

# How Can We Make TVET Institute Center of Excellence?

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## Abstract

A country needs to ensure proper human resource management for its socio-economic development, where the role of TVET is significant. Enhancing quality of TVET should therefore be one of the priorities. In line with other education programs, TVET programs need a paradigm shift to make our youth fit for global market with adequate competencies for global competitiveness. The institute with quality managed center of excellence only can offer competencies for the global competitiveness. Center of excellence (CoE) institute is known as having quality management system (QMS) in place, accredited by national and international body, high ratings perception of stakeholders and reputed image in the society. There are ample of practices by many countries on CoE. The criteria varies from one another; however, the major thrust areas are the same or similar. Institute, industries, students, parents and country can get direct benefits from the establishment of CoEs in the TVET system. There should be policy intervention, implementation system and commitment from leadership to establish a well functioned CoE.

## Introduction

Human resource development is the key element for a country's development. There are different ways to develop human resources. Most common ways are literacy programs, school education, university education, technical and vocational education, recognition of prior learning, training and work experience. People enrich their Knowledge, Skills and Attitude (KSA) from these ways of learning. All types of learnings are important. However, the Technical and Vocational Education and

Training (TVET) is highly relevant to impart competencies for youth. TVET programs are well recognized by national system and society in the developed economy. But, it is struggling in the underdeveloped economy in both national system and social status.

TVET is the key element of socio-economic development. TVET enhances the competencies of the graduates for both wage and self-employment. They can establish enterprises and create jobs in the society. It integrates three cognitive, psychomotor

and affective domains of the learning as knowledge, skills and attitude to equip the competencies of the graduates. It enhances the confidence level of graduates through adequate hands-on skills during the learning period. While basic skills development and workforce preparation for the country are important in the South Asian region, a paradigm shift must take place recognizing that in order to be truly globally competitive, we must be globally competent.

Making youths globally competent helps them understand socio-economic issues thoroughly and take proper initiative from their sides, which not only boosts national economic activities but also creates atmosphere to share international best practices and skills. In this regard, it is wise to mull how and where TVET has contribution.

In line with other education programs, TVET programs need a paradigm shift to make our youth fit for global market with adequate competency. For that we have to ensure quality TVET programs. Quality TVET programs however do not happen as miracles without appropriate efforts and investment. One of the basic steps for that is institute should have adequate facilities, human and other resources, committed management and linkages with industries. In the perception of the stakeholders, that institute should be considered as center of excellence. Therefore, it is important that the TVET institutions are innovative and proactive in developing their courses and workforce through a well-

established Quality Management System (QMS). In turn, this system is recognized by accrediting bodies or third-party evaluators by branding them as “center of excellence”, as an example. Considering the importance of center of excellence to ensure quality management system, this paper highlights the definition of center of excellence, status of TVET institutions in Nepal, international practices of center of excellence, importance and criteria for center of excellence, conclusions and some ways forward as recommendations.

### **Definition of Center of Excellence (CoE)**

There are numerous definitions of Center of Excellence. Wikipedia (“Center of Excellence,” 2020) defines it as “a team, a shared facility or an entity that provides leadership, best practices, research, support and/or training for a focus area. It may also be known as a competency center or capability center”. Merriam Webster defines it as “a place of high achievement”.

In the context of TVET institutions, being a “center of excellence” is a quality recognition that encompasses a validation of their systems, policies and platforms as consistent to the present needs of their clients. A “center of excellence” is expected to produce a batch of learned individuals that are well-adapted to the rigors of the labor force, are globally competitive and are effective members of society that contribute not only to the well-being of their respective sectors but of the society as a whole.

According to Development Asia (2017), which is the ADB's knowledge collaboration platform for sharing development experience and expertise, best practice, and technology relevant to the Sustainable Development Goals, one way to produce highly skilled workers is to establish COEs. Steady supply of highly skilled workers will boost productivity which will ultimately lead to improved Asian economies.

**Development Asia presented three operational models which is illustrated below.**

thus, it requires intensive capital and human resources investment. Involving the industry or industry skills councils in co-financing, sponsoring, and managing the COE can be highly advantageous due to immediate links with industry and government policy priorities.

