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Permeability in Cambodian Post-secondary Education and Training: A Growing Convergence

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Abbreviations

ACC	Accreditation Committee of Cambodia
AQRF	ASEAN Qualifications Reference Framework
ASEAN	Association of Southeast Asian Nations
CAQDAS	Computer-Assisted Qualitative Data Analysis Software
CDRI	Cambodia Development Resource Institute
CQF	Cambodia Qualifications Framework
DGHE	Directorate General of Higher Education
DGTVET	Directorate General of Technical and Vocational Education Training
ECTS	European Credit Transfer System
ECVET	European Credit System for Vocational Education and Training
EHEAQF	European Higher Education Area Qualifications Framework
EQF	European Qualifications Framework
HE	Higher Education
HEIs	Higher Education Institutions
HNs	Scottish Higher Nationals
ICT	Information and Communications Technology
ISCED	International Standard Classification of Education
KIIs	Key Informant Interviews
MLVT	Ministry of Labour and Vocational Training
MoEYS	Ministry of Education, Youth and Sport
NGOs	Non-governmental Organisations
NQF	National Qualifications Framework
NTB	National Training Board
OECD	Organisation for Economic Co-operation and Development
SDG	Sustainable Development Goal
SFC	Scottish Funding Council
SNCE	Supreme National Court of Education
STEM	Science, Technology, Engineering and Mathematics
TVET	Technical and Vocational Education Training
UNESCO	The United Nations Educational, Scientific and Cultural Organization
VET	Vocational Education and Training

Executive summary

The distinction between vocational training and academic education can be traced back to different institutional structures in medieval Europe. However, owing to an increasing need for higher-level skills to respond to market demand, countries have resolved to establish flexible pathways for students on both tracks or systems to move or transfer across to each other. Permeability in education and training refers to the possibility for learners to transfer between different types of education and between different levels of qualifications. In its recommendations, UNESCO highlights the important role of TVET in providing options for lifelong learning that can take place at secondary and post-secondary levels and includes work-based learning and continuing training and professional development which may lead to qualifications. Permeability helps to increase the attractiveness of TVET by eliminating the concept that this is a dead-end track. It also contributes to social inclusion and mobility by providing opportunities for disadvantaged groups to pursue higher education. In theory, Cambodian students can move between the two systems in Cambodia through the recognition of prior learning, as both TVET institutes and universities have adopted the credit system. Nevertheless, little is known about student mobility in Cambodia between these two sub-sectors. This study intends to explore the permeability pathways between post-secondary TVET and academic higher education and identify challenges hindering student transfer between the two tracks.

Employing the thematic analysis approach, this study follows the six-step process of thematic analysis developed by Braun and Clarke (2006), and the hybrid process of Swain (2018) in combining both inductive and deductive approaches in coding the transcribed interviews and generating the themes and sub-themes. Two main sources of data – primary data obtained through key informants at universities and technical training providers, and secondary data from policy documents – were used for the analysis in this study. Semi-structured interviews with the informants were guided by an interview protocol and conducted in Khmer between early February 2020 and late April 2020. In total, representatives from 15 selected training institutions and universities participated in face-to-face and online interviews. The secondary data was gleaned from policy documents such as the Cambodia Qualifications Framework, the Royal Decree on the accreditation of higher education, the Prakas on internal regulation of student admission from MoEYS, along with the ministry's guideline No 09, and the ACC's decision on credit systems and credit transfer implementation for higher education.

To begin with, the study examined the pathway into post-secondary TVET and academic higher education in Cambodia. There is little difference in qualification requirements to enter post-secondary TVET and higher education, although students from low-income households and those who are academically low performing, are more likely to enter the TVET track. Attracting talented students to the two-year higher diploma programs has been a challenge for some public TVET providers.

There are several pathways that enable students to move between post-secondary TVET and academic higher education in Cambodia, but the most common permeability pathway is through the higher levels of TVET qualifications. After the introduction of the Cambodia Qualifications Framework (CQF), more and more public technical training institutes have started offering bachelor's degree programs, allowing students to smoothly progress to higher-level training and education after graduating from the two-year higher diploma programs.

Credit transfer between the two tracks is another pathway, yet it is a route much less travelled. Both sub-sectors have adopted the credit system, and the transfer system has been in place for many years. Nevertheless, the cross-system transfer is still less commonly practised due to its complexity and the absence of consensus on the recognition of prior qualifications.

The study has identified several challenges that have hindered student mobility between the two sub-sectors. First, universities and institutes under MoEYS and the MLVT evaluate a student's prior learning based on different guidelines, which result in conflicting practices. The differences in orientation and quality assurance mechanisms are another barrier to permeability for students who wish to move between the sub-sectors. With limited inter-ministerial coordination and effective communication, these challenges remain unaddressed.

The study found that the two tracks have, in many aspects, grown alike and in some ways in competition with each other as both strive to meet the demand of the labour market and the students themselves. Each starts to take roles supposedly performed by the other: academisation of TVET and vocationalisation of academic higher education. More and more technical training institutes offer higher-level qualifications and courses similar to those within academic higher education. Meanwhile, some universities have introduced professional tracks and incorporated internships into their programs.

Based on the findings, the study presents three policy implications: i). Jointly establish a common guideline on how to recognise and evaluate prior learning and credit transfer to facilitate the horizontal permeability between the two tracks; ii) Rather than drifting far away from their original mission and orientation, both TVET institutes and academic universities should enhance the quality of their programs based on their strengths and uniqueness; and iii). To make TVET more attractive and to eliminate the perception that TVET is second-class education, the government needs to continue to incentivise students to choose this track, improve TVET quality, and at the same time put more effort into winning financial and technical support from the private sector in respect of curriculum design and joint collaboration in research and development and the provision of apprenticeship opportunities.

1. Introduction

1.1. Background

Traditionally, vocational training and academic education have been on two separate tracks with entirely distinctive institutional structures. The division between the two pathways can be traced back to the medieval period. In the past, competency-oriented vocational education was strongly associated with skills for specific occupations and was hardly articulated with the academic world (Field and Guez 2018). The response to the rapid and unpredictable change in demand for higher-level skills has diversified post-secondary education and training. Intending to promote a highly dynamic knowledge-based economy, the council of Europe set up four main priorities and objectives: i) to make lifelong learning and mobility a reality; ii) to improve the quality and efficiency of education and training; iii) to promote equality, social cohesion and active citizenship; and iv) to enhance creativity and innovation (Spöttl 2013). From this, some European countries adopted a system that connects vocational education and training programs (VET) and academic education to meet the demand of the market. The new system structure is called "permeability".

Permeability in the context of education and training can be referred to as a system that enables learners to transfer between different pathways (i.e., between vocational and academic tracks) or to further their learning at a higher level of qualification (Cedefop 2012). The directions of permeability can be horizontal or vertical. While horizontal permeability ensures the smooth transition of students between different tracks or programs at the same level, the latter enables learners to continue their study at a higher level regardless of their prior learning background, whether they are from the vocational or academic track (Spöttl 2013). Based on global experience, there are three main pathways for learners to move from TVET to higher education. The first pathway is the progression from initial TVET programs at upper-secondary schools directly to higher education. The second pathway to higher education is through post-secondary TVET programs (such as higher diploma), and the third is through the recognition of prior learning acquired outside of formal learning settings so that working adults have the opportunity to pursue higher education (Field and Guez 2018).

Permeability helps to eliminate the concept that the TVET track is a dead-end pathway, making TVET more attractive among students who have aspired to further their study at a higher level soon - or years - after graduation. It also contributes to social inclusion and mobility by providing opportunities for disadvantaged groups to pursue higher education (Field and Guez 2018). The Cambodia Qualifications Framework (CQF) was introduced in 2012, which provides standards for national education and training qualifications in order to help to create flexible pathways and to facilitate smooth transitions between the academic and training tracks. Nevertheless, little is known about student mobility between these two sub-sectors in Cambodia.

1.2. Research objectives

The main objectives of this study are twofold:

1. First, it intends to explore the permeability pathways between post-secondary TVET and academic higher education in Cambodia;
2. The second objective is to identify challenges hindering student mobility between the two sub-sectors.

1.3. Significance of the study

Literature about higher education in Cambodia is relatively abundant, but the topic of Cambodian TVET is less studied and documented. CDRI has conducted some studies (Chea, Song and Hun 2020; Madhur 2014) on TVET, but to the authors' best knowledge, this is the first attempt to examine student mobility between the two tracks in Cambodia. Effective permeability pathways can help to remove challenges for people from disadvantaged backgrounds to access lifelong learning opportunities, as stated in Sustainable Development Goal 4 (SDG 4). Nevertheless, the topic relating to the articulation between TVET and higher education in the context of developing countries, not to mention Cambodia, has received very little attention.

In 2012, the CQF was developed to ensure that national education and training qualifications standards were mutually agreed upon by different sectors, and to prepare for ASEAN integration by having a qualifications framework that could be compared with other counties in the region. One of its objectives was to help to create flexible pathways for learners so that they could move smoothly between academic education and vocational and technical training sub-sectors by providing consistent and comparable qualifications in each. Nevertheless, the framework does not provide concrete guidelines on how it should be done and leaves this task to individual institutions (NTB 2012). By examining the current state of student mobility between the two tracks and identifying challenges faced by the education and training providers in both tracks, this study offers some implications for policy options to enhance cross-sector student mobility.

2. Overview of post-secondary education and training in Cambodia

Higher education and technical and vocational education training are both governed by the 2007 Law on Education. The law stipulates that the Supreme National Council of Education (SNCE) be established as the overarching body to oversee the education and training system; however, more than a decade after the promulgation of the law, it is unlikely that it will be fully enacted in the foreseeable future. In addition, the law provides no details about how higher education and TVET should be governed and regulated. Without central unified legal frameworks, both sub-sectors are instead guided by many unrelated sub-laws, ranging from Royal Decrees to Prime Minister's sub-decrees, Ministerial Prakas, decisions and guidelines. Fragmented governance in the Cambodian higher education and TVET sub-sectors and a lack of inter-ministry coordination have been well documented in many previous studies (Sen and Ros 2013; Mak, Sok and Un 2019; UNESCO 2013). At the time of writing, the Ministry of Labour and Vocational Training (MLVT) is in the process of drafting the TVET law and it is expected to be finalised by 2022 (MLVT 2019).

