25 countries discussed the challenges in promoting intercultural understanding and knowledge sharing among developed and developing countries, the lack of research culture for the development of TVET, the fragmentation in VTE, the importance of developing TVET, and VTE and restructuring of TVET systems (UNESCO – UNEVOC 2004). In 2008, the First World Congress on Teacher Education for Technical and Vocational Education and Training (TVET) was organized in Indonesia and adopted the Bandung Declaration on TVET Teacher Education “Shaping TVET-Teacher Education for the changing world of work” calling for high quality initial teacher education for an improvement in vocational skills for employability and citizenship, linking expertise in the pedagogy of TVET with integrative perspectives on school-based and work-based learning.

The Association of Southeast Asian Nations (ASEAN), which represents an active region within the emerging economies in Asia, has also been promoting cooperation between nations across the region as well as beyond the region. Based on geographical similarity and mutual understanding, the ASEAN Economical Community (AEC) was founded in 2015, which facilitates the free flow of goods, services, investment and capital across the region and fosters the integration of the ASEAN to the global economy (ASEAN Secretariat 2015a, 2015b). The establishment of the AEC not only opens many opportunities for the member countries, but also brings them many considerable challenges. As one of the key areas providing a trained labour force for the regional labour market in the context of AEC, TVET in ASEAN is, therefore, also encountering many relevant challenges regarding:

Assurance of training quality, improving curricula and the manner of training to be in line with the demands of the real working environment,

- the issues of mutual recognition of qualifications in order to facilitate the free flow of services, which allows the free mobility of a trained labour force,
- the issue of standardization and harmonization in TVET across the region,
- the lack of quantity and quality of TVET teachers and instructors,
- the lack of cooperation between TVET sector and industrial sector,
- the lack of information about job opportunities across the region,
- the difficulties in making effective policies in the field of TVET due to the lack of the comprehensive researches in TVET,
- the application of environmentally friendly technologies to develop the “Green TVET”.
- the low funding from governments,
- the low attractiveness of TVET to young people (Gennrich 2016, on behalf of RAVTE).

In order to address such challenges, the recent debates of the ASEAN, the United Nations Educational, Scientific, and Cultural Organization (UNESCO), the Southeast Asian Ministers of Education Organization (SEAMEO), the Regional Cooperation Platform (RCP), the Regional Association of Vocational Teacher Education (RAVTE), the International Labour Organization (ILO), the Colombo Plan Staff College (CPSC), the East Asia Summit, the Asia-Pacific Economic Cooperation (APEC), the Asia Europe Meeting (ASEM) and the German Development Ministry (BMZ) discussed and applied many initiatives in TVET. Some featured initiatives can be mentioned, such as the National Qualification Framework (NQF), the TVET Quality Assurance Framework suggested by East-Asia Summit (EAS TVET QAF), the ASEAN qualification reference framework (AQRF), and the publication of the journal TVET@Asia. The SEAMEO VOCTECH also discussed ten concrete initiatives to improve the quality of TVET in the period of ASEAN economic integration:“(1) TVET quality assurance, (2) qualification framework, (3) relevancy of curriculum to incorporate green technology, employability skills including entrepreneurship and high order thinking skills, (4) articulation, (5) authentic teaching-learning and assessment, (6) ICT in TVET, (7) research and development, (8) access and equity, (9) lifelong learning, and (10) graduate

employability” (Paryono 2013 b; SEAMEO VOCTECH 2013). At the same time, the representatives of RCP, CPSC, SEAMEO VOCTECH, UNESCO Bangkok, German Corporation for International Cooperation (GIZ), ASEAN University Network (AUN), Rajamangala University of Technology Thanyaburi (RMUTT) also issued the Thanyaburi Statement in 2013 (Schröder 2017) with a consensus on five action orientations:

- (1) enhancing the cooperation and exchange of the best experience in the field of Vocational Teacher Education (VTE),
- (2) developing VTE and TVET into an independent scientific discipline, intensifying the exchange of research results in the region,
- (3) strengthening research in VTE,
- (4) raising awareness of the importance of TVET and VTE for policymakers at the national and regional level, and
- (5) improving frameworks and instruments to foster the development of VTE and to measure the effectiveness and efficiency of policies and carrying out VTE strategies (AUN, CPSC, RCP, RMUTT, SEAMEO VOCTECH, & UNESCO Bangkok 2013) .

