LELAM-TVET4INCOME

Country Case Study on Technical Vocational Education and Training (TVET) in Costa Rica

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1 Introduction

This country case study provides an overview of the landscape of Costa Rica's formal and non-formal technical vocational education and training (TVET) programmes. In particular, it will provide a more detailed insight of four of these TVET programmes, its actors and institutions in the form of case studies. The selection of TVET programmes for the case studies was based on a theoretical framework that classifies TVET programmes in six categories of formal and non-formal TVET programmes in employment and education systems. Thereby, we aimed to choose at least one TVET programme per category per country to be described in a case study, in case there was a TVET programme available for the respective category.

As part of the LELAM-TVET4Income project, this publication for Costa Rica is part of a series of case studies that have also been published for Costa Rica, Chile and Benin. By selecting countries representing low- (Benin and Nepal), middle- (Costa Rica) and high-income countries (Chile[1]), we want to approximate the heterogeneity of TVET programmes and economic settings of different countries across the world (OECD, 2018:465). In that regard, Benin and Nepal represent countries with a large informal sector (about 80 and 60 percent respectively), where also a substantial part of the country's TVET activities takes place. These two countries are also representative for their geographical regions West Africa and East Asia. In contrast, Costa Rica and Chile represent countries in Middle- and South America, where TVET typically takes place in schools and labour market informality is much lower (10-40 percent). Benin, Costa Rica, Chile and Nepal are all part of the LELAM-TVET4Income project (see the box below). In this context, the case studies represent an important step aiming to better understand the TVET landscape in the four countries. Therefore, the main purpose of this study is to gather descriptive evidence to trace out particularities, strengths and difficulties of the countries' TVET programmes.

About the LELAM TVET4Income project

As summarized by its title: *"Linking Education and Labour Markets: Under what conditions can Technical Vocational Education and Training (TVET) improve the income of the youth?" (short title: LELAM TVET4Income)*, the aim of this project is to find out under what conditions and to what extent TVET can help to improve the labour market situation of the youth- especially in east developed, low and middle-income countries. The project consists of six teams coming from five different countries and four continents: Chile, Costa Rica, Benin, Nepal and Switzerland. This project is financed jointly by the Swiss National Science Foundation (SNSF) and the Swiss Agency for Development and Cooperation (SDC). For more info, see: http://www.r4d.tvet4income.ethz.ch/. Each year, stakeholder teams from these four countries attend the CEMETS Summer Institute (http://www.cemets.ethz.ch/), which is a reform-lab for reform-leaders from all over the world who want to improve their national TVET systems. This study helps practitioners to understand the whole TVET landscape in Costa Rica.

In this country case analysis, we describe three formal and one non-formal TVET programmes in Costa Rica. First, the formal Technical Colleges (*Colegios Técnicos, CTPs*) programme, which lasts three years. It is the most important formal TVET programme in Costa Rica at the upper-secondary formal education

[1] Chile became a high-income economy in 2012 and for the purpose of this study, we considered Chile as a middle-income country (United Nations, 2014; World Economic Situation and Prospects report, 2014)

level in terms of enrolment: from 2013 to 2016, about 28.3 percent of all pupils in upper-secondary level attended the CTP programme. Second, we studied the formal four-year Invenio University programme, which is part of tertiary education and leads to a Bachelor degree. Third, the post-secondary parauniversity programme that aims to provide education and training for labour market integration and mitigation of poverty. Most specialisations offered by parauniversities have a duration of two to three years. Besides these three formal programmes, we selected one non-formal TVET programme for the case studies. Namely the Dual programme of the National Apprenticeship Institute (INA), which is a promising programme in that it combines in-company and –classroom training.

This document is structured as follows. In the second chapter, we introduce some concepts that are important to guarantee a common understanding of terms used in this study. In addition, we introduce a theoretical framework that aims to classify and select TVET programmes for the case studies. In the third chapter, we describe how we conducted an asset mapping and expert interviews to gather information about all TVET programmes in Costa Rica and describe how we selected TVET programmes for the case studies. In the fourth chapter, we present the results of our selection procedure and describe the TVET programmes as case studies. In the fifth chapter, we give conclusions and outlook of this study.