**Model 3: Networks of excellence.** These are organizational structures or agencies that bring existing training providers together in a network. Networks of excellence may involve upgrading equipment, strengthening human resources, and the granting of



Figure 1: Three Operational Models for Centers of Excellence (retrieved from: <https://development.asia/explainer/creating-centers-excellence-fill-critical-skills-gaps>)

**Model 1: Centers within a training institution.** To establish a COE, existing facilities of an institution may be used or new ones may be constructed. This is beneficial as it empowers the COE to take advantage of the reputation and resources of an existing institution. Typically, this center will become a model of best practice in a specific field.

**Model 2: Stand-alone independent centers.** This COE is not connected to an institution,

a certification of quality. These can be effective means of ensuring that provision in specific areas is aligned with government policy priorities and useful when the skills needs of a particular sector or subsector are diverse.

Accreditation is one of the means to certify quality. There are a variety of accreditation models. The most common are institutional and program accreditation. An institution

refers to a center, institute, school, college or university in its totality. In contrast, an academic program refers to a group of related courses, packaged in a curriculum and leading to a certificate, diploma or degree.

Accreditation is viewed as both a process and a status. It is a process by which a TVET institution evaluates its operations and programs, and seeks an independent judgment to confirm that it substantially achieves its objectives, and is generally equal in quality to comparable institutions or programs. As a status, it is a formal recognition granted by an authorized accrediting agency to an institution or

program as possessing certain standards of quality as defined by the accreditation agency.

### **Status of TVET Institutions in Nepal**

Nepal has been focusing on expansion of the programs and establishment of the institutions without quality measures. There were only 5 technical schools and colleges before 1990. According to the Council for Technical Education and Vocational Training (CTEVT), there were 18 Technical Schools and Institutes under CTEVT, 107 private technical schools (TSLC level) affiliated with CTEVT, 20 Annex programs in secondary schools, 71 private institutes affiliated to

*Table 1: Status of TVET Program in Nepal*

S. N	Particulars	Unit	1989	2004	2020
1	Public Technical School/Polytechnic	Nos	5	18	61
2	Polytechnic Institute in Partnership	Nos	-	1	38
3	Affiliated Private Institute (TSLC and Diploma)	Nos	-	178	429
4	Community School (TSLC and Diploma)	Nos	-	20	572
5	Vocational Training Providers	Nos	-	34	1140
6	Vocational Training Provider Ministry	Nos	12	12	12
7	Grade 10 (Technical Wing) General Schoolt	Nos	-	-	434
8	Intake Capacity of Diploma Programs	Nos	320	2000	38,976
9	Intake Capacity of TSLC	Nos	600	8000	35,887
10	Diploma Level Curricula	Nos	6	40	48
11	TSLC Level Curricula	Nos	7	27	28
12	Vocational Skills Training Curricula	Nos	20	133	210
13	Skills Standard	Nos	-	-	295
14	Apprenticeship Course	Nos	3	3	9
15	Enrollment capacity (with technical wing MoE)	Nos			90,000
16	Actual enrolled students (2019/2020)	Nos			57,000
(Sources: CTEVT, 1989, 2004, 2020; Ministry of Education, 2019; Ministry of Finance, 2019)					

diploma programs and 34 training institutes affiliated to conduct short-term vocational training in 2004 (CTEVT, 2004). As a result of focusing on access and expansion, there are 61 public TVET institutes, 429 private institutes, 572 community schools offering TVET, and 1140 vocational training providers affiliated to CTEVT which was none in 1990 and only 34 were in 2004. The status of the TVET programs is stated in Table 1.