2.1. Technical and vocational education training (TVET)

Both higher education and the TVET sub-sectors used to be under the jurisdiction of MoEYS until the establishment of the MLVT in 2004. As of 2019, there are 107 TVET institutions under the jurisdiction of the MLVT, of which 38 are public, 44 are privately owned, and 25 are run by NGOs (MLVT 2019). If these are combined with institutions operated under the other 11 ministries, there are more than 300 TVET institutions in Cambodia (ADB 2016). Formal TVET in Cambodia can be divided into upper-secondary TVET and post-secondary TVET. According to the CQF, the former consists of vocational certificate programs and three levels of competency-based technical and vocational certificate programs, equivalent to the International Standard Classification of Education (ISCED 3), also known as C1, C2 and C3. Although the CQF states that vocational certificate programs must be full-time, lasting between four to six months (NTB 2012), in practice, the delivery of some short-course vocational certificate

programs lasts for only a few weeks. The main entrance to the first level of the technical and vocational certificate (C1) is the completion of lower secondary school or through bridging courses provided by training centres or institutes. C3 certificate holders have the qualification equivalent to upper-secondary school completion in general education. However, according to statistics from the Directorate General of TVET (DGTVET), the drop-out rates in this program are very high. The majority of the technical and vocational training programs are provided by public institutions and NGOs, while only 3 percent of students were registered with private schools as of the academic year 2018-2019 (see Table 1). In recent years, MoEYS has rapidly expanded its technical education programs at the upper secondary education level. The number of students enrolled in the technical education program of MoEYS has soared significantly in the past five years - from 1,061 students in 2015 to 2,717 students in 2019 (MoEYS 2019). If the number of general and technical high schools will be doubled from nine in 2018 to 19 by 2023, as planned (MoEYS 2019), the number of secondary-level TVET students under the supervision of MoEYS is likely to surpass the stagnated enrolment at TVET institutions under the MLVT.

Table 1: Enrolment in TVET by qualifications level

	Certificate	Technical and Vocational	Higher Diploma	Bachelor	Master
Enrolment by type of provider					
Public	43,171	3,630	8,859	18,045	178
	(84%)	(76%)	(84%)	(81%)	(35%)
Private	6,141	135	474	4,083	333
	(12%)	(3%)	(5%)	(18%)	(65%)
NGO	2,168	982	1,171	15	0
	(4%)	(21%)	(11%)	(0%)	(0%)
Enrolment by gender					
Female	17,892	1,272	2,887	6,644	132
	(35%)	(27%)	(27%)	(30%)	(26%)
Male	33,588	3,475	7,617	15,499	379
	(65%)	(73%)	(73%)	(70%)	(74%)
Total	**51,480**	**4,747**	**10,504**	**22,143**	**511**

Sources: Prepared by the authors based on student enrolment statistics from the MLVT in the first semester of the academic year 2018-2019

In common with vocational education and training (VET) at higher levels of the European Qualifications Framework (EQF), Cambodia has four levels of tertiary-level TVET, including qualifications for two-year higher diploma, bachelor's degree, master's and doctoral degrees. However, currently, a master's degree is the highest TVET program available in Cambodia. About a third of post-secondary TVET students enrol in higher diploma programs, and around two-thirds for bachelor's degrees. Only a small fraction of TVET students, around 2 percent, are pursuing post-graduate programs. While a higher diploma degree is the highest level that training centres can provide, TVET institutions that have institute status are legitimised to offer bachelor's degrees and higher programs. Even though it is not the government's priority, the expansion and status upgrade of TVET institutions has led to increasing enrolment in bachelor's degrees in recent years.

Engineering degrees, including electrical, mechanical and civil engineering courses, are by far the most popular programs, particularly among males, at both higher diploma and bachelor's degree levels. As an institutional strategy to make TVET programs more gender-inclusive, more and more institutions have introduced non-technical courses into their programs. As a result, in respect of enrolment in business-related and foreign language majors, females outnumber males. Enrolment in business-related majors, such as accounting, marketing and management, is now more than twice that of enrolment in ICT-related majors. Nearly two-thirds of the females enrolled on bachelor's degree programs chose business-related majors. On the positive side, a good proportion of female students are also attracted to engineering majors at both higher diploma (19.7 percent) and bachelor's degree (23.0 percent) programs.

Table 2: Enrolment in post-secondary TVET by majors

Majors	Bachelor's degree			Higher Diploma		
	Total	Female	Female %	Total	Female	Female %
Engineering	12,149 (67.3%)	1,018 (23.0%)	8%	4,534 (51.2%)	420 (19.7%)	9%
Business, management, marketing and related services.	3,914 (21.7%)	2,738 (61.7%)	70%	1,179 (13.3%)	828 (38.0%)	70%
Computer and information sciences and support services	1,230 (6.8%)	305 (6.9%)	25%	705 (8.0%)	276 (13.0%)	39%
Foreign languages, literature and linguistics	337 (1.9%)	203 (4.6%)	60%	512 (5.8%)	256 (12.0%)	50%
Architecture and related services	322 (1.8%)	146 (3.3%)	45%	25 (0.3%)	0 (0.0%)	0%
Mechanics and repair technologies/technicians	48 (0.3%)	4 (0.1%)	8%	1,773 (20.0%)	274 (12.9%)	15%
Agriculture, agriculture operations and related sciences	45 (0.2%)	21 (0.5%)	47%	97 (1.1%)	61 (2.9%)	63%
Personal and culinary services	0 (0.0%)	0 (0.0%)-	-	34 (0.4%)	13 (0.6%)	38%
Grand Total	18,045	4,435	25%	8,859	2,128	24%

Source: Prepared by the authors based on statistics from the MLVT.

The majors were classified based on the Classification of Instructional Programs (CIP) codes.

2.2. Higher education

Similar to that of TVET, the governance of the higher education system in Cambodia is also fragmented. According to the Directorate General of Higher Education (DGHE) of MoEYS, 124 institutes and universities are registered as higher education institutions (HEIs) under the supervision of 16 different ministries and agencies, including the MLVT (MoEYS 2020). Based on the MoEYS education congress report, among the 107 TVET institutions under the MLVT, 25 institutions (12 public and 13 private) are also classified as HEIs. Nevertheless, official statistics, such as student enrolment rates, are not usually included in the DGHE statistics due to a lack of coordination. For instance, the DGHE compiles the higher education statistics it obtains from individual HEIs on an annual basis, as shown in Figure 1. However, the compiled annual statistics contain no information from all of the 15 HEIs under the MLVT.

According to DGHE statistics, the ratio between enrolment in associate degree and bachelor's degree is around one to nine. The vast majority of associate degree students are from private universities, as many reputable public universities do not currently offer an associate degree program. Although females have been considered to be among the disadvantaged groups,

female enrolment in higher education is now even slightly higher than it is for their male counterparts (MoEYS 2020). After the introduction of private universities and fee-paying tracks at public universities in the late 1990s, fee-paying students now outnumber scholarship students by a factor of more than seven in associate degree programs and by a factor of five in bachelor's degrees.

Figure 1: Enrolment in academic post-secondary education

	Associate Degree		Bachelor's Degree	
Public	3,090	16%	74,344	41%
Private	6,485	84%	104,914	59%
Male	9,284	47%	88,325	49%
Female	10,291	53%	90,933	51%
Scholarship	2,374	12%	27,338	15%
Fee-paying	7,201	88%	151,920	85%
Total	**19,575**	**100%**	**179,258**	**100%**

Source: Prepared by the authors based on DGHE statistics. The enrolments at HEIs under the MLVT are not included

A significant share of undergraduate students – 43 percent - enrolled in majors related to business and management in the academic year 2018-2019 (MoEYS 2020). The second most popular field is foreign languages (mainly English), accounting for about 10 percent. With continuous efforts made by MoEYS to promote STEM in higher education, there have been slow but steady increases in STEM enrolments in the past few years. The latest MoEYS statistics suggest that about 29 percent of undergraduate students are in STEM-related majors. Nevertheless, enrolment in the engineering field (around 8 percent) is still much lower compared with many other countries in the region, such as Malaysia (29 percent), Vietnam (20 percent), Singapore (20 percent) and Thailand (19 percent) (UIS 2021). To be fair, engineering enrolment figures for higher education could be higher if the statistics from the 15 HEIs under the MLVT are included. Although the overall participation in higher education of males and females is about the same, there are significant differences between them in terms of major choices. While female enrolments are concentrated in business-related majors, their enrolment in STEM-related majors is still very low. Based on our estimations using statistics from MoEYS, nearly half of females opt for majors in business-related majors, yet female enrolments in IT and engineering majors account for only 1.8 percent and 2.1 percent, respectively.

3. Literature review

Ineffective traditional training, the demographic evolution, and the growing demand for new skills to respond to the global industrial revolution and technological advancement during the twentieth century, gave rise to vocational education and training (VET). The primary aim of introducing such an education and training modality was to provide opportunities for the lower socio-economic workforce to reskill and upskill, and thereby strengthening their capacity when tasked with the complex and specialised jobs required during this century (Benavot 1983). Nilsson (2010) explains that three ideal modalities of vocational education and training were reported to have been developed and supported by many international agencies (e.g., the International Labour Organization (ILO) and UNESCO) in the aftermath of World War II:

i) A market-led system (the VET takes place substantially in the labour market)

ii) A school-based model (the VET is the responsibility of the schools and they have accountability for it)

iii) A dual system (the integration between the apprenticeship concept to the training and the school-based model).