Within such a context, this paper aims to present further discussion regarding the solutions to improve the quality of TVET during the ASEAN economic integration with the challenges mentioned above.

**Methodology:** The paper uses the theoretical research method, in which, the researcher collects and analyses information as well as evidence about the current situations and existing instruments in the field of TVET in the region as the basis for suggesting the solutions for the improvement of TVET quality in the period of ASEAN economic integration.

## **2 Some solutions for improving TVET quality against the backdrop of ASEAN economic integration**

### **2.1 First issue: Professional development of TVET teachers and personnel**

To develop TVET, the professionalization of TVET teachers plays a significant role, thus, this issue is emphasized in many TVET discussions in the region (UNESCO-UNEVOC 2012; Witaya 2013; Lipsmeier 2013; AUN, CPSC, RCP, RMUTT, SEAMEO VOCTECH, & UNESCO Bangkok 2013; Sharifuddin 2014; BMZ 2015; Vu X.H. 2016; Diep 2016; Gennrich 2016). Currently, there are two forms of VTE worldwide as well as in the region basically: concurrent model and consecutive model.

- Concurrent model refers to the fact that the training of technical expertise is implemented in parallel with the training of pedagogical competence. This form helps to enhance the professionalism of VTE and helps students to identify the career at an early stage (Lipsmeier 2013).

- Consecutive model refers to the fact that the training of technical expertise is implemented first (e.g. bachelor with duration: 03-04 years), then the training of pedagogical competence is added (duration: 06 months to 01 years). This form helps the graduates (from technical universities or colleges) or the masters/ practitioners in companies, who have professional experience and/or have desire to become a vocational teacher/ instructor become vocational teachers/ in-company instructors after being provided with the training in pedagogical competence.

Corresponding to these forms of VTE, there is the existing situation, that in-school teachers, who are often employed after graduation, are often lacking in industrial experience and practical skills, meanwhile in-company instructors are often lacking in pedagogical experience. In general, it can be noted, that at present, there is a lack of quantity and quality of vocational teachers/ instructor in the region (AUN, CPSC, RCP, RMUTT, SEAMEO VOTTECH, & UNESCO Bangkok 2013).

Besides the TVET teaching staff, other personnel of TVET (e.g. the management staff at governmental and school level, the executives of businesses) also play an important role in promoting the quality of TVET. The issue of enhancing the professionalism of TVET personnel is still an especially important issue in the context of TVET in ASEAN. Under the support of Germany (GIZ; BMZ), the Regional Cooperation Program to Improve the Training of TVET Personnel (RECOTVET) has been focusing on human capacity development for TVET personnel in ASEAN member countries and China, with Viet Nam as a project coordinative location from 2014 to 2017. TVET teachers, administrators and managers from ministries, vocational training institutions, industry federations and businesses receive training on regionally relevant topics, which help them to design, implement and evaluate training programs in accordance with the requirements of industry and the real working environment (BMZ 2015; GIZ 2016).

## **Solutions**

- Maintaining the diversity of the forms of vocational teacher education (VTE) with concurrent model and consecutive model in order to enhance the ability of the teachers and to sufficiently provide the number of vocational teachers for TVET.
- Promoting cooperation with enterprises to foster the praxis-orientation in VTE. The following directions of cooperation should be carried out in parallel:
- Improving the practical skills for in-school teachers by promoting the participation of enterprises in training of pre-service teachers and in-service teachers. More specifically, enterprises should be encouraged to facilitate in-company manufacturing-oriented practice of technical pedagogical students (pre-service teachers) as well as in-service teachers. Technical pedagogical universities and vocational institutions should actively persuade enterprises about their interests in cooperation in VTE and sign legally binding cooperation contracts. In most member countries of ASEAN, VTE is implemented at educational institutions (e.g. technical pedagogical universities, centers of teacher education). There has been almost no policy with specified terms on

the scope, responsibilities and interests of enterprises in coordination in VTE yet. This is also one necessary research theme to be promoted to enhance the participation of enterprises in VTE.