Based on the above data and facts, whatever the number of institutions and programs increased, the actual enrollment of the students has not increased for the last 5-6 years. It indicates that there are more programs and opportunities, but attraction is less. It is very clear that the key reasons for the mismatch between intake capacity and enrollment are lack of relevant programs and quality of the programs. Most of the institutions both community schools and CTEVT managed schools (established in last two years) were established with

political objectives than actual needs of the community. The institutions are lacking minimum requirements of the physical infrastructure, labs or workshops, competent human resources and linkages with industries. Similarly, most of them do not have quality management system as well. The institute which has adequate experiences of program implementation, adequate infrastructure and other facilities, competent human resources, innovations and creativity to implement programs, linkages with industries, and quality management system in place is considered as model or CoE institute. In contrast, there are model institutions without implementing programs and physical facilities.

### International Practices of CoE

Considering the importance of quality management system to produce competent workforce for the global market, many countries have implemented the center of excellence model in the TVET. Some of the good examples of CoE are stated in Table 2 below.

*Table 2: International Practices of CoE*

Country	Definition	Criteria	Functions
Indonesia	TVET providers of high quality and relevant training programs and can play a strategic role in improving skills supply and productivity in line with policy priorities of the Government.	<ol style="list-style-type: none"> <li>1. QMS in place</li> <li>2. Market Relevancy Programs</li> <li>3. Partnership with Industries</li> <li>4. Innovation and Creativity</li> </ol>	Implemented CoE concept based on competitive advantaged of the institution in selected sectors. For example, BLKI National Industrial Training Center and ATMI Surakarta Polytechnic

Malaysia	The Centre of Technology (COT) that involve and fulfill the workforce demand of the industries. The three elements surrounding the COT circle which are Teaching and Learning, Expert Services, and Research and Innovation are the core elements. The outer circle represents four important elements that are the strengths and determinants of the success of a polytechnic COT– Collaboration, Publication, Recognition, and Income Generation.	<ol style="list-style-type: none"> <li>1. Collaboration</li> <li>2. Research &amp; Services</li> <li>3. Experts Services</li> <li>4. Publication</li> <li>5. Recognition</li> <li>6. Teaching and Learning</li> <li>7. Income Generation</li> </ol>	<p>Awarding 3 level of certificates.</p> <ul style="list-style-type: none"> <li>• 3 Star <math>\geq</math> 90%</li> <li>• 2 Star <math>\geq</math> 80%</li> <li>• 1 Star <math>\geq</math> 50%</li> </ul> <p>Note: for the 3 Star award, <i>required conditions is full marks for the 3 main elements (Collaboration, Research &amp; Innovation, and Expert Services)</i></p>
Philippines	Center of Technical Excellence is a TVET institution, whether public or private, that has acquired the highest level of award of accreditation under the STAR Rating System of Technical Education and Skills Development Authority (TESDA). This system recognizes the accomplishments, innovations and improvements that a technical vocational institution has instituted beyond the minimum requirements set in the Unified TVET Program Registration and Accreditation System (UTPRAS). It has aligned the success indicators vis-a-vis East Asia Summit TVET Quality Assurance Framework (EAS TVET QAF) and the Asia Pacific Accreditation and Certification Commission (APACC).	<ol style="list-style-type: none"> <li>1. Governance &amp; Management</li> <li>2. Curriculum and Program Delivery</li> <li>3. Support Services</li> <li>4. Program Performance Measures</li> </ol>	<ul style="list-style-type: none"> <li>• 3 Star: 475-500 points (Center of Technical Excellence-CenTEx)</li> <li>• 2 Star: 425-474 points (Center of Technical Proficiency-CenTPro)</li> <li>• 1 Star: 375-424 points (Center of Technical Development-CenTDev)</li> <li>• CANDIDATE: 300-374 points</li> </ul>

Singapore	Most of the Centers of Excellence in Singapore are connected to established institutions. They are sector specific.	<ol style="list-style-type: none"> <li>1. Innovation and Creativity</li> <li>2. Digital Technology</li> <li>3. Partnership with Industry</li> <li>4. Learner centered learning</li> <li>5. Similar Set up with industries</li> </ol>	<ul style="list-style-type: none"> <li>• Centre of Excellence in New Media and Design by ITE</li> <li>• Centre of Excellence in Maritime Safety (CEMS) jointly launched by the Singapore Polytechnic (SP) and Singapore Maritime Institute (SMI)</li> <li>• Centres of Excellence in Research &amp; Development (R&amp;D) in Temasek Polytechnic</li> <li>• National Centre of Excellence for Workplace Learning (NACE) established by Nanyang Polytechnic</li> </ul>
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*(Source: Lamichhane2020)*