In Cambodia, TVET has never received the attention it deserves: it has always been overlooked despite its considerable contributions to the economical competitiveness of the country. More often, TVET learners and graduates have encountered challenges because the route to continuing their studies in universities has been unclear; this issue has, therefore, been central to discussions not only in Cambodia but also in other countries. Coupled with development partners, policymakers have begun to identify coping strategies and policy measures to promote the permeability between technical and vocational education and training and higher education. Field and Guez (2018) assert that existing challenges stem from various barriers, one of which could be the fact that universities hold substantial autonomy in terms of programme design. Consequently, this led to restraining all of the possible transitions from the vocational track to the academic track. Ambrose et al. (2013) and Aird et al. (2010) highlight additional barriers that have been perceived to be the leading determinants in making the transition from TVET to universities even more challenging. These included the absence of uniformity, inadequate academic content in TVET programs, and vice versa, and the disparity between pedagogical and learning approaches.

Without a well-coordinated policy that can mediate the transition from the vocational track to the academic track, Winch (2013) suggests it would result in deteriorating the attractiveness and image of TVET programs. A theory called "Diploma disease" can be applied to explain the cause of the degradation of TVET attractiveness. The theorist posits that in the late-development effect, students seek higher qualifications under a hopeful scenario to obtain an upper echelon of occupation in society upon their studies. In addition, this general phenomenon stemmed from the demand-side because employers in certain professions place a greater value on higher learning or certificates and soft-skills, such as the ability to adapt within the organisation, cooperation and responsibility, rather than the possession of vocational qualifications (Dore 1997).

3.1. Establishment of national qualifications frameworks

An individual usually masters or acquires knowledge, skills and competencies through training and education, either in formal, non-formal, or informal settings. To provide an evaluation to certify that an individual has acquired a qualification, an assessment is usually carried out, after which the qualification is conferred that can be used to apply for an employment opportunity or to pursue higher education or training (OECD 2007). Coles (2007) similarly defines "qualification" as the desired outcome when an individual has shown sufficient ability on completing training and education, or learning from various settings, to perform the necessary tasks. Therefore, gaining an explicit understanding of the concept of "qualification" contributes directly to the construction of a qualifications framework.

In European countries, two significant initiatives - the Bologna Process (1999) and the Copenhagen Process (2002) - reviewed the essential agenda and aimed to modernise Europe's education and training system. This led to the development of the European Qualifications Framework (EQF).

> Both processes aimed at modernising education and training and gave rise to two credit systems (European Credit Transfer System – ECTS; European Credit System for Vocational Education and Training – ECVET) and two qualifications frameworks (European Qualifications Framework for lifelong learning – EQF; European Higher Education Area Qualifications framework – EHEA Framework or Bologna Framework) (Mouillour 2015, p. 481).

The EQF comprises eight qualification levels, each of which is oriented towards professional and practical components, outcomes-based approaches (knowledge, skills and competencies), and learner progress (measured by value-added rather than progression) (Lester 2015). The EQF came into effect in 2008. The year 2010 was designated as the target for countries to develop comprehensive national qualification frameworks (NQFs) based on the EQF, and 2012 was the year for countries to reference individual national qualifications to EQF levels. The EQF and subsequent NQFs have since been a driving force behind education and training policy reform in 38 countries.

Most European countries deemed the adoption of NQFs a top priority, and the implementation has resulted in positive outcomes in the years since, given the significance of the qualification framework (Elken 2016). According to the European Centre for the Development of Vocational Training (Cedefop 2015), 29 European countries reported having adopted NQFs officially, while a far-reaching NQF was under comprehensive development in 34 countries as of November 2014 with the inclusion of all levels and typologies of qualifications between education and training systems. This is the sizeable impact of reform and the changes brought about by the EQF on European education and training. In addition, Germany, Romania and Turkey introduced NQFs as a compulsory device to improve the permeability between education and training systems. Their aim has been to eliminate the segmented structure of education and training systems (Cedefop 2018; UNESCO 2015). Further, Allais (2010) and Lester (2015) maintained that the NQFs have facilitated transfer between tracks, aided the recognition of prior qualifications, and increased the transparency of different qualifications and levels.

In a similar way to European countries, and to address the shortfall in skill development and ensure the free flow of skilled labour within the region, ASEAN member states endorsed the ASEAN Qualification Reference Framework (AQRF) in 2016. The AQRF is used as a referencing guideline and to provide processes to enable the member states to achieve harmonisation in education and training and to compare qualifications within the region without influencing individual NQFs. In addition, its primary functions are to promote the mutual recognition of qualifications, the development of national assessment systems to validate prior qualifications gained outside of formal settings, and to support student and worker mobility within ASEAN (ASEAN 2016). In addition, a comparative study of regional qualifications frameworks highlights the progress made in the implementation of AQRF. Indonesia, the Philippines, Thailand and Malaysia have already linked their NQFs with the AQRF, and Laos, Myanmar and Cambodia are considering undertaking the referencing processes, whereas Singapore and Brunei have just provided information about their education and training systems (Auzinger et al. 2021). However, this study does not elaborate on the challenges in terms of referencing the processes that are underway in the region, and more importantly, Vietnam was not mentioned. In Cambodia, the CQF is not yet referenced to the AQRF. However, it assists higher learning institutions to understand the classification that differentiates TVET from universities, to conduct assessments of students' prior learning from various educational settings, and, more importantly, it helps enterprises to determine the skills and capability of a graduate that is manifested in their level of achievement when they apply for an employment opportunity.

The CQF is structured to differentiate the heterogeneities of both tracks according to four key elements - levels, credits, learning outcomes, and study/testing pathways - and eight levels of qualifications, as stated in Table 3 (National Training Board 2012).

Table 3: Structure of levels in the Cambodia Qualifications Framework (CQF)

CQF Levels	TVET	Higher Education	ISCED Level
8	Doctoral degree of Technology and Business Education	Doctoral degree	8
7	Master's degree in Technology and Business Education	Master's degree	7
6	Bachelor of Technology and Business Education	Bachelor's degree	6
5	Higher diploma of Technology and Business Education	Associate degree	5
4	Technical and vocational certificate 3		4
3	Technical and vocational certificate 2		3
2	Technical and vocational certificate 1		2
1	Vocational Certificate		1

Source: National Training Board (2012)

To promote vertical and horizontal progression and eliminate the "dead-end" perception of VET, a study that aimed to review policy on the progression from VET to higher education, conducted by Thomas et al. (2015), introduced the concept of "Hybrid Qualification". This originated in Germany and its objective is to integrate apprenticeships and vocational education and training systems. It also emphasises how an individual acquires qualifications, one of which can be a vocational qualification - a qualification that is considered equivalent to that of students following the Higher Education (HE) track - thereby making it easier for students to enter HE directly. A similar vision was adopted in Scotland called Scottish Higher Nationals (HNs). This qualification enables students to adjust their direction or progress studies either vertically or horizontally without necessarily repeating the courses they completed in their prior studies. In this seamless system, credit value and course articulation are voluntarily recognised by universities so that students are entitled to the first one or two years of a four-year degree program (Scottish Credit Qualifications Framework (SCQF) 2019). These qualification frameworks among European countries include policies, mechanisms, and steps not only to eliminate the divisions but also to build the bridge between education and training through a learning outcomes approach, credit recognition, the accumulation of various forms of training in formal, informal, or non-formal settings, and transfers according to the levels reached. This ensures transfer without any barriers and does not restrict students' learning choices or hamper efforts to strengthen the links between both systems. Instead, it improves the permeability that can raise the visibility and image of a TVET program (Cedefop 2012).

3.2. VET as a steppingstone to higher education

As unusual as it may sound, while universities are usually located in major cities and draw much attention from high-achieving students, VET institutes are typically located in the periphery of main urban areas. They tend to attract students with below-average performances or socio-economic disadvantages because VET programs are made affordable and accessible to the masses. Such segmentation is a barrier to permeable education and training. Great

strides have been made to address the situation and to connect education and training systems. A case in point is Singapore, where technical and polytechnic education is seen not only as an indispensable pathway that imparts practical skills and produces industry-ready graduates, but also as a viable alternative route from a junior college to university (Agrawal 2013). By connecting its education system, Singapore has been able to address the problems of school drop-outs and failure. Students who did not pass the school-leaving examination, rather than leaving education altogether, can obtain practice-oriented education that leads directly to labour market entry and/or higher education. As a result, Singapore has improved equity in educational outcomes and raised standards overall.

As can be seen, some countries, such as Canada, Indonesia, the Republic of Korea and Jamaica - where the system of community and junior colleges stems from the US model - allow students to take the two-year associate degree in order to gain entry to university; however, they have to study for two years more to complete a bachelor's degree (Field and Guez 2018). A Scottish Funding Council (SFC) report notes that for students with non-traditional qualifications, such progression routes and articulation arrangements are considered imperative. Prior education or training over an extended period and associated qualifications allow them to strengthen and develop their efficacy and capacity before embarking on a university degree. Importantly, not all students are ready to commit to a full four-year degree course from the outset, so the opportunity to study for a diploma or an associate degree can keep them engaged in education (SFC 2007).

However, students' prior qualifications are not always voluntarily recognised because some higher learning institutions are disinclined to translate the adopted policies - such as credit transfer, articulation arrangements, and recognition of prior learning - into practice and demand that students start from the beginning provided that they aspire to further study at university levels (Musset et al. 2013). Because of this inconsistency, the route from VET to higher education is still beset with complications due to institutional barriers (Griffin 2014). For example, in Latvia and Estonia students are not deemed automatically eligible for direct entry to a degree course even though they have completed a two-year VET course (OECD 2016). This is because not all VET courses and qualifications count towards university entry qualifications. After all, their entry qualifications are conditional and depend on the courses students have completed; this might require them to undertake additional supplementary courses that prepare them for higher education. Additionally, the accredited system between VET and HE, argued by Pavlova (2014), is still the cause of debate, and is widely discussed amongst practitioners. More importantly, VET curricula are occupation-specific, further limiting progression opportunities for VET learners (Field 2017). This division of functions and curricula can also be observed in Japan. The curriculum of *senmongakko* (vocational higher education) greatly emphasises employability and workplace-oriented skills, as well as flexible and informal learning approaches instead of programmed instruction (Goodman, Hatakenaka and Kim 2009). Consequently, permeability as a steppingstone is quite confusing, and the practice of related policies remains stagnant.