2 Concepts and Theoretical Framework to Classify Formal and Non-Formal TVET

Worldwide, the understanding and definitions of TVET differ and often depend on the country-specific context. In the following, we provide an overview of the most important definitions and concepts. We then use these to construct a conceptual framework for classifying formal and non-formal TVET programmes, which we use to select TVET programmes for the case studies. In addition, we use the concept of Education and Employment Linkage (Bolli et al., 2018), which refers to the extent to which education and employment systems are linked. Finally, we introduce the concept of the Curriculum Value Chain (Renold et al., 2015), which refers to three steps to develop a curriculum and represents a helpful tool to analyse selected TVET programmes.

2.1 Concepts

Different Definitions of Technical Vocational Education and Training (TVET)

There are many different definitions for TVET [2]. In general, definitions are socially constructed concepts that are greatly influenced by national and socio-cultural contexts (Renold, forthcoming). Put on an abstract level, Popper (1994) noted that the definition of a given concept or term—in our case the definition for TVET—does not stipulate its application. Instead, the application of the concept (e.g. TVET) stipulates its definition—which makes it a socially constructed concept. Hence, according to Popper (1994), definitions are always derived from applications ("usage definitions"). At first sight, this implies that definitions for TVET can only be derived from their applications in real life. However, a definition of TVET can also be derived from theory. Popper (1994) states that the principles of any theory can be understood as an implicit definition of the "fundamental concepts" it uses. Moreover, application of fundamental concepts to reality stipulates the definition of this theory. Hence, a definition of TVET does not necessarily need to be derived from real life applications (concrete examples of TVET programmes), but can also be derived by applying different theories of TVET.

Following Popper (1994), we conclude that all existing definitions of TVET are "working definitions" and therefore not very helpful for the purpose of this paper, as we want to capture formal and non-formal TVET programmes for which learning may also take place in the formal or informal labour market. Hence, instead of using one explicit definition of TVET, we suggest a more open approach that tries to define TVET programmes according to their formality, such as formal and non-formal programmes that may also operate in the informal or formal labour market. In the following, we provide definitions of formal, non-formal and informal education programmes. These definitions are equally applicable to TVET programmes.

[2] See for example: "(…) TVET, as part of lifelong learning, can take place at secondary, post-secondary and tertiary levels and includes work-based learning and continuing training and professional development which may lead to qualifications. TVET also includes a wide range of skills development opportunities attuned to national and local contexts. Learning to learn, the development of literacy and numeracy skills, transversal skills and citizenship skills are integral components of TVET. (…)" (UNESCO-UNEVOC, 2017a). Or: "(...) Technical and Vocational Education and Training (TVET) is concerned with the acquisition of knowledge and skills for the world of work. (…) (UNESCO-UNEVOC, 2017a). (…) Throughout the course of history, various terms have been used to describe elements of the field that are now conceived as comprising TVET. These include: Apprenticeship Training, Vocational Education, Technical Education, Technical-Vocational Education (TVE), Occupational Education (OE), Vocational Education and Training (VET), Professional and Vocational Education (PVE), Career and Technical Education (CTE), Workforce Education (WE), Workplace Education (WE), etc. Several of these terms are commonly used in specific geographic areas. (…)" (UNESCO-UNEVOC, 2017a).

Defining Formal Education, Non-Formal Education and Informal Education

Formal education

Formal education can be provided in educational institutions, such as schools, universities, colleges, or provided as off-the-job education and training in enterprises' training centres (in-company training centres) and workplaces (UNESCO-UNEVOC, 2017b). Usually, it is structured in terms of learning objectives, time or support (from a trainer, instructor or teacher) and typically leads to a formal recognition (diploma, degrees). Formal education is intentional from the learner's perspective (UNESCO-UNEVOC, 2017c). A written curriculum laying down the objectives, content, time, means of knowledge acquisition and awarded degree exists. Diploma/degrees are usually part of the education system and regulated by the legal framework.

Non-formal education

Non-formal education is embedded in planned activities not explicitly designated as learning (in terms of learning objectives, learning time or learning support). Education that takes place through a short course of instruction but does not usually lead to the attainment of a formal qualification or award, for example, in-house professional development programmes conducted in the workplace (UNESCO-UNEVOC, 2017d). Non-formal education is often delivered by educational providers, companies, social partnership organizations, and public-benefit bodies. In contrast to formal education, non-formal education leads to a formal degree (diploma) that allows the programme graduate to progress within the formal education system (GTZ, 2017). In non-formal education, a written curriculum may exist.