- Training the pedagogical competence of practitioners at enterprises, so that they can become harmonically-skilled in-company instructors. The practitioners at enterprises have real professional experience, but they lack pedagogical knowledge and skills. Therefore, adequate training of pedagogical competence for them is required when implementing the cooperative training model (CTM), which refers to the form of cooperation between vocational schools and business enterprise in the implementation of vocational training programmes (this will be mentioned again in 2.7).
- Establishing and maintaining long-term and medium-term projects relating to training of TVET personnel at the regional and national level. This would reinforce the linkages between political decision-makers, managers of vocational training institutions and the executives of businesses in the design, implementation and evaluation of training programs, thus meeting the requirements of industry and the real working environment in the context of the establishment of the AEC.

## **2.2 Second issue: Practice of TVET quality assurance, development of TVET accreditation system**

This trend is identified in recent debates in TVET ASEAN (SEAMEO VOCTECH 2013; Paryono 2013b, 2013c; Sharifuddin 2014; Vu X.H. 2016, Diep 2016). The TVET system needs some effective instrument to assure TVET quality; one of these factors is ‘standards’. Spoettl (2016) noted that a ‘standard’ is an instrument used to define the quality of education, the quality of teacher training programmes, a basis to guide the development of curricula, and is used to assess learning results in TVET. Loose & Spoettl (2014) also determined that “the occupational standards which are the basis for training should be paramount in being binding as outcomes of the programmes as well as reference points for the anticipated demand of the employers”. Aware of the significance of standards in TVET, the countries in the region made efforts to build their own standards for VTE. Lao PDR has structured the standards for vocational teachers into five competence areas: acting in exemplary manner, educating, teaching, assessment, self-development and innovation, with concrete criteria for each area (Soysouvanhet et al. 2013). Vietnam also issued standards for vocational teachers focusing on four evaluation areas: ethics, expertise competence, vocational training pedagogical competence, competence for self-development and doing research. Each of these areas is continuously developed into detailed criteria (MoLISA 2010). The RECOTVET Working Group 1 is developing Regional Standards for VTE. However, the final draft of Regional Standards for VTE is yet to be adopted and officially published.

Besides standards for school-teachers, standards for in-company instructors/trainers also play an important role. The draft of “Framework Standard for In-company Trainers in the Mekong Region and the Philippines” was initiated by Dr. Grosch (Karlsruhe Institute of Technology) with the approval of Prof. Dr. Fischer and some feedback from GIZ team. According to this

framework, besides the prerequisites regarding personality, qualification, experience, Grosch suggests four modules: (1) Analyzing work tasks and defining learning requirements, (2) Planning and preparing training, (3) Conducting training, (4) Evaluation and further development of training. Each module is continuously developed into (1) Competencies (what an in-company trainer can do), (2) Skills/ Knowledge (which knowledge or skills an in-company trainer has to acquire to realize each competency), (3) Contents/ Topics (to be taught for in-company trainers, so that they can possess the competencies and skills/ knowledge). This draft has yet to be completed and the author calls for the improvement of this draft (Grosch 2016). Within the framework of the project “Vietnamese-German Vocational Centre” implemented by GIZ in Vietnam, Prof. Bui The Dung on behalf of GIZ also developed “standards for in-company teachers”. The author chose the term “in-company teacher” instead of “in-company instructor” or “in-company trainer” “in order to promote the function of the “in-company teachers” who take over an important new role equivalent to the role of school/ college teachers in formal education” (Bui T. D. 2015). In comparison with activities of a vocational teacher and based on experience relating to the real activities of in-company teachers involved in the implementation of the “cooperative training model” (CTM) in Vietnam, Bui T.D. designed an occupation analysis chart. This chart shows the five main duties, with their concomitant tasks, of an in-company teacher:

- (1) Develop training plan: An in-company teacher must be able to identify/ determine the training requirements, check training conditions at the company, make plans for training implementation;
- (2) Prepare the teaching process: An in-company teacher must be able to make teaching plans for a company training module, elaborate lesson plans, prepare teaching media, prepare working appliances;
- (3) Implement the teaching process: An in-company teacher must be able to create an active learning environment, implement teaching processes according to the lesson plan, manage the learning process, apply effective teaching methods;
- (4) Evaluate learning outcomes: An in-company teacher must be able to make evaluation plans, develop evaluation tools, implement evaluation plans;
- (5) Making training report: An in-company teacher must be able to make a report on the training process, draw-on training experience, propose measures to improve training quality, manage learner’s documents.

In addition, essential knowledge and skills are also listed. Nevertheless, it can be readily seen that there has been no consensus on formal regional standards for in-company instructors up to now.

In terms of accreditation, there is the existing Asia Pacific Accreditation and Certification Commission (APACC) conceived by CPSC. On behalf of APACC, Dr. Alto points out many obstacles for accreditation in the region, such as, the status of regional accreditation is not

standardized and harmonized, the lack of national accreditation systems and other TVET standards in some countries, the diversified and dis-unified feature of accreditation systems in the region, the implementation of accreditation is hampered by “limited institutional capacities, limited funding sources, lack of skilled human sources and other logistics to sustain efforts” (Alto 2016).

## **Solutions**

- Developing and strengthening the National Occupational Skill Standards and Regional Occupational Skill Standards;
- Developing and consolidating the National Standards of TVET Accreditation and Regional Standards of TVET Accreditation. Countries should benchmark their own NSTA against RSTA to ensure the relative uniformity of accreditation system;
- The countries in ASEAN should establish and improve the system of national and private institutions of TVET accreditation. Also, the establishment of Regional Centers of TVET Accreditation is necessary;
- The countries should strengthen National Standards for VTE and establish National Standards for In-company Instructors/ Teachers/ Trainers;
- Regional political organizations should promote the establishment of Regional Standards for In-school Teachers and Regional Standards for In-company Instructors/ Teachers/ Trainers;
- Standardization is necessary for enhancing TVET quality in response to ASEAN economic integration. However, there are often differences (or deviations) between regional and national standards. Therefore, there should be solutions for harmonization, to feasibly apply the standards in the region. One solution is that there should be a certain flexibility in adopting criteria and indicators when designing sets of standard. Accordingly, the designed criteria and indicators can vary within an acceptable range (from the lowest acceptable indicators to the highest indicators which can be attained), instead of being locked into a rigid frame of absolute standards.

### **2.3 Third issue: Synchronization of regional qualification frameworks**

The synchronization of qualification frameworks facilitates the mutual recognition of qualifications and labor recruitment across borders in the context of the AEC. This trend has been emphasized in many recent discussions in TVET ASEAN (Witaya 2013; Paryono 2013c; Vu X.H. 2016, Diep 2016). As mentioned above, some instruments for the synchronization of regional qualification frameworks have been initiated, such as the National Qualification Framework (NQF), the Regional Qualification Framework (RQF), and ASEAN Qualifications Reference Framework (AQRF). Currently, many countries in the region have developed a NQF. In reality, the RQF with 7 levels was initially developed by ASEAN Secretariat, International Labour Organization (ILO) Bangkok, UNESCO Bangkok, and SEAMEO in 1998. It was piloted in some countries in the region. Its outline has been accepted by 5 countries (Cambodia, Lao PDR, Myanmar, Thailand, and Vietnam) (Paryono

2013a; Dang 2011; Diep 2016). The AQRF with 8 levels was initially developed in 2010 and was endorsed by the Ministers of Finance, Education and Labour (Bautista 2016). However, it still seems to be difficult to find a consensus for RQF in whole region to date. According to the RAVTE, the fact that there are still some countries without NQF has been hampering the successful implementation of AQRF for many years (Gennrich 2016).