3.3. VET at higher qualification levels

The traditional forms of VET programs are usually short-cycle courses and secondary education. Given its growing significance in building human capabilities responsive to the rapid transformation of industrialisation and servicification, the European development discourse has paid increasing attention to the inclusion of VET at tertiary level to bridge the different aspects of education and training systems (Cedefop 2011). In addition, ASEAN nations, such as

Thailand, Vietnam, Cambodia and Lao PDR, have made concerted efforts to introduce TVET initiatives to increase student enrolment in the national TVET system and to further update TVET programs at higher levels. For example, Vietnam is seen as a progressive nation in terms of promoting TVET at the post-secondary education level, and the national quality standards in industries (e.g., hotel and tourism) have already been designed (Paryono 2011). However, because it is apparent that a standard terminology does not exist, higher/tertiary VET has been interpreted in different ways, particularly in different European countries. Cedefop (2014, 292) defines VET as "education and training which aims to equip people with knowledge, know-how, skills and/or competencies required in particular occupations or more broadly in the labour market".

In addition to dealing with different concepts and organisational and institutional structures, the definition presented serves as an integral tool to delimit the scope of higher-level VET and its regulation. Taking ISCED 2011 into account, tertiary VET encompasses four education levels, from five to eight, equivalent to short-cycle tertiary education, bachelor's degree, master's degree, and doctoral degree (UNESCO 2011). Auzinger, Ulicna and Messerer (2016) assert that providing an industry-ready qualification for VET learners to enter the labour market or that is geared toward specific industries and professions, and paving the way for those who aspire to pursue tertiary learning programs, are primary objectives of a higher VET qualification. To ensure VET learners receive a well-rounded education, higher VET programs are characterised by a consolidation of professional and academic elements, dominated by aspects that are vocationally oriented (Cedefop 2011).

It is evident that, in Australia, the addition of higher qualification levels in the VET framework is intended to respond to fast-growing needs, and to deal with the shortage of individuals who are equipped with workforce-ready qualifications, to spur the country's economic growth and productivity (Foster et al. 2007). The report points out that the Australian government has introduced two higher levels in the VET sector: the vocational graduate certificate and the vocational graduate diploma. Both qualifications are designed to link VET and higher education and are higher than a bachelor's degree (ISCED level 6) but lower than a master's degree (ISCED level 7). Although a particular distinction exists in comparison with other qualification frameworks, these higher-level qualifications provide better flexibility and a much more obvious pathway to assist learners in accessing the world of work or in gaining eligibility for further studies (Langworthy and Johns 2012).

Various developed European economies have exhibited positive experiences and confirmed that skills development is a frequently used route to economic development as a result of the expansion of higher VET qualifications. Sweden, for example, has scaled up its professional programs to ISCED level 7, equivalent to a master's degree, attracting more than 50,000 VET learners in 2017 alone (Skolverket 2019). Approximately ten countries, including Austria, Belgium, Germany, Denmark, Spain, Finland, France, Ireland, Netherlands and Portugal, have followed suit in adding higher levels in VET to their training systems (Auzinger, Ulicna and Messerer 2016). Therefore, the flexible learning pathways and delivery modes in higher VET enable learners to pursue a practice-oriented bachelor's degree and post-graduate professional education at universities of applied sciences, where courses such as medicine, law or engineering/technology have a strong emphasis on vocationally-oriented aspects (Cedefop 2019).

Successful cases can also be found in Southeast Asian countries. Thailand's VET system comprises three levels, two of which are post-secondary (ISCED levels 5 and 6), and rigorous guidelines have been laid out to assist student mobility to support the notion

of lifelong learning (Department of Education Skills and Employment 2020). Similarly, the government of Malaysia has established 33 technical and polytechnic institutions nationwide. These polytechnics are under the jurisdiction of the Ministry of Higher Education. Ten bachelor's degree programs, nine advanced diploma programs, and 44 diploma programs in most major fields of study, including engineering, commerce, food technology, ICT and hospitality, have been incorporated into their education and training system. As a result, as of 2016, more than 90,000 people had been attracted (Hassan, Foong and Ismail 2019). Therefore, developing flexible learning pathways at tertiary levels of VET is considered mandatory as it can result in the easier removal of barriers that prevent young people from achieving their potential. These barriers include the segmentation of education and training systems, the misperception that VET is a dead-end pathway and the absence of uniformity that hinders progress. Overall, significant steps have been taken to improve graduate outcomes (Cedefop 2012).

3.4. Inter-institutional collaborative arrangements and partnerships (credit transfer)

Robust government efforts to introduce the arrangements for credit transfer and accumulation systems have long been recognised as significant in aims to boost greater links between VET and academic educational institutions. To be successful, this solution to permeability requires the joint effort and engagement of a broad range of stakeholders, including learners, training and educational institutions, teaching staff and trainers and employers (Pollard et al., 2017). Contrary to expectations, the arrangements bring a realisation that the steppingstone from vocational to academic track can be uncomplicated and seamless in principle, but in reality, Harris, Rainey and Sumner (2006) describe it as being more akin to "crazy paving". This is because the system is complex and inconsistent; specifically, policy and practice vary across institutions and are usually ad hoc (Bandias, Fuller and Pfitzner 2011).

The Australian government initiated the VET Fee and Higher Education Loan Program to increase the proportion of VET graduates studying in higher education institutions. This initiative has created a dynamic climate, encouraging universities and VET institutions to collaborate or establish partnerships to facilitate seamless transitions from VET to higher education through credit transfer and articulation arrangements, as the transfer process can be a daunting experience for students (Smith and Brennan Kemmis 2014). In another example, in Tajikistan, students who have completed a two-year program at technical college can transfer directly to the third year of a bachelor's degree program at a partner university (Marope, Chakroun and Holmes 2015). This is similar to the Australian credit transfer systems, which enable VET students to continue their studies at university through credit transfer systems (Langworthy and Johns 2012).

It is apparent that the established collaboration between higher learning and VET institutions is a significant factor in determining the impact of the credit transfer and articulation systems. However, successful implementation is heavily contingent upon both institutions since some university staff perceive that the credit systems "threaten the integrity of the course as well as the general standards of their particular university" (Bandias, Fuller, and Pfitzner 2011, 587). This objection tends to undermine efforts and initiatives to promote inter-institutional partnerships and impedes the development of permeability between education and training systems. Contrary to the perceptions of some higher learning institutions, the recognition of prior learning between post-secondary academic and vocational tracks attempts to smooth disparities and harmonise commonalities in terms of course contents and approaches to teaching and learning. This gives students, despite their educational background, the opportunity to

pursue higher learning without having to revisit the knowledge they have already acquired (Field and Fazekas 2013). However, universities usually hold substantial autonomy not only in terms of assessing students' credits, but also accepting or declining the applications (David and Cathy 2015).

3.5. Academic vocationalisation and VET academisation

As can be seen in many societies, the academic-type education is traditionally framed as an engine for the promotion of scholarship and the production of human resources equipped with scientific knowledge: the success of each discipline lies in the scientific outputs to which this system contributes, not necessarily to the absorption of practical skills appropriate for employability (Spöttl 2013). However, due to industrialisation and the increasing investment in human capital for better economic productivity, the nature of the education and training system has changed. Lauglo (2005) states that in the 1970s, secondary and post-secondary education set about the process of revisiting their "pure" identities by placing a greater emphasis on skill development. Because of the trend towards vocationalisation, all institutions hoped to create an inclusive society where disadvantaged students had equal access to education and training by eliminating the opportunity gaps in education and lessening the divide in the nation.

In addition, with a large influx of students completing their secondary schooling and ready to enter higher education, many universities revised their curricula and their admission requirements, making their education programs more comprehensive with the introduction of courses embedded with academic and vocational aspects and accessible to all students who were otherwise deemed ineligible because of their under-achievement. This diversification would result in students with distinct backgrounds, interests and aptitudes being able to take advantage of diverse pathways to universities (Maclean and Pavlova 2013). A study on comparative perspectives in Germany, conducted by Hoelscher (2005), is a testament to the vocational programs in higher education. The study highlights the fact that German higher education fashions its programs with the dominance of more vocational aspects in comparison with the United Kingdom: the Germans were confident that, through vocationalising their higher education programs, students would acquire occupation-specific skills that could prepare them to respond to the growing demands of the labour market and ensure stable employment.

Aware of the vast enrolment figures at tertiary level at universities, VET institutions began to foster the dual bachelor's degree. This was initially adopted in 1970 by academising education and training contents with an integration of apprenticeship and academic elements. This would enable institutions to maintain visibility and attractiveness and ensure that their graduates would be better able to enter high-profile occupations. Students completing the dual program would be granted two certificates (e.g., a vocational certificate and a bachelor's degree) (Haasler 2020). The source also suggests that, although this approach could evidently improve the students' employment prospects, career stability and wages, criticism arose, and some practitioners were concerned that it would damage the image of vocational programs. Despite the criticism, another modality to academise vocational programs emerged, offering the full-cycle degree program that lasts for three-and-a-half years. This cycle of education enables VET students to gain specialisation, skills and competencies.

4. Research Methodology

This study employed qualitative analysis and followed Swain's (2018) hybrid process in combining both inductive and deductive thematic analysis approaches. The primary data is from key informant interviews (KIIs), but we also conducted policy document reviews and observations to ensure a good understanding of the phenomenon and to validate the collected primary data. This is a form of data triangulation, which engages with various types of participants including individuals, groups, families and communities, and that can maintain the validity and reliability of the data obtained (Bekhet and Zauszniewski 2012).