Informal education

Informal education is not structured in terms of objectives, time or learning support. In most cases, it is unintentional from the learner's perspective and does not lead to a formal degree. It is the kind of education resulting from daily life activities related to work, family or leisure. It is often referred to as experience based learning (e.g. learning-by-doing) and can, to a certain degree, be understood as accidental learning (UNESCO-UNEVOC, 2017e). A hidden curriculum, that is, lessons that are learned but unwritten, unofficial, and often not openly intended such as the transmission of norms, values, and beliefs taught in the classroom or social environment (Martin, 1983), may exist.

Pathway, programme and curricula

Similar to the definition of TVET, there is also no unique common understanding for the concepts of "pathway, programme and curriculum". Any education system can be divided into three nested layers: pathway, programme and curricula. In the following lines, these descriptions are applied to the TVET context (Renold et al., 2016).

TVET or PET pathway

Are all formal education and training programmes that prepare students specifically for the labour market or focus more on vocational topics, either at the secondary, postsecondary non-tertiary level (TVET pathway) or the tertiary level (PET pathway). In contrast to general education or academic programmes aiming to prepare students for university entry, TVET or PET programmes typically prepare for a direct labour market entry after graduation. In some countries, TVET programmes provide access to higher education (Renold et al., 2016).

TVET or PET programmes

"Programme" refers to the different ways education is organized within either the academic or vocational pathway. Examples for TVET programmes within the vocational pathway are dual programmes combining work-based with school-based TVET (e.g. apprenticeships), purely school-based TVET or training

programs at the tertiary level (PET). Programmes contain one or more curricula for one or more specialisation. For the purpose of this study, we focus on the programme level.

TVET or PET curricula

Curricula are study-field specific or occupation-specific learning plans within each programme that lay down the learning content, goals and evaluation criteria to pass or fail a programme.

2.2 Conceptual Framework for Classifying Formal and Non-Formal TVET Programmes

In this section, we constructed a framework to classify TVET programmes[3] for the four country cases. For this framework, we combine the classification of TVET programmes in formal and non-formal education with the notion that TVET programmes that involve workplace-based training can be classified as being part of the formal or informal labour market.

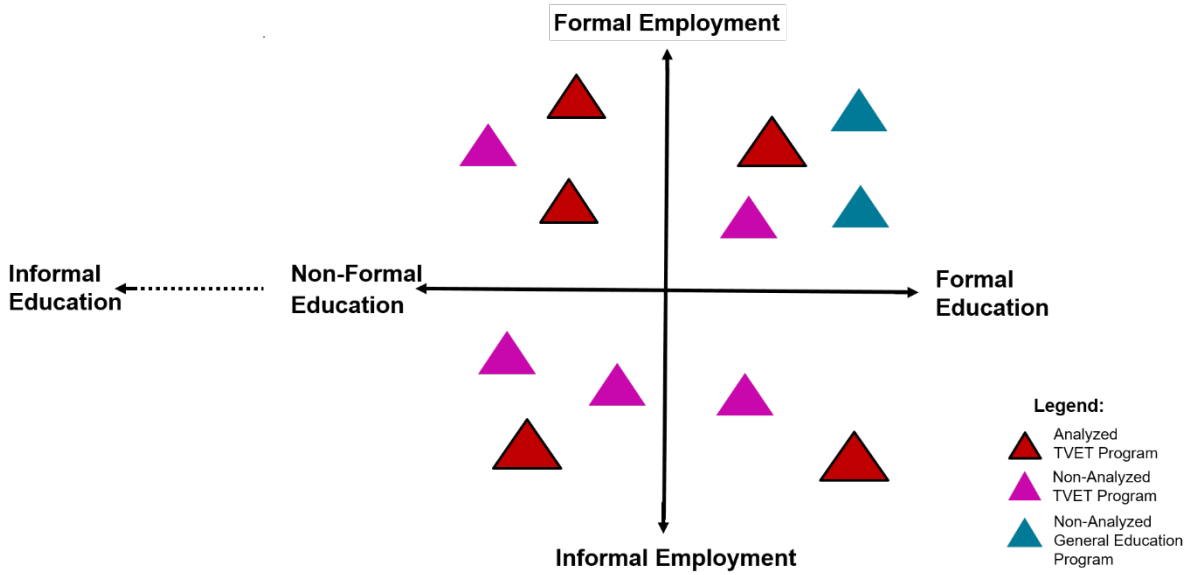
Although informal education exists, there are no informal TVET programmes (see Figure 1). In the previous chapter, we described informal education as unintentional from the learner's perspective, as a kind of education resulting from daily life activities related to work, family or leisure, often referred to as experience based learning (e.g. learning-by-doing) or even accidental learning. In contrast, the concept "programme" refers to the structure or form in which education is delivered, which contradicts the un-structured nature of informal training.