## **Solutions**

- The Regional Qualification Framework (RQF) should be continuously promoted to support the integration of ASEAN globally.
- The countries in the region should develop a National Vocational Qualification Framework (NVQF). This is the initiative which Vietnam pointed out in the Vocational Training Development Strategy of Vietnam 2011- 2020 (VPM 2012, Diep 2016).
- Because there are still difficulties to find a consensus for a RQF, some countries in the region are utilizing the AQRF. Another appropriate solution to be considered, is that a Regional Vocational Qualification Framework (RVQF) should be established. It may be easier to find a consensus for a RVQF than to find a consensus in RQF. RVQF can be regarded as a transnational frame for accreditation and certification of vocational qualifications.

## **2.4 Fourth issue: Curriculum change, transferable skills, life-long learning**

This is a current issue mentioned in several discussions in TVET (Paryono 2013c; Witaya 2013; Brennan Kemmis, Hodge, & Bowden 2014; Paryono 2014; Sharifuddin 2014; BMZ 2015; Che Rus, Yasin, & Rasul 2014; Diep 2016). Curriculum in TVET should be improved to meet the requirements of the real working world and to help learners acquire transferable skills. The definition of “transferable skills” can be understood in many different ways by different countries, e.g. Malaysia holds them for employability skills with K-Worker framework encompassing three competencies: (1) technical competency, (2) social and humanistic competency, and (3) methodological and learning competency (Che Rus, Yasin, & Rasul 2014); Brunei and Australia have the relatively same concept of transferable skills when considering them as life skills with eight components: (1) communication, (2) teamwork, (3) problem-solving, (4) initiative and enterprising, (5) planning and organizing, (6) self-management (and competitiveness), (7) learning, (8) technology (and applying numeracy, design) (Paryono 2014); Vietnam tends to access to German concept of vocational action competence with three main domains: (1) expertise competence (Fachkompetenz), (2) social competence (Sozialkompetenz), (3) personal competence (Personalkompetenz). Despite the different concepts of transferable skills, it can be stated, that transferable skills are useful and necessary competencies, which the learners have to acquire to deal with their private and occupational life.

## **Solutions**



- Build regional standard vocational institutions with advanced standard curricula which are developed on the basis of job analysis, enterprise surveys as well as regional occupational skill standards. The curricula need to be regularly updated according to changes and developments in the professions. Teaching methods applied in these institutions need to be student-centered in accordance with the concept of competence-based training to develop comprehensive competencies for the learners.
- The standard learning resources should be put on intermediary webs which facilitate the self-learning and life-long learning of learners. These are also valuable as open reference sources for vocational schools in countries of the region.
- Vocational institutions in each country in the region should develop and improve their training programmes flexibly based on research on enterprise demands. These programmes should meet national and regional standards.
- The teaching methods in TVET should be improved in the praxis-oriented and action-oriented direction. Active learning is necessary for building the holistic competence of the learners.
- Collaboration with enterprises in building and revising training programmes is highly recommended.

## **2.5 Fifth issue: Horizontal and vertical articulations**

This trend refers to the mutual recognition and the possibility of training transition between vocational institutions. Horizontal articulation describes the possibility of training transition, based on occupational fields, between institutions at the same training level. Vertical articulation describes the possibility of training transition according to the training levels between institutions of low education level and institutions of high education level. The training transition between vocational institutions promotes the professionalization of TVET and enhances the attractiveness of TVET for learners. Paryono mentioned this trend in his research in 2013 (Paryono 2013c; Diep 2016).

### **Solution**

In the context of the establishment of AEC with the free flow of service (as well as trained labourers); horizontal and vertical training articulations should be developed not only in a country, but also in the whole of the region. To facilitate the training transition based on mutual recognition of qualifications in whole of region, the Regional Vocational Qualification Framework (RVQF) should be developed, as mentioned above in the third trend.