4.1. Data collection

Two main sources of data were used for the analysis in this study - primary data obtained through KIIs and secondary data from policy documents. To collect the primary data, the research team purposively selected 20 training centres and institutes under the MLVT and universities under MoEYS located in Phnom Penh and another six provinces. This was to ensure the geographic variation of the selected education and training providers as well as the type of learning institutes. Official letters were sent to the selected training institutions and universities asking for their cooperation; however, only 15 responded positively to the requests. The research team could not obtain permission from the remaining five training institutions and universities for the interview even after several follow-up telephone calls. Policy documents include, but are not limited to, the Cambodia Qualifications Framework, the Royal Degree on the accreditation of higher education, the MoEYS Prakas on the internal regulation of student admission at public and private higher education institutions, MoEYS guideline No. 09 on examination requirements or examination subjects for the first-year bachelor's degree student admission, and the ACC decision on credit system and credit transfer implementation for higher education.

The participating institutions consist of eight TVET institutions under the MLVT and seven universities under MoEYS. Seven of the sampled training institutions and universities are in Phnom Penh, and eight are located in the provinces of Battambang, Kandal, Kampong Speu, Kampot, Sihanoukville, Prey Veng, Svay Rieng and Siem Reap. Four out of the eight universities are private, but all the selected institutions under the MLVT in this study are public. Private and NGO TVET institutions have been excluded from the study because a majority are relatively small, and their programs are typically limited to short courses and/or higher diplomas.

After obtaining permission for an interview from the individual institution, the research team requested them to assign people for the interviews who were at management level, and who were familiar with student affairs and transfers. In most cases, the key informant interviews were conducted with the university's vice-rector or, in the case of TVET institutes, the director and/or head of academic affairs. The semi-structured interviews, guided by the interview protocol, were conducted in Khmer between early February 2020 and late April 2020. The semi-structured interview protocol can be found in Appendix A. The use of semi-structured interviews allowed the researchers the flexibility to ask more follow-up questions on specific issues that were of interest to the study. The face-to-face interviews started with the introduction of the research team members and the research purposes, and written consent was sought from the key informants. However, data collection was temporarily suspended from mid-March after MoEYS issued the emergency directive to close all educational institutions due to the Covid-19 outbreak. Later in April, the research team decided to resume the data collection by conducting online interviews through video conference using Zoom with our key informants.

Beyond our expectations, the video conference with the last four universities conducted in late April went very smoothly with little disruption. With verbal consent from the interviewees, all interviews (except for one held in one school) were recorded using voice recorders. Both face-to-face and online interviews lasted around one hour. The research team decided not to replace the five schools that had declined requests for interviews, as the information obtained in the last few interviews indicated that saturation point had been reached. The list of interviewees appears in Appendix B.

4.2. Data analysis

For the data analysis, the study used NVivo 12, a computer-assisted qualitative data analysis software (CAQDAS), to code the transcribed interviews and interview notes and to generate and identify the themes. The analysis process was guided by the thematic analysis approach, a widely used method in qualitative research popularised by Braun and Clarke (2006). In their words, "thematic analysis is a method for identifying, analysing and reporting patterns (themes) within data. It minimally organises and describes your data set in (rich) detail" (Braun and Clarke 2006, 79). The key uniqueness of the thematic analysis is its flexibility. Different from grounded theory or discourse analysis, thematic analysis is not tied to any theoretical framework or any assumption in the analysis process. This study also follows the six-step process of the thematic analysis suggested by the authors. Those steps are: familiarising with our data; generating initial codes; identifying themes; reviewing themes; defining and naming themes; and finally writing up the findings.

The researchers familiarised themselves with the data by directly conducting the interviews and then sensitising the data by editing transcribed interviews for clarity and reading them several times. All recorded interviews were transcribed into English by CDRI's interns and a research assistant, and were later checked and reviewed by the research team. All transcripts and interview notes were imported into NVivo 12 for coding and analysis. Although our research is guided by an analytical framework, the initial open codes were unguided. In generating our themes, we adopted Swain's (2018) hybrid approach that includes top-down deductive reasoning based on the research objectives and bottom-up inductive reasoning derived from the initial open codes.

4.3. Scope and limitation of the study

TVET refers to a broad range of learning experiences and activities. In the revised UNESCO recommendations, TVET is defined as "part of lifelong learning, [it] can take place at secondary and post-secondary levels and includes work-based learning and continuing training and professional development which may lead to qualifications" (UNESCO 2015, 5). In Cambodia, formal TVET begins at upper-secondary education level, known as a certificate program, and theoretically continues up to the doctoral program. This study's discussions will focus mainly on the vertical permeability between the training and education system from the TVET track to the academic higher education track at post-secondary levels - specifically, the International Standard Classification of Education (ISCED 2011) levels 5 and 6. The legal framework boundaries and definitions of academic higher education and TVET in the context of Cambodia are not clearly demarcated, as some TVET institutions also provide non-technical programs up to post-graduate level. At the same time, HEIs under MoEYS also offer two-year professional programs and short-course certificates. Therefore, for analytical purposes, tertiary-level TVET and academic tracks in this study are restricted to those programs offered by institutions under the MLVT and MoEYS, respectively.

The researchers jointly coded the first three transcripts to ensure some level of consistency among the researchers. After the joint coding, one researcher was assigned to code the remaining transcripts. Due to time constraints, the researchers could not code separately and compare the codes to test their validity. Another limitation is that private and NGO TVET schools were not included in this study as we could not obtain their contacts.

5. Results

From our analysis, four main themes emerged: i) students' entrance pathways, ii) permeability pathways, iii) challenges hindering smooth permeability, and iv) academisation of TVET institutes and vocationalisation of higher education institutes.

5.1. Entrance pathways to TVET and higher education

There is little difference in qualifications required to enter post-secondary TVET and higher education, but there are some distinguishable differences in student traits. For admission to TVET higher diploma or university associate degree programs (ISCED level 5), the main requirement is the completion of the final year of upper-secondary education. Passing the national grade 12 examination (school-leaving examination) is not obligatory. An alternative pathway to post-secondary training and education is the successful completion of the three-year technical and vocational certificates, commonly known as C1, C2 and C3 (ISCED level 3) offered by TVET providers. The certificate-level programs are also available at MoEYS technical high schools, but enrolment is still low. Due to the low enrolment in the program and its high drop-out rate, it is a less favoured route.

In addition, students entering higher education usually aim to obtain a high-profile occupation in society. They are not inclined to be low-skilled workers but aspire to be entrepreneurs. They prefer business-oriented programs, including marketing, management, and entrepreneurship. Although these degree programs largely focus on theory, students are confident about the security of a possible promotion to a management position, receiving social recognition, and establishing a proper pathway to lifelong learning. This argument was supported by most of the interviewees in the KIIs. However, there is a belief that the nature of TVET, unlike higher education, is oriented to the assimilation of practices and skills. TVET can be a better option for some students.

> If they [HE students] just complete a lower-level degree, they would end up becoming low-skilled workers. This factor encourages them to continue studying at a higher education level that focuses on research, management and analysis. These are the key skills to manage people. [AC-02]

> TVET is designed for specific occupations…For example, engineering students at university study more theories, but we allow students to practice for no less than 50 percent of their time from year 1 to year 4. (TVET-07)

A vast majority of our key informants agreed that TVET students are generally from economically disadvantaged backgrounds and are academically below-average performers. A significant proportion of TVET students enrolled in higher diploma degree programs were reported to have been prolonged drop-outs, to have failed high school examinations, or to have passed with unsatisfactory grades. The perception that TVET is of inferior quality has made this the last resort for potential candidates.

> Students who can afford tuition fees would choose other schools [universities]. They generally consider us as the last choice. (TVET-04)

Reasons why socio-economically disadvantaged students find TVET programs more attractive are scholarship offers and other benefits. This support provides students who have financial constraints with a means to further their post-secondary training and education as a pathway toward lifelong learning. All certificate-level students and a large proportion of higher diploma students interviewed at TVET centres and institutes were eligible for tuition waivers, and some of them also received stipends and free meals and accommodation.

> Besides the tuition waivers, there are stipend scholarship opportunities. ADB provides C-program students USD40 a month for ten months a year on some prioritised skills. Some higher diploma students also receive stipend scholarships from the government. (TVET-08)

The majority of TVET centres and institutes admitted that they had problems attracting students to enrol on their certificate programs even with scholarship offers because students and their families had the embedded perception that TVET was only for low-skilled workers and was of low quality. However, some leading and well-resourced TVET institutes disagreed with the idea that TVET was the second option for students because a significant share of their students on higher diploma and bachelor degree programs were self-financed.

> Our institute has no problem in attracting students to the higher diploma and bachelor's degree programs. Most students here, except those on the C programs, are fee-paying. Different from other institutes, our programs are full-time (seven hours a day). Last year, the school admitted more than 900 students, much higher than anticipated. (TVET-05)

The requirements for admission to four-year bachelor's degree programs on the TVET track are somewhat analogous to those on the academic track. One of the most important requirements is passing the national grade 12 examination or the completion of the C3 program. The difference is that, according to MoEYS guideline No 09 issued in 2009, universities are required to administer entrance examinations to determine students' competencies. The entrance examinations are supposed to be a prelude to the enrolment or course registration, yet in most cases, the examination is administered after the payment of the tuition fee has been made and classes have already started. When asked about the fundamental factor that leads to the arrangement of entrance examinations after the courses have started, university representatives responded that universities had the intention to expand the opportunities for students to undertake majors for which their prior qualification was deemed ineligible. However, the entrance exam is a requirement set forth by MoEYS, so they find it obligatory to arrange the exams to meet this requirement. Despite the requirement, the probability that students will fail the entrance exam is extremely low to almost non-existent at some universities. As a university's vice-president admitted:

> …about 5 percent of students failed the entrance exam. However, we offer bridging courses for those who have failed it. These courses, that last between two and three months, help to strengthen their abilities to pass when they re-take the entrance examination. (AE-02)

In theory, students who successfully complete C3 can enter the bachelor's degree program of both tracks. Nevertheless, the actual practice does not support this, particularly in the case of academic higher education. One of the persistent barriers that prevent them from switching to the academic track stems from their poor academic backgrounds and the concentration on practical skills of the programs at TVET centres or institutes.