Since the unit of analysis for this study is the programme level, this forces us to restrict the framework to the programme categories formal and non-formal (education system) and formal and informal (employment system) because using the above definition of informal education and learning in combination with the definition of "programme" provides a conceptual contradiction. Therefore, by limiting our conceptual framework to the programme level, TVET programmes are classified into four categories according to whether they are formal or non-formal, and according to whether they involve workplace-based training in the formal or informal labour market.

The framework is depicted in Figure 1. The horizontal dimension of Figure 1 captures, from left to right, whether a given TVET programme is formal or non-formal. The vertical dimension depicts whether the programme involves workplace-based learning in the formal or informal labour market. The top right quadrant in Figure 1 displays all formal programmes that may involve training in the formal labour market, the quadrant represents formal programmes below that may involve training in the informal labour market. The upper quadrant on the left represents all non-formal programmes that may involve training in the formal labour market. The lower quadrant shows all non-formal programmes that may involve training in the informal labour market. Blue triangles in Figure 1 represent general education programmes and pink triangles TVET programmes that are not selected for the case studies. Red triangles represent the TVET programmes that we selected for the case studies. Table 1 depicts all four categories with examples of TVET programmes for each category.

[3]The term «programme» is generic and linked to the concept of social system theory. See: Renold et al. (2015; 2016).

Figure 1: Asset mapping according to the six possible categories of formal and non-formal education programmes and informal and formal labour markets



Source: own illustration.

Table 1: Four categories or "ideal types" of TVET education

Category number	Category	Type of Education	Type of Employment	Example
1	formal-formal	formal	formal	Swiss VET system
2	formal-informal	formal	informal	CQP training programme Benin
3	non-formal-formal	non-formal	formal	Master of Business Administration (MBA) that does not allow to progress in formal education system (e.g. to PhD)
4	non-formal-informal	non-formal	informal	SAMI project in Nepal

Source: own illustration.

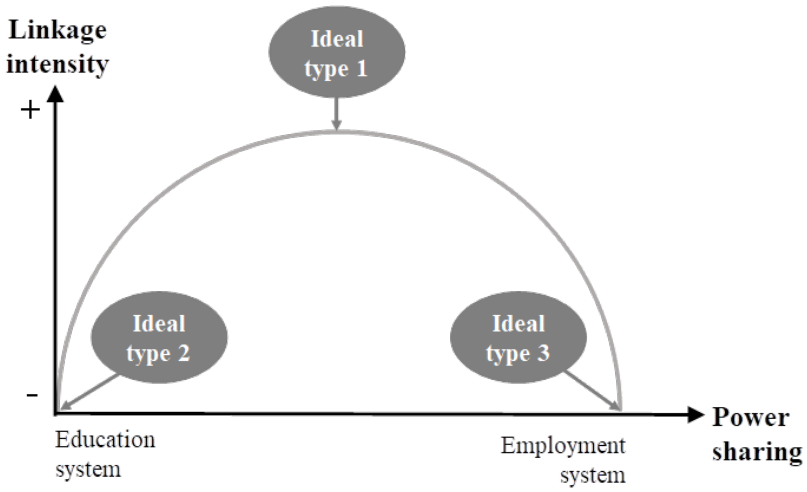
Defining the Education and Employment Linkage