## **2.6 Sixth issue: Labour mobility, graduate employability, career guidance and job information**

The establishment of AEC stimulates labour mobility in the region. Therefore, this trend is mentioned in discussions of TVET in ASEAN (Paryono 2013c; Sharifuddin 2014; BMZ 2015; Diep 2016). In reality, the transnational movement of labourers confronts many obstacles caused by many reasons: limited English language skill of labourers, the lack of job

information (in particular overseas jobs), the lack of intermediary organizations introducing job possibilities and giving guidance, the inadequacy of training quality.

### **Solutions**

- It may be relevant to establish a Regional Career Center, where research on labour demands and occupational trends in the region are implemented. It would also be available as an intermediary organization connecting information between enterprises and labourers in the region, introducing job opportunities, supplying career guidance and legal consultation for employees. There should be an intermediary website, where enterprises and labourers across region can “meet each other” based on self-introduction and expression of their demands/needs.
- In a similar manner, countries should establish National Career Centers to help the graduates find job in a convenient way.
- Intensifying of English education in TVET programmes.
- The regional political organizations should continuously support countries in developing cooperation with industrial sectors in TVET. The close cooperation between vocational institutions and enterprises can improve TVET quality, which facilitates the learner’s possibilities to find a job.

### **2.7 Seventh issue: Good governance, TVET policy reform and the networking within the region**

Policies at the macro level always make decisive impacts on all fields of society including TVET. Therefore, the issue regarding governance, TVET policy reform and networking within the region has been an important issue in recent TVET discussions (Witaya 2013; Sharifuddin 2014; BMZ 2015; Vu X.H. 2016; Diep 2016; Gennrich 2016). The policy of low funding for TVET leads to many problems for TVET in ASEAN regarding attracting competent teachers, investment in machinery/equipment, implementation of accreditation mechanisms, assuring training quality and implementation of good governance. RAVTE cited the research result of UNESCO 2014, that “TVET institutions are largely underfinanced as reflected in the relatively low level of direct budget allocations made by governments“. RAVTE also calls for implementing systemic administrative reforms, ensuring the regional comparability, permeability and mobility in TVET (Gennrich 2016).

### **Solutions**

- Sustaining the existing network in the region which fosters cooperation through platforms, dialogues, conferences, training courses, cooperative projects etc. The countries in the region can share their effective TVET policies through these instruments.
- The political regional organizations should help the countries in establishing projects of national reform of TVET governance system.

- The countries should raise awareness about the importance of vocational training, increase the financial investments for vocational training, especially the investments for facilities, machinery and equipment. Lipsmeier (2013) also emphasized that the quality of TVET in general and the quality of VTE in particular depends on many factors including the equipment and an equipped library.
- Mobilization of investment from private sectors.

## **2.8 Eighth issue: Developing the collaboration with industrial sectors**

Unlike developed countries such as Germany, Australia, and Japan, the process of cooperation with industrial sectors in TVET in ASEAN occurs slowly and is difficult, although the concept is a current trend as mentioned in many discussions (UNESCO-UNEVOC 2012; BMZ 2015; Sharifuddin 2014; Vu X.H. 2016; Diep 2016). Enhancing the collaboration between technical pedagogical universities, vocational institutions and enterprises can improve the “competence of linking real work processes with professional learning processes” in vocational teachers. This is one of competencies proposed by Diep P.C & Hartmann M. on the model of pedagogical competence of vocational teachers for a world of sustainable development (Diep & Hartmann 2016). Particularly, it can efficiently help in improving the TVET training quality to fulfill the requirements of real-life working world.

Currently, the implementation of collaboration between TVET institutions and enterprises in ASEAN often occurs in two forms:

- (1) Vocational institutions and universities of technology and education send the learners to enterprises for the short-term internship or traineeship. This is the popular and easy-implemented form in most countries.
- (2) Vocational institutions and enterprises carry out the medium-term or long-term, structured training programmes co-developed and carried out by vocational institutions and enterprises. The training process takes place in two places in parallel: (1) at school for the vocational theory and basic practice under the instruction of school-teachers, (2) at enterprise level for the advanced and manufacturing-oriented practice under the guidance of in-company instructors. This model can be called “cooperative training model” (CTM). CTM is different from short-term internship. This form is still not popular and encounters many difficulties in ASEAN due to the undeveloped industries in ASEAN and the lack of policies in guiding the implementation of the CTM. This collaboration mainly exists based on an own consensus between a vocational institution and an enterprise with the consent of learners and/or learners’ parents.