### **Asia Pacific Accreditation and Certification Commission (APACC)**

The Inter-Governmental International Organization Colombo Plan Staff College for Technician Education for Human Resources Development established the Asia Pacific Accreditation and Certification Commission (APACC) as one of the specific targets in the implementation of the CPSC

Corporate Plan 2003-2008. With the support and commitment of 16 member countries to the CPSC Seoul Declaration of 2004 in Seoul, Republic of Korea, APACC will ensure that it is able to guide Technical and Vocational Education and Training (TVET) institutions in equipping themselves with internationally-recognized standards and systems. It will enable these institutions to



produce workforce with great mobility to move across borders and with regionally-competitive qualification skills.

The Seoul Declaration of 2004 was further strengthened by the continued support and commitment to the mission and goals of APACC, as expressed by participating governments through the Manila Resolution 2005 and Cheonan Affirmation of Commitment 2007.

APACC accreditation is an internationally recognized sign of quality. Accredited institutions and stakeholders enjoy the following benefits:

1. Greater workforce mobility and mutual recognition of qualifications in Asia and the Pacific region;
2. Quality and employable workforce in member countries through APACC coordination among its network of institutions, agencies and other stakeholders;
3. Employer confidence on the selection of employees coming from accredited institutions. Accreditation status is important to employers when evaluating credentials of job applicants and when deciding to provide support for current employees seeking further education;
4. International recognition of the institutions' quality, accountability, and public trust;
5. Eligibility and reliability of TVET institutions for funding support from

donors and other lending agencies;

6. Part of a regional network of quality institutions that expand schooling and learning opportunities for students; and
7. Transferability of credits earned by a student among educational institutions. Receiving institutions take note of whether or not the credits a student needs to transfer have been earned from an accredited institution.

APACC accreditation is a tool or approach to establish center of excellence. Figures 1 and 2 shows the accreditation criteria and awards (APACC, 2020).

The APACC accreditation is based on quality management system and follow the Plan, Do, Check and Act (PDCA) cycle.

### **Polytechnic Ungku Omar (PUO), Malaysia as an Example of COE**

PUO is the first APACC Gold Awardee in Malaysia and is the first polytechnic in Malaysia to achieve full recognition status for Centre of Technology (CoT) in two fields of specialization which are:

1. Marine Engineering (Centre of Technology in Marine Engineering, CTME)
2. Air-Conditioning and Refrigeration (Centre of Technology for Air-conditioning & Refrigeration, CARE)

PUO's journey in getting the CoT recognition started in 2010 through the initiatives of the Polytechnic Transformation Roadmap by the Department of Polytechnic Education (DPE), Ministry of Higher Education