Independent of the question whether a TVET programme is formal or non-formal and may involve training in the informal or formal labour market, optimal labour market outcomes are more likely to be reached if all actors involved in a given TVET programme have a net benefit from participating. Renold et al. (2015; 2016; 2018) argue that in a setting where TVET takes place in schools and firms, the likelihood of achieving relatively better labour market outcomes may be higher than in a setting where TVET is either purely school- or workplace-based. This may be due a stronger involvement of firms in the design of curricula and organization of training, increasing the labour market relevancy of skills. Likewise, in a setting where training not only takes place in firms, but also in schools, it is more likely that the skills taught are not too firm specific. This increases the likelihood that students find jobs in other but the training firms and can upgrade their skills set later on. Hence the more actors from education (e.g. schools) and employment systems (e.g. firms) are involved in the organization and setup of TVET and the better their interest are balanced, the better they are "linked" in the TVET process. Generally, "linkage" refers to all processes where actors from the education and employment systems interact in TVET. Rageth and Renold (2019) build on ideal types of TVET programmes where the education and employment linkage can be visible. shows three ideal types of TVET programmes. Ideal type 1 depicts an equal power sharing between both education system and

employment system, while ideal types 2 and 3 show an unbalanced power sharing between the two systems in different directions.

Along the lines of Renold et al. (2015; 2016; 2018), we hypothesize that TVET programmes that are close to ideal type 1 are more likely to yield better labour market outcomes than programmes that are closer to types 2 or 3; irrespective of whether they are formal or non-formal, involve training in the formal or informal employment.

Figure 2: Education-employment linkage for different types of TVET

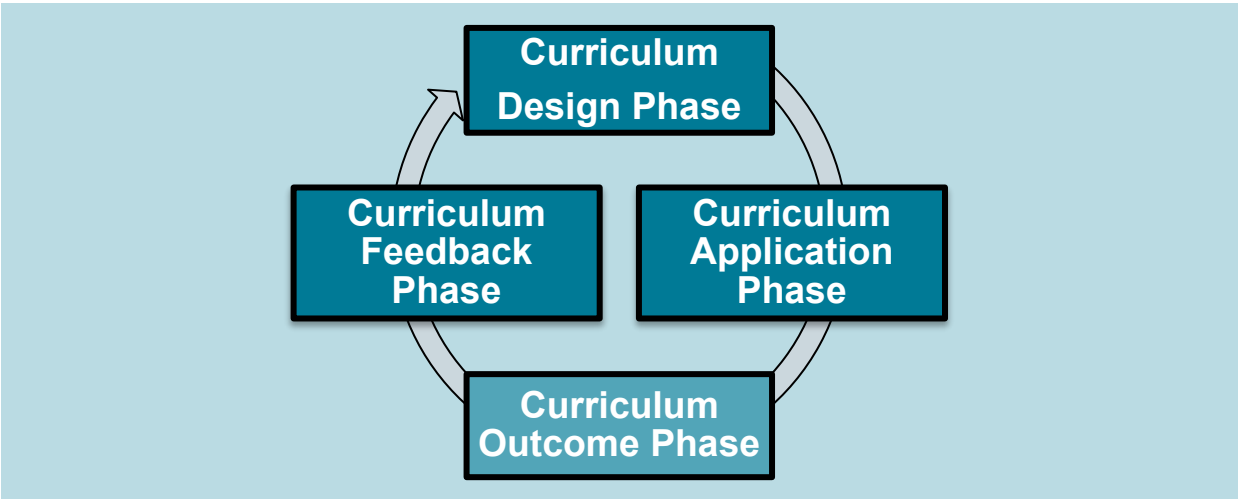


Source: Rageth and Renold (2019) Three ideal types of VET programs, Figure 5, p. 18

Curriculum Value Chain

The curriculum is a central element for the functioning of a TVET or PET system by defining the framework and the (quality) standards for the education system. The development of a curriculum can be decomposed into a three-step process with a curriculum design, a curriculum application and a curriculum feedback phase. This theoretical concept called the Curriculum Value Chain (CVC) is depicted in below (Renold et al., 2015). The concept of the CVC helps us to describe the involvement of actors from the education sector and labour market in the TVET programmes described in the case studies. Importantly, this provides us information about which actors are involved and to what extent they are involved in a given programme.

Figure 3: Curriculum Value Chain (CVC)



Source: (Renold et al., 2015).