> I acknowledge that completion of C3 is equivalent to high school graduation, but we have not yet received any C3 applicants since the inception of our university. (AE-05)

5.2. Permeability pathways between the two sub-systems

This study found that the establishment of CQF has helped to pave the permeability pathway by allowing TVET institutes to establish higher levels of TVET programs. According to the CQF, TVET institutes can offer qualifications as high as doctoral degrees (ISCED level 8), and, in practice, some TVET institutes are already offering master's programs. At most of the TVET institutes interviewed in Phnom Penh, enrolments in bachelor's degree programs are far higher than enrolment in higher diploma and certificate programs. Our findings suggest that Cambodia's most common permeability pathway is through the higher levels of TVET qualifications and, to a much lesser degree, through credit transfer between the two tracks.

Higher-level qualifications

The minimum number of credits required for a higher diploma or associate degree is 60, while students on four-year bachelor's degree programs need to acquire 120 credits. All TVET institutes at which interviews were conducted recognise that the knowledge and skills offered at the two-year higher diploma level are equivalent to what students learned in the first two years of the bachelor programs, although curricula and student backgrounds of the two programs are supposed to be distinguishable. This means that after completing the higher diploma program, TVET students, whether s/he passed the grade 12 exam or not, can continue directly to the third year of the bachelor's degree in the same or a similar field. They can either choose to pursue their bachelor's degree at the same institute or another technical training institute under the MLVT.

> A majority of our students continue to bachelor's degree…They aim to get a higher degree. We also have evening and weekend courses for those who wish to combine school and work. (TVET-01)

> … they can get jobs after obtaining a higher diploma degree. However, if they continue to bachelor's degree, they receive better social recognition and possibly promotion. I believe people have to move forward, for it is life-long learning. (TVET-02)

One TVET institute interviewed even uses the same curriculum for both higher diploma and bachelor's degree programs and combined students in the two qualifications of the same major in the same class. Two of the TVET institutes interviewed in Phnom Penh also offer master's degree programs. According to the MLVT's latest enrolment statistics for public TVET providers in the academic year 2019-2020, slightly more than 100 students enrolled in master's programs, or roughly one percent of the post-secondary TVET enrolment at a public TVET institution.

Credit transfer

Another less travelled permeability route is through credit transfer. The CQF's credit system is designed to provide a flexible pathway for students to move between the TVET and academic tracks. Both universities and TVET institutes have adopted a credit system that supposedly aims to ease all challenges and to promote the links between the two tracks through credit transfer and mutual recognition of prior learning. That said, the transfer between these two tracks is still less commonly practised due to its complexity and the absence of consensus on recognition of prior qualifications. The CQF does mention the importance of the recognition of prior learning but does not provide any clear guidelines about how this should be assessed, apart from suggesting the establishment of National Recognition Prior Learning and Credit Transfer Implementation Policies and Guidelines that have never been realised. Without adopting a

proper credit system, it seems far-fetched for students to transfer between the two tracks. As can be seen, the transfer process is seamless within the TVET track without involving any complexities and bureaucratic stages. Given the unfair treatment of prior learning, very few TVET students transferred to universities when they wished to further their bachelor's degree, partly because the 60 credits obtained from their higher diploma program are undervalued and not considered equivalent to the 60 credits of the first two years at universities.

> Most of the students pursuing bachelor's degrees do so within the TVET track. Only one or two students [a year] transfer to universities under MoEYS. (TVET-04)

Although TVET is commonly perceived to be of low quality, there is a higher chance that students from the academic track can easily transfer and be admitted to the bachelor's degree program at TVET after obtaining an associate degree. This is because they are likely to be able to continue directly from the third year without having to take extra credits. Even so, the evaluation hinges on the internal evaluation committee.

> We often receive students transferred from private universities… They don't have to take extra courses if they fulfil all the credits required by our institute. (TVET-01)

The credit system adopted by most TVET institutes and universities is, in itself, another problem hindering credit transfer. A considerable number of interviewees admitted that their credit system is not "pure" because of the application of the cohort-based system throughout academic years and programs, meaning that students have little or no choice in the course or subject selection. They have to strictly follow the curriculum assigned by the faculty.

> First of all, we have to evaluate the courses that students have already undertaken. It can be general, functional or core subjects. For general subjects, students are not supposed to re-take them, while major-oriented subjects are compulsory, because students have to build a foundation to connect with the major they intend to undertake. (AE-07).

5.3. Hindrances to permeability

The shortcoming of inter-ministerial coordination and collaboration, the use of separate guidelines in evaluating students' prior studies, and the differences in orientation and quality assurance mechanisms between the two systems are the key challenges that hinder the concerted efforts to harmonise the homogeneities and to distinguish the heterogeneities of the two tracks.

Lack of a common framework for the recognition of prior learning

An obstacle to the smooth transfer between the two systems is the conflicting practices in evaluating students' acquired credits, as they are based on different guidelines. This issue was often mentioned during interviews with participants from the university side. To assess students' prior learning, universities under MoEYS follow the Prakas 641 issued by MoEYS in 2000, while TVET institutes mentioned the CQF as their reference. It is worth noting that the CQF does aim to promote the recognition of prior learning, but it does not elaborate on how this should be assessed, leaving this task to the individual institution. "Responsibility for determining eligibility for admission to programs and the extent to which credit or unit competency should be given for prior studies must remain with the institution in which students wish to enrol" (National Training Board 2012, 50).

As mentioned earlier, public TVET institutes consider the credits students obtained from higher diploma programs to be equivalent to those acquired by bachelor's degree students in the first two years. With this interpretation, TVET students can smoothly continue directly to the third

year after graduating with a higher diploma degree. There is also a possibility for a student who obtained a university associate degree to transfer to the third year of the bachelor's degree program in a TVET institute, but this needs to be assessed by the school committee.

> There is no difficulty in transfer at all. As long as they complete a two-year [higher diploma] program, they can start year three here immediately. (TVET-01)

On the other hand, Prakas 641 directs HEIs under MoEYS to conduct a comprehensive evaluation to determine whether or not students have completed required subjects and that universities should differentiate candidates with and without a national grade 12 exam certificate. The implementation of the Prakas varies slightly between universities, but, in general, candidates with the national grade 12 exam certificate are required to take one extra semester before entering the third year. In contrast, students without the certificate need to start from the second semester of the first year or the first semester of the second year depending on the evaluation.

> According to the MoEYS guidelines, students cannot continue directly to the third year of the bachelor's degree. Those who have completed an associate degree or higher diploma degree and passed the grade 12 examination can enter a program of the same or similar major from Year 2 Semester 2. (AE-01)

According to the ACC's decision No. 04/04 issued in 2004, HEIs should support students' transfer process by preparing the necessary documents, and at the same time determine the requirements to accept transferred students. That said, the decision does not mention how prior learning should be assessed. Cambodian HEIs have autonomy in designing their curricula, and it is supposed to be so. This diversity of the curricula of the same major, in addition to the lack of guidelines and inflexible cohort-based credit system, adds another layer of complexity to the transfer process. The decision to accept or decline students' applications depends on the discretion of the committee. Even though universities are directed to set up an evaluation committee, those committees are ad hoc and temporary in most cases.

> At my university, it [evaluation committee] is usually formed only when we have students submitting their transfer applications. We create the internal committee based on respective majors… Committee members consist of academic office representatives, the faculty dean, or vice-dean of faculties concerned. (AE-01)

> We look at the credits on their transcript and determine the general and core subjects taken. We only accept students holding degrees applicable to our university program, and the courses must be similar to our curriculum. (AE-03)

> The evaluation process was complicated when I was in charge of the student transfer, and I am certain it has worsened. (AE-02)

Several TVET institutes also complained about the difficulties for their students who wish to transfer to the academic track as universities argued that TVET institutes do not encompass academic aspects in the curriculum that would entail permeability in their learning pathways. Consequently, students are not well suited for university entrance, and do not have a necessary grounding that is considered equivalent to an entrance qualification.

> The transfer process to universities under MoEYS is still so challenging… I even helped to call the school directly to facilitate the process, but they still rejected my students. (TVET-04)

Differences in orientations and quality assurance mechanisms

Traditionally, TVET has focused on occupation-specific and competency-based programs. Some major programs in Cambodia continue to follow this tradition. Moreover, some majors, such as mechanics, electronics and electricity, are not widely offered at Cambodian universities. These different focuses and orientations also partly hamper the transition between the two tracks.

> One challenge that poses difficulties in transferring from TVET to universities is that [TVET] students, despite having a great deal of practice, do not have adequate general and academic knowledge. (TVET-02)

> Some majors, such as electricity, are not available at university… They need to go to a TVET institute if they want to pursue these majors. (AE-01)

Another permeability barrier is the adoption of different quality assurance mechanisms. Universities follow the guidelines of the Accreditation Committee of Cambodia (ACC), currently under MoEYS. The ACC has the mandate to safeguard and promote the quality of higher education in Cambodia. One of the accreditation requirements of the ACC is the provision of the 10-subject foundation year (30 credits) for all bachelor's degree programs in the first year. Eight of them are general-oriented subjects. On the other hand, unlike universities, TVET institutes do not follow this guideline and instead adopt the International Organisation for Standardisation (ISO) 9001: 2015 as the mechanism to ensure the quality of their training and education. Degree curricula, administration and facilities and infrastructure are accredited by the ISO body and monitored by the NTB, a body responsible for TVET policy coordination under the MLTV. For this reason, one of the permeability challenges commonly raised by the university side is that TVET students do not acquire the foundation-year credits required by the ACC.

> …HEIs do not welcome TVET students. They complain that TVET institutes do not provide the foundation year. (TVET-01)

Shortcoming in inter-ministerial coordination

TVET institutes offering bachelor's degree programs or higher qualifications are considered to be HEIs and are supposed to be governed by the same system under MoEYS. However, in practice, there is little coordination or communication between TVET institutes and the MoEYS Department of Higher Education. Many respondents admitted that there is little exchange of information and communication at ministerial levels and that policy and practice vary between institutes under the different ministries.