Examples of implementation of collaboration between TVET institutions and industry sector are given in Vietnam and Malaysia. In recent years, Vietnam has been piloting some forms of cooperation between businesses and educational institutions including the cooperative training model (CTM) to find out the useful experience and the feasible process to be widely deployed in the future within the Vietnamese context. Hasan, Malek, and Mohamad (2015)

also shared the experience of Malaysia in the implementation of TVET agency-industry cooperation.

## **Solutions**

Besides the form of short-term internship and traineeship, ASEAN countries should have strategies to develop CTM in accordance with the context of member countries. This form brings benefits for all stakeholders: (1) CTM helps the learners gain access to the real working environment in a practical manner, be familiar with the modern industrial technologies, have high quality training, acquire the occupational skills that meet the requirements of industry, have more job opportunities, (2) CTM helps TVET institutions save investment expenses on equipment and machinery by taking advantage of the facilities at the enterprise, (3) CTM helps businesses save cost of retraining workers, and reduces difficulties with recruitment, (4) CTM helps society solve many problems in addressing unemployment, reduces expenses in TVET, creates a TVET system with high efficiency and effectiveness, which provides the high-skilled labour force stimulating the development of economies.

The issue of policies promoting the collaboration between TVET institutions and industry should be especially concerned at the regional and national level. Governments should provide legally binding regulations on concrete rights and responsibilities of enterprises in participating in VTE and TVET, as well as policies guiding the implementation of CTM in reality. The theme CTM should become an important topic to be continuously discussed in the upcoming debates in the field of TVET in ASEAN. Member countries should share their experience in implementation of CTM through the dialogues, conferences, journal etc.

## **2.9 Ninth issue: Extension of knowledge sharing and dialogues, expanding access and equity**

To promote the development of TVET in the region, the issue of expanding access of TVET information is noted in recent discussions (Paryono 2013c; Sharifuddin 2014; Diep 2016; Gennrich 2016; RAVTE 2016). The cooperation between RAVTE, UNESCO Bangkok and SEAMEO VOCTECH has offered TVET@Asia as an effective instrument to spread TVET information/research results in the region and to create data base on TVET/VTE-related subjects.

## **Solutions**

- Sustaining existing conferences, journal, workshops, dialogues, etc.,
- The Regional TVET Portal could be set up. On this portal, information of TVET, careers, needs of recruitment of enterprises in the region would be available.
- Building the Online Learning Resources with the E-learning packages and the regional standard curricula to help the vocational learners learn by themselves and help the vocational institutions gain access to regional standard curricula.
- The ‘call for papers’ for every issue of TVET@Asia should be distributed to all important TVET-related institutions (to the managers of these institutions) to remind

them of their responsibilities, as participating in the regional political organization, to raise awareness of the importance of TVET, VTE and to promote research and sharing experience/research results/significant information in the regional TVET community. The journal also should become a journal with high impact-factor in the field of TVET. This may then stimulate the motivation of researchers to contribute to this effective tool.