In the curriculum design phase, TVET curriculum content and qualification standards are decided upon by the relevant actors. The curriculum application phase revolves around the implementation of the curriculum. Hence, while the curriculum design phase captures the processes of determining the curriculum, the curriculum application phase captures the resulting processes of education and training. Finally, the curriculum feedback phase intends to collect and analyse curriculum outcomes. This evaluation process is important as it may render a more refined curriculum design than was possible in the first place.

Curriculum Design Phase

The design phase is crucial for the whole curriculum process. In order to ensure that the skills taught in the TVET programmes correspond to the needs of the labour market, experts from companies should be involved in defining the qualification standards and learning contents of the curricula.

The curriculum design phase consists of creating the curriculum guiding the education process. It describes who decides what the content of the curriculum will be, who decides on the content, what the standards will be, who decides on the standards, and how achievement will be measured in granting certifications. Defining content relates to identifying the skills students must learn to be proficient at their occupations. Defining the qualification standards is about how this proficiency should be measured through exams. It can involve actors from both the education and employment system.

Curriculum Application Phase

The way in which a curriculum is implemented—especially with respect to learning environments—is important to achieve the intended learning outcome.

The curriculum application phase refers to the process of implementing the curriculum. The main functions or sub-dimensions of the application phase consist of the learning place, the examination regulations in the workplace, financing, equipment provision, teacher provision, and career counselling, and the logistics of the examination. Again, all of these dimensions can involve actors from the education and employment systems, so all are included.

Curriculum Feedback Phase

The curriculum feedback phase deals with the question, whether and how educational outcomes are analysed. Based on this, the curriculum could be re-worked and improved.
Outcomes of the CVC—for students as well as society and the economy—are simply the results of processes in the design and application phases. These outcomes are gathered, analysed, and utilized for updating in the curriculum feedback phase. This captures the process of gathering information on education outcomes as well as the decision process to redesign the curriculum or restart the cycle of the CVC. Its sub-dimensions are information gathering and update timing. As both can involve actors from the education and employment systems, both functions are included.

3 Method

The methodology of this study is a country case analysis based on explorative and descriptive research (Yin, 2018: 229). First, the explorative research consisted on desk-based research to gather basic information about all TVET programmes of Costa Rica. In this phase, we elaborated an inventory of TVET programmes in Costa Rica, a so-called asset mapping. We complemented the asset mapping with expert interviews to reassure we cover all TVET programmes known in Costa Rica. The expert interviews represent the "practical insider knowledge", which is especially useful in an explorative research phase (Bogner, Littig and Menz, 2009: 2). Second, the descriptive research consisted on selecting and describing in detail a small number of TVET programmes in Costa Rica, e.g. three to four TVET programmes fitting into one of the four categories of TVET programmes, as described in chapter 1 for an in-depth analysis. The selection of cases was based on the representation of diversity of case-study types (Gerring, 2007).

In this section, we describe the criteria TVET programmes had to fulfil to be included in the asset mapping, the criteria used to select experts for interviewing, as well as the criteria used to select programmes for a case study.

3.1 Asset Mapping

The aim of the asset mapping was to create an inventory of all TVET programmes in Costa Rica, which serve as a basis to select programmes for the case studies. The TVET programmes that were identified in the asset mapping were documented in a way that helped gathering the necessary information to assign the programmes to one of the four categories of the framework (formal/formal, formal/informal, non-formal/formal, non-formal/informal) described in chapter 1. In the course of documenting TVET programmes for the asset mapping, we allocated the respective TVET programme into one of the four categories, described as "ideal types".

Criteria for TVET programmes to be included in asset mapping

For a TVET programme to be included in the asset mapping, we developed five inclusion criteria: 1) it must be a TVET programme. 2) It should be identifiable to fit into one of the four categories. 3) The duration of the programme had to be at least a year. 4) The main purpose of the programme had to be initial education and training. Finally, 5) the target group had to be youth, disadvantaged youth or young women. Table 2 provides an overview of the relevant indicators for the asset mapping. The information based on which the inclusion criteria 2-5 are defined, can be found in the Asset Mapping Table A1 provided in Appendix A (using the indicator number in the right column in Table 2).