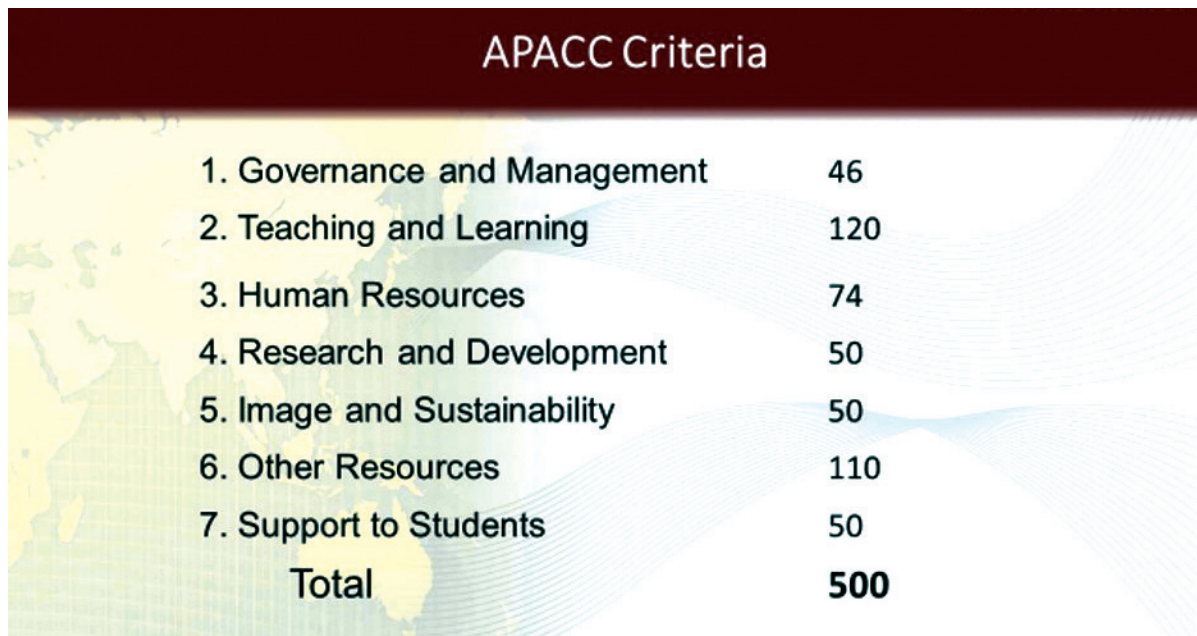


Figure 1. (APACC Criteria, 2020)



Figure 2. (APACC Awards/Levels, 2020)

Malaysia. The process started with the selection of niche areas in each polytechnic and followed by the development of focus area in the niche area. PUO had selected Marine Engineering and Air-conditioning & Refrigeration as the focus areas. Since then, both CTME and CARE have planned and implemented various activities aimed at developing human capital and upgrading of facilities and infrastructures of the COT to comply with the international standards in order to be the most referred centre by external agencies from both the government and private sectors in the fields of Shipping, and Heating, Ventilation, Air Conditioning & Refrigeration (HVAC) respectively. The successful execution of the planned activities in CTME and CARE are in line with the vision and mission of each Centre of Technology.

### **Importance of CoE**

CoE and quality management system (QMS) is a kind of a synonym. It always focus to implement quality management system, accreditation and certification and quality outputs and outcomes. It always follow the framework of quality assurance in TVET system as stated in Figure 3 below.

All the stakeholders of TVET get benefits by establishing CoEs. The benefits for the key stakeholders are as follows:

#### ***For the TVET Institutions***

- bestows national quality recognition to providers of TVET
- promotes quality and current trends

in education/training in the Technical Education and Vocational Training sector

- enhances credibility and image as a training provider
- establishes national quality standards among training institutions
- Promotes a culture of continuous improvement

#### ***For Employers***

- ensures the continued supply of competent employees who have been trained at institutions that comply with established quality standards and criteria
- makes the search for competent employees easier by selecting candidates with qualifications from quality assured training institutions

#### ***For Trainees***

- provides recognition for entry into institutions, professions and business
- ensures quality of the training that they have received according to some agreed standards and criteria

#### ***For Parents***

- is an indication of the standard and quality of training provided
- Assures them that they are getting value for their investment in the training their children pursue at approved quality assured institutions and programs.