> There should be a coordinating body to ensure good collaboration between these two ministries. As we know, more than ten ministries are overseeing the higher education institutes in Cambodia. It is a bit messy. (AE-07)

> …there were HEIs under other ministries, such as the Ministry of Agriculture, Forestry and Fishery, and the Ministry of Culture and Fine Arts, also taking part in meetings [with MoEYS], but not the MLVT. (AE-05)

Both the National Training Board and the Accreditation Committee of Cambodia were under the Office of the Council of Ministers but were later moved to the MLTV and MoEYS, respectively. Many TVET institutes also hope MoEYS will include their institutes in the guidebook on HEIs and majors disseminated to high school students. This guidebook provides information high school students need in deciding which major and school they should choose.

> This is my request to the ministry to include TVET institutes [in the guidebook]. This will allow students to know more about TVET so that we can attract more students. (TVET-07)

However, when asked if there is any information sharing between the TVET institute and MoEYS, one respondent replied:

> We have never given our information to MoEYS. (TVET-02)

5.4. Hybridisation of education and training

Academisation of TVET

As a strategy to mobilise financial resources to supplement limited support from the government, public TVET institutes had shifted their focus toward higher-qualification programs and introduced fee-paying tracks similar to those that had been implemented at public universities since the early 2000s. That was when the government allowed public universities to accept fee-paying students. However, only TVET institutions with "institute" status are legally entitled to provide bachelor's degree programs or higher. As of the academic year 2019-2020, 21 out of 38 public TVET providers had "institute" status, an increase from 13 institutes in the academic year 2015-2016. The remaining 17 still hold "training centre" status. The two training centres sampled were in the process of obtaining their institute status at the time of the interview and were planning to offer bachelor's degree programs soon. At least ten training centres have acquired a university-equivalent status in the past five years. The program extension at TVET institutions is to satisfy the needs of students and to generate extra income from students' tuition fees.

> All fee-paying students are in the bachelor's program. The school allows them to pay by semester twice a year. (TVET-07)

> Our institute has no problem in attracting students to the high diploma and bachelor's degree programs. Most students here, except for those on the C programs, are fee-paying. (TVET-05)

However, some TVET institutes outside the capital still have difficulties in attracting fee-paying students. Another strategy that TVET institutes employ to increase student enrolment is to offer more business-oriented majors (e.g., accounting, marketing and foreign languages). TVET institutes' respondents acknowledged that they find it very challenging to attract female students to technical majors (e.g., electricity, mechanics and construction). More and more TVET institutes have started offering business-oriented and foreign language majors in their higher diploma and bachelor's degree programs. As a respondent at a TVET institute stated, it is also a strategy to narrow the gender gaps in TVET enrolment.

> If we only provide bachelor's degrees in technology, it does not appeal to female students. We offer business-related programs so that we can attract female students to study at our school. (TVET-07)

In addition, merely examining the business-oriented curriculum at TVET institutes, it is virtually impossible to distinguish whether a curriculum is vocationally or academically driven, as the curricula are barely distinguishable. When shown a curriculum obtained from a TVET institute's website, our participants at the universities sampled could not identify any differences from their curricula due to their similarities. It appears that some TVET institutes intend to integrate theoretical courses and academic components that are as similar to those of HEIs as possible: one participant assured us that it was not a problem for university students to transfer to their institute because of the similarities in the curriculum.

> When we designed our curriculum, we did a lot of research. For some majors, such as English literacy, accounting, management and marketing, we also drew comparisons with university curricula. (TVET-07)

> I learned that certain majors between TVET institutes and HEIs are identical because the MLVT gives licences to HEIs. They design their curricula to be virtually similar to the one designed by HEIs under MoEYS. (AE-04)

One TVET respondent even admitted that a majority of their students seemed to consider their TVET institution to be a university.

Vocationalisation of academic education

Furthermore, some universities have started to introduce programs and courses that are similar to those provided by TVET centres or institutes, such as professional tracks, internship requirements, and vocational and technical certificate programs. In addition to the associate degree, a few universities interviewed had started to introduce professional tracks to their two-year degree program that was more practice-oriented and had shifted its focus from theories. There are also professional bachelor's degree programs that do not require students to take the foundation year, allowing them to concentrate on their specialisations from the outset. It is different from students on the academic track who need to take around 80 percent of the general courses in the first year. The nature of this new professional track is very similar to that of the programs offered at the TVET institutes. Unlike the associate degree programs, the professional track students are permitted to be in pursuit of a bachelor's degree without the need to take any additional courses, provided that they pursue a degree that is in the same professional track.

> At my university, the two-year programs are divided into academic and professional tracks. For the academic track, students are required to pass the high school national examination, while students with or without the high school certificate can enrol on the professional track… Students who graduated from the professional track [even without a high school certificate] can continue to the third year of the bachelor's degree program without the need to take extra courses. (AE-04)

Furthermore, learning activities on the professional track concentrate on task-based approaches with a high practice ratio. This instructional approach is almost identical to those activities implemented at TVET institutes. Students are also given more freedom to explore practical activities that help to form an occupation-specific competence instead of being passive learners.

> I don't think they [professional and TVET tracks] are entirely different. Based on the CQF, on the professional track, we have to allow students to practice more than just sitting in class and being lectured. (AE-05)

A unique feature that has helped to distinguish TVET from academic education is the requirement of compulsory internship as a part of the program. That is why the professional track is designed to integrate similar aspects within the associated curricula. However, in recent years more and more universities have incorporated internship programs as a requirement in some of their majors. They believe that students will benefit from the hands-on experience in the world of work.

> We expand a focus on innovative teaching methodology that can equip students with skills to enhance their employability and to aid the development of competence through an internship program. (AE-05)

The study also found that one university located outside of Phnom Penh also provides the certificate program (ISCED level 3), which is widely available at TVET centres and institutes. An institute was established under the university to offer the three-level certificate programs, namely C1, C2 and C3.

> We also provide these three levels of vocational and technical education training at our Centre for Community Development. We have been running this program for three years now… Overall, I think the C programs provided by both MoEYS and the MLVT are the same. It is just that there are more majors - such as mechanics and construction - offered at centres and institutes under the MLVT. (AE-06)

Upon the completion of the final year (C3), students would be eligible to further their study at a university if they so wish. Interestingly the university did not have any difficulty in attracting students to enrol on the C program, although they faced some challenges in finding technical instructors.

As both institutions begin to introduce additional pathways that make their degree programs more diversified, the line between "education" and "vocational and training" becomes ever more blurred. Some teaching staff, particularly those in business-related and ICT fields, were found to work in both sub-sectors, making the instructional approaches and learning contents increasingly similar. As one TVET respondent stated:

> I graduated from university, majoring in management. TVET lecturers of some TVET institutes also teach at universities. (TVET-08)

6. Discussion

As a pathway towards lifelong learning, Cambodian students who fail the grade 12 examination have the option to enter post-secondary education and training through higher diploma or associate degree programs. After the two-year program, about one-half of them exit for the labour market and the other half pursue bachelor's degrees, most often at the same schools and within the same track. For students who are both academically and financially constrained, the TVET track is probably the only route for them to navigate. The notion that TVET is of low quality is still ingrained within Cambodian students and their parents, partly because of the lack of awareness of vocational opportunities or the limited vocational content of high school programs, and the lack of attention given to the industry-ready qualification because its value is overlooked by society at large. However, some TVET schools have proved that this is not always the case.

This study found that moving to higher qualifications programs under the same track is the most common pathway for TVET students who want further education. Following many developed countries in Europe and the Southeast Asian region (Cedefod 2011; Hassan, Foong and Ismail 2019), Cambodian TVET providers have started offering bachelor's degree programs after the introduction of the national qualifications framework. The credit transfer system has indeed been in place for nearly a decade, yet it is still a route much less travelled by students of both tracks. The CQF that would also ease student mobility across the two tracks is yet to be used for such a purpose. The unpopularity of student transfer between the two sub-sectors can be attributed to the fact that both sub-sectors are governed by different authorities - TVET under the MLVT and academic higher education under MoEYS - and the weak coordination and collaboration between them. The fragmented governance of post-secondary education and training is not uncommon in other countries and has often been cited as one of the permeability barriers (Field and Guez 2018). As Griffin (2014) pointed out, the absence of political will

to coordinate the student transition inter-ministerially impedes institutional harmonisation. Without collaboration and harmonisation at the policy level, student mobility between the two tracks will remain challenging due to the lack of consensus about recognition of prior learning and different standards and mechanisms of quality assurance.

The two sub-sectors will continue to grow independently and in some ways in competition with each other as both strive to meet the demand of the labour market and the students themselves by adapting their program offers. Such adaptation has, to some extent, gone beyond their original missions and resulted in two independent hybrids, each starting to take on roles supposedly performed by the other: academisation of TVET and vocationalisation of academic higher education. TVET academisation happens through program expansion to include majors aiming to increase female participation in TVET and to provide bachelor's programs to meet students' demand as they are willing to pay at this level. Due to the poor image of skills training, some TVET schools cannot find enough candidates for the number of scholarships offered for certificate-level programs. Thus, offering higher-level TVET is an attractive option for TVET schools as they can both satisfy the demand of the students and increase school revenues. More and more TVET centres are transforming themselves into institutes so that they can offer higher-level qualifications. Such a trend has been called "mission drift" and is nothing new. It has always been in operation and gained great momentum in the 1980s and 1990s in developed counties (Maclean and Lai 2011; Oketch, Green and Preston 2009). Originally, the main goal of TVET is to prepare the labour force for the industry. However, as we are moving from the industrial to the information age, the labour market requires its labour force to have a new domain of knowledge and skills to understand and operate modern technologies. Thus, naturally, TVET providers will have to impart not only manual skills but also cognitive knowledge.

Meanwhile, the introduction of the professional track at academic higher education institutions is probably a strategy devised in response to the decline in the pass rate, which sharply plummeted from over 80 percent in 2013 to 40 percent in 2014, after the grade 12 exam reform in 2014 (MoEYS 2014). This new track helps to maintain the financial sustainability of private academic HEIs as higher education is in great demand (Williams, Yuto and Keng 2016). The unexpected findings of the offering of C-level programs at some academic HEIs in the provinces suggest the existence of an unmet demand for skills training at the upper-secondary level in the local community where the university is located, and TVET providers have failed to absorb or reach out to this potential market.