## **2.10 Tenth issue: Research and development**

TVET in ASEAN still has difficulties in implementing the collaboration of vocational institutions and enterprises, making policy and applying green technologies in TVET towards sustainable development. The significance of doing research for the development of TVET is mentioned in some recent debates (Paryono 2013c; AUN, CPSC, RCP, RMUTT, SEAMEO, VOCTECH, & UNESCO BANGKOK 2013; Chang & Trzmiel 2013; Diep 2016; RAVTE 2016). UNESCO Bangkok determined that collaborative research is a way of addressing important regional issues, and, therefore, facilitated collaborative research in the region (Chang & Trzmiel 2013). Education policy and reform fosters different forms of research cooperation in the region, which support the governments by offering policy advice to reform education systems based on working analysis, knowledge management, capacity building and regional networks. Besides the activities in knowledge management and knowledge sharing, UNESCO Bangkok has been hosting some networks meaningful for research and development, such as Education Institutes Network in the Asia-Pacific, Network on Education Quality Monitoring in Asia and the Pacific the annual UNESCO-KEDI (Korean Educational Development Institute) seminar. Research programmes to promote educational policy review in some countries are also supported by UNESCO Bangkok, e.g. the Comprehensive Education Sector Review in Myanmar, Education Policy Review in Malaysia and, TVET Policy Review in Lao PRD. The cooperation between UNESCO Bangkok, RCP, RAVTE, SEAMEO VOCTECH also offers research possibilities to regional experts. The establishment of TVET@Asia Journal is a significant initiative and a remarkable effort on promoting the sharing of scientific information and research results in the region. Despite some recent efforts, Asia in general and ASEAN in particular still encounter many challenges in research when they “remain at the periphery of the global research system“ (Chang & Trzmiel 2013) and “East Asia and the Pacific ranks relatively low in history in relation to the overall ranking” (Ranken, Hoekman, & Hardeman 2010, cited by Chang & Trzmiel 2013).

## **Solutions**

In terms of research theme:

- Promoting research on the requirements and demands of enterprises regarding the required professional competence of employees and the praxis-oriented curricula for certain fields. This helps to improve the current curricula at vocational institutions, also enterprise surveys supply the basis to develop training programmes according to CTM.

- Countries in ASEAN should promote research on TVET policy, particularly policies relating to the appropriate regulations on the extent, rights, and responsibilities of enterprises in cooperation with universities and vocational institutions in TVET and VTE.
- Fostering research on building the regional standards in the field of TVET and on E-learning of TVET.
- Promoting research on application of green technologies in TVET.

In terms of organization and supporting:

- The countries should be aware of the significance of research and increase the funding for fields of research, in particular in the field of TVET and VTE.
- The regional and international educational organizations should continuously support the research programmes of the countries regarding policy review, application of green technologies in TVET and implementation of CTM. The support in funding, for sharing the experience from international experts and in organizing and conducting research is needed.
- The regional organizations and nations should establish more research projects, which gather the regional and national experts and researchers to focus on research with the themes mentioned above.
- The ‘call for papers’ of TVET@Asia should be frequently distributed to every educational institute in Asia as well as outside this region to stimulate contribution from the regional and international researchers to foster the development of TVET and VTE as a self-reliant scientific field, to find more effective solutions for TVET Asia and ASEAN and to enhance the impact factor of this instrument.

### 3 Conclusion

The paper suggests ten groups of solutions for improving the quality of TVET ASEAN based on the issues of TVET in ASEAN in the period of economic integration. In particular, some following solutions are emphasized and highly recommended:

- Enhancing training cooperation between vocational institutions and enterprises through implementing CTM, which can be medium-term or long-term, structured training programmes co-developed and carried out by vocational institutions and enterprises;
- Improving the quality of in-school teachers and in-company teachers through reinforcing the participation of enterprises in training of pre-service and in-service vocational teachers, developing the regional/national standards of in-school teachers and in-company instructors;
- Promoting policy review regarding investment/finance for TVET and legally binding regulations on extent, rights, and responsibilities of enterprises in collaboration with vocational training institutes and universities for technology and education in VET and TVET.

- Developing sets of standards in TVET (regional/national occupational skill standards, regional/national standards of TVET accreditation, standards for in-school and in-company teachers as mentioned above);
- Establishing regional/national standard vocational institutions and regional/national centers of TVET Accreditation;
- Developing the synchronization of regional qualification frameworks with the idea of trying to build a Regional Vocational Qualification Framework (RVQF) besides trying to find the consensus on the RQF and the AQRF.

The assurance of regional TVET quality can contribute to helping countries overcome the barriers in the period of ASEAN economic integration. It requires unceasing efforts from the governments and regional political organizations.

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