#### ***For the Nation***

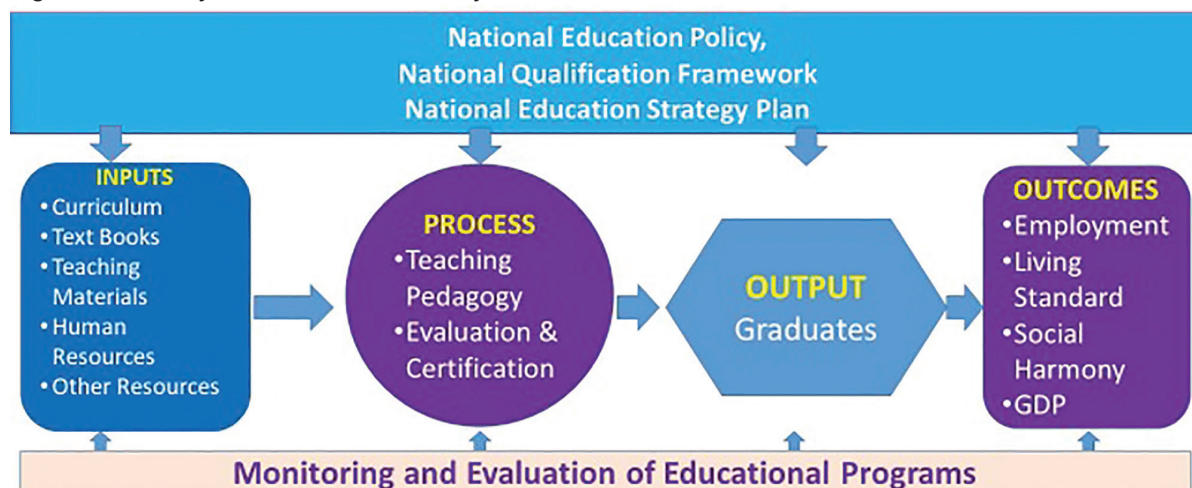
- Enhance images in the global market by

producing globally competent workforce

- Increase employment rate of the people
- Increase GDP

For different countries, it is expected that different CoE criteria are also being used. They have developed their own based on the social, economic and technological context.

Figure 3: Quality Assurance in TVET System



## Conclusions

Center of Excellence for TVET institutes should always work for the different aspects of innovation, quality and customer satisfaction. It creates high image in the society through stakeholders' satisfaction. The broader indicators of the CoE are stakeholders' perception, customer satisfaction and image in the society. Similarly, governance and management for transparent system, adequate infrastructure, tools and equipment, competent human resources, research based programs, strong partnership with industries and less than 2 percent of student dropouts, above 90% graduation and employment rate as an output and outcome, are the in-depth indicators of CoE.

It cannot be an exact copy from one country to another. In the Asia Pacific region, most of the countries have applied an almost similar criteria as APACC. Singapore's approach is quite different than others, because they have created trade-wise CoE in different level of institution from training institute to university.

The key challenges to establish CoEs are absence of supportive policies, weak top management, inadequate resources, and inability to manage change. In general, CoEs within an institution are not financially autonomous, thus cannot operate creatively in terms of income and policies. Most of the CoE initiatives were funded by development partners, but did not continue due to lack of commitment and resources.

## Recommendations

There are number of TVET institutions in every country; however, industries are not getting competent workforce as per their needs. Majority of the institutions are focusing on quantitative targets, and not the competency-based qualitative result. This is happening due to the absence of quality management system in the institutions and they are not developing as center of excellence to produce specific sector based graduates. Therefore, the following recommendations are made:

- a. Each and every country may develop accreditation and certification system to ensure quality management system of the TVET institutions.
- b. The TVET system should have practical partnership with relevant industries, social organizations and local communities to ensure shared ownership on quality outputs of the TVET.
- c. The government and institutional management should ensure adequacy of financial and other resources to bring new technology and innovations.
- d. The concept of CoE should be integrated in the system such as policies, registration, accreditation and certification. It is recommended to make use of available resources such as the APACC criteria, indicators, and sub-indicators.
- e. The CoE approach was initiated by development partners such as ADB, GIZ, SDC in some countries, but it could not continue after the project. Therefore, it is

recommended to continue as a system of CoE practices even after the conclusion of development partner supported projects.

- f. Leadership and top level management should give their utmost commitment to establish CoEs in addition to all stakeholders' support.
- g. To establish CoEs, the following criteria may apply.
  - I. Governance, Leadership and Management
  - II. Curriculum Design, Content and Review
  - III. Teaching Learning and Assessment
  - IV. Human Resources and Services
  - V. Research, Publications and Linkages
  - VI. Infrastructure and Learning Resources
  - VII. Student Services
  - VIII. Internal Quality Assurance and Enhancement System
  - IX. Institutional Outputs and Outcomes (Graduation and employment rate)

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