The hybridisation of the two sub-sectors is not nascent or uncommon as similar trends can be found throughout decades and in other countries (Hoelscher 2005; Graf 2013). However, what seems to be unique in the Cambodian case is that such independent and upward development of the education and training systems has left skills development at the lower levels (the certificate programs), which have been claimed to be the most needed (ADB 2016), at great risk and constrain the efforts to create more pathways for students to navigate their career. The Cambodian labour market will continue to lack skilled workers if transfer to the TVET track at the end of nine-year basic education is not improved. Therefore, good collaboration and coordination between the key ministries are much needed to ensure smoother mobility between the two tracks at this first transfer point. It is also of great importance at the higher level of qualifications that both sub-sectors should reach an agreement on the recognition of prior learning and jointly develop admission criteria, evaluation tools, bridging programs, and transfer mechanisms. A standalone final assessment by licensed providers could be an option.

Coupled with the current, generous government support, quality TVET would provide a good opportunity for poor students to access good education and training, along with decent jobs. Improvement of TVET quality would also change the public perception toward TVET and address the current challenge in attracting potential students to TVET programs in the future. At the same time, there should be more effective approaches to promote the promise of TVET to potential students, as it has been proved that there are ways to attract them.

7. Conclusion and policy implications

7.1. Conclusion

Permeability in education and training refers to the possibility for learners to transfer between different types of education and between different levels of qualifications. It helps to eliminate the concept that TVET is a dead-end track and to promote social inclusion by providing lifelong learning opportunities for disadvantaged groups. In theory, after the adoption of the national Cambodia Qualifications Framework in 2014, Cambodian students should be able to move across the two sub-sectors in Cambodia through the recognition of prior learning and the credit transfer system. However, nearly a decade after its introduction little is known about the practices and challenges regarding student mobility between the two sub-sectors. This study has explored the permeability pathways between post-secondary training and education and identified challenges hindering student transfer between the two tracks.

Based on an analysis of data collected from the key informant interviews at selected TVET and HE institutions, the study found that, although both sub-sectors have adopted the credit system following the CQF, very few students use the credit transfer system to move between TVET and academic higher education or vice versa. The most common permeability pathway in Cambodia is through the higher-level qualifications as most public technical training institutes have started to provide bachelor's degree programs. Factors that hinder permeability through the credit transfer system include the lack of a mutual framework for recognition of prior learning that both sub-sectors have agreed upon, differences in orientation and quality assurance mechanisms, and the dearth of effective inter-ministerial coordination and communications between the two sub-sectors. These challenges have, more or less, pushed forward the academisation of TVET and the vocationalisation of academic education in Cambodia. Now, students at technical training institutes can obtain tertiary qualifications or enrol in less technical programs that were exclusively available for those on the academic track, while some universities have started to offer professional-track programs that are commonly provided by TVET institutes.

7.2. Policy Implication

A notable trend found in this study was the growing convergence between TVET and academics in terms of programs and curricula. This has indeed made it more convenient for students to pursue a bachelor's or higher degree after completing their higher diploma or associate degrees, and more majors to choose from whichever track they have taken. However, it also makes the rarely-used transfer system between the two sub-sectors even less appealing, leading to even weaker collaboration and communication between the sub-sectors. Considering the changing landscape of the labour market, the provision of higher levels of TVET has become a necessity. Yet, at the same time, it should not drift too far away from its original mission and orientation. In comparison with universities, technical training institutes are much better equipped with human resources, infrastructure and equipment that are indispensable for providing technical and vocational training and that are too costly for, and not attractive to, private investment.

These strengths and unique features should be the main driving forces for TVET institutes to determine their specific program offerings rather than providing programs and courses that are similar to those widely available at universities. In this way, TVET institutes would be able to offer technical and vocational training with quality unrivalled by its counterparts. Vice versa, it is not cost-effective to create vocational and technical training courses that require heavy investments in infrastructure and equipment, as well as teacher training, at academic universities. Rather, they should concentrate their resources on instilling high-level knowledge, passion for higher learning and pursuit of big ideas and theoretical knowledge.

This proposal will pose a major challenge and a threat to the revenue stream of TVET as it has been observed that not many Cambodian students would prefer to choose technical and vocational training. This is where government intervention and industry collaboration is needed since a skilled workforce is indispensable for the growth of industry and the national economy. Government should continue to incentivise students to take part in TVET, make TVET more appealing to students and parents by strengthening its training and education quality. The industry should jump earlier into the training process to shape the training curriculum, offer places for internships and apprenticeships, and fund support for training programs and innovative projects at TVET. Such collaboration would not only reduce the cost burden for TVET institutes (i.e., they would not need to invest heavily in training facilities and equipment when students had access to those in the industry through their apprenticeships), but also ensure the high quality and relevance of the training.

The adoption of the credit system in both TVET and academic HE institutions has paved the way for horizontal permeability between the two tracks. But the lack of consensus on how to recognise prior learning and credit transfer procedures have hampered student mobility between the two tracks, despite the promise exemplified by the Cambodia Qualifications Framework. An inter-ministerial technical working group should be established to facilitate the communication and coordination between MoEYS, the MLVT and other ministries that have their education and training institutions to develop mutually agreed guidelines on the recognition of prior learning and credit transfer. However, such an endeavour will also be predicated on a mutually recognised and credible quality assurance system, which is yet to emerge.

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Appendix A. Interview guide

Interview guide on:
The hybridisation of vocational training and academic education in Cambodia
(TVET institutes and HEIs)

Interview instruction: Setting the scene (5 minutes)

1. Interviewer's self-introduction:
[Interviewers introduce themselves by reporting their name, position, institution, (connection between interviewer's institution and the target interviewee's institution) and visions of the study].

2. Interview objectives:
The purpose of today's interview is to explore, identify, and determine the existing policies and the actual practices related to student transfer between academic and TVET tracks in Cambodia and its practice in reality and the challenges and possible solutions for better permeability between the two systems.

3. Confirming time availability of respondent, consent form, and the use of voice recorder:
The interview lasts about 1 hour. [The researcher adjusts the time according to the convenience of respondents.] Participants read and sign the consent form to agree to participate in the interview. Voice recorder is used. [If participants refute the use of voice recorder, the interviewers take full notes.] The data will be kept confidential and used only by the interviewers and the research team for the purposes of this study. [Check whether participants have confirmed questions before the start of the interview].

Dimensions	Focused areas	Specific Questions
Admission policies	General entry requirement MoU-based transfer & Transfer from other institutions	What are the eligibilities and requirements to enter your HEI/ TVET? Do you accept students who complete C3? Is there any admission policy set by the school to provide them access to the vocational/ academic track? How is the implementation of that policy? In which program/ course (example: engineering, business, agriculture, or construction) are students more likely to transfer across the tracks? How are the decisions made? Do you have any MoU with HEIs or MLVT?
Academic Program	Majors Degree levels: Theory and practice balance	What are the majors provided by your institution? Degree levels? What is the orientation of training: theoretical or practical? How do you differentiate your training from that of a university/TVET institute? Do you implement the foundation year program? Has the FY program been evaluated by the internal committee or/and ACC? Provisional accreditation or full accreditation? Have you ever heard of NTB or CQF?

Real practices at each institution	Inbound and outbound transfer	Do you have students who have transferred from other TVET institutes/universities (cross-track transfer)? What are the criteria for accepting them? Do you recognise the courses they took at their previous school/universities? How about your students? Do some of them pursue higher degrees? Do they have difficulties getting accepted by the institution they apply to for higher degree?
Perceptions on permeability	Strengths of the training in each respective track. Concerns, challenges, possibilities. Impact on training and education quality	Why do you think students choose to come to your TVET/HE rather than HE/TVET? the motives to provide training in certain majors and to have similar programs and degrees, the advantage one has over the other What do you think if TVET and HE could be more permeable (there are more ways students can move from one to the other)? Is it an advantage or disadvantage to your schools? Why? As a whole, how do you think the permeable system will impact the quality of graduates? What do you think we should address to make the transfer recognised by all sides? (concerns and challenges) What can we do specifically to make the education and training system more permeable? (working mechanism) Who should be the main players to facilitate the link between TVET and HE?

Appendix B. List of participants

Code	Month of interview	Means of interview	Interviewers	Participants
TVET-01	February	Face to face	Chea Phal, Song Sopheak	Director
TVET-02	February	Face to face	Chea Phal, Hun Seyhakunthy	Deputy Director in charge of academic affair
TVET-03	February	Face to face	Song Sopheak, Hun Seyhakunthy	Head of curriculum development department
TVET-04	February	Face to face	Chea Phal	Head of technical and vocational education
TVET-05	February	Face to face	Chea Phal, Hun Seyhakunthy	Deputy Director in charge of academic affair
TVET-06	February	Face to face	Chea Phal	Director
TVET-07	February	Face to face	Chea Phal	Chief of planning in charge of student enrolment
TVET-08	February	Face to face	Chea Phal	Deputy Director in charge of training
AE-01	March	Face to face	Chea Phal	Vice Rector in charge of academic affairs and Head of academic office
AE-02	March	Face to face	Chea Phal, Hun Seyhakunthy	Dean of Post-Graduate School and Head of academic office
AE-03	March	Face to face	Chea Phal, Hun Seyhakunthy	Deputy Director in charge of quality assurance
AE-04	April	Video Conference	Chea Phal, Song Sopheak, Hun Seyhakunthy	Vice Rector in charge of academic affairs
AE-05	April	Video Conference	Chea Phal, Hun Seyhakunthy	Vice Rector in charge of academic affairs
AE-06	April	Video Conference	Chea Phal, Song Sopheak, Hun Seyhakunthy	Vice Rector in charge of academic affairs
AE-07	April	Video Conference	Chea Phal, Song Sopheak, Hun Seyhakunthy	Vice Rector in charge of academic affairs

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