Table 2: Criteria for a TVET programme to be included in the asset mapping

Criteria	Decision rule or criteria	Indicator from Table A1
1.	Must be a TVET programme	
2.	Degree of formality: Unambiguously identifiable to fit in one of the four categories of the framework described in Figure 1.	**8, 11-13, 15-17**
3.	Programme lasts at least a year	**3**
4.	Main function/purpose of programme is initial education and training	**6**
5.	Target group is youth, disadvantaged youth, young women	**5, 7**

Source: own illustration.

3.2 Expert Interviews

Interviews to experts represented an explorative research to complete information of TVET programmes in Costa Rica. These interviews were particularly important to identify programmes that are non-formal or are very small programmes, which are known only by practitioners. We define country-specific expert characteristics to be considered in the selection process of experts (see Table B1 in Appendix B for more details).

Criteria for selecting interviewees

Our working definition of experts consists of two parts. First, the representativeness of the *institutional affiliation* of the expert for the national TVET sector. Such institutions could be education providers, institutions that monitor and control the system, representatives from the employee (e.g. unions) or employer-side (e.g. trade associations). Second, the *individual role* of the expert *within his/her institution*, which reassures he/she is at the top of his/her institution, or at least in some sort of a key position, and at the same time knowledgeable with respect to TVET. Table B1 in Appendix B provides an overview of *individual attributes* of experts for the formal and informal sector, sorted by the broad category of their *institutional affiliation.*

In the following, we give a short summary of the conducted expert interviews in Costa Rica. Additional criteria considered for selecting interviewees in Costa Rica was the coverage of federal and provincial levels, and the inclusion of diverse sectors of the economy such as government, non-government and private. Ten expert interviews were conducted (see more in Table 3 and Table B2 in Appendix B).

From these ten interviews, four persons are in the government, four persons are intermediaries, one person is a researcher, and one person is part of a non-governmental institution. Under the government, four senior officials were selected. One of them represented one of the TVET related ministries who had plenty experience of implementing TVET programmes under the ministry. The other three interviewees were implementers and managers working at the federal as well as provincial levels. As intermediaries, one of the interviewee was selected as one of the renowned trade unionists of the country. Other intermediary was the leader of a hotel association in the country and one intermediary represent the construction sector in the country. Similarly, one intermediary is a freelance consultant with experience on TVET of more than 15 years. As researcher, the interviewed person has been working in the non-formal and formal TVET sector in a private technical institution.

Finally, as non-governmental institution, one person is one of the international development partners, which has been collaborating with the government in the sector of TVET for more than five decades.

Interviews were conducted face to face, both in Kathmandu as well as in other locations of Province-1, province-2 and province-3. Initial interview sessions generally lasted for one hour. Further information was collected either by visiting the organizations repetitively or through telephoning follow up. For reasons of confidentiality as ethical proceedings in conducting interviews, we do not list the names of interviewees.

Table 3: Summary of interviews

Stakeholder	Number of Interviews
Government	4
Intermediary	4
Researchers	1
Non-governmental institutions (or Institutions composed of actors from two or more of the above categories)	1
Total	10

Source: own illustration.

3.3 Case Studies

The case studies represent a descriptive research in which programmes were chosen due to their characteristics of diversity. This means that each selected programme represents one of the four categories of TVET programmes described in the conceptual framework in chapter 2. Therefore, it is part of the formal/non-formal education and/ or formal and informal labour market. Three main special cases were identified when selecting TVET programmes:

1. No TVET programme was available for a certain category: in such cases, the category was left blank. As a result, a case study for a programme falling into one of the other categories was conducted.
2. Only one TVET programme was available per category: in such cases, the respective TVET programme was directly chosen for the case study.
3. More than one TVET programme per category was available: in such cases, prioritized larger programmes in terms of enrolment and number of curricula/specialisations offered. Secondary level programmes were preferred over higher education programmes and dual over purely school-based programmes.

These criteria are summarized inTable 4. The information based on which the decision rules are defined, can be found in the Asset Mapping Table A1 provided in the Appendix A (using the indicator number in the right column in Table 4).

Table 4: Criteria to select TVET programmes competing in the same category against one another

Criteria	Decision rule or criteria	Indicator/characteristic from Table A1
Scope of the programme	- Take the larger programme in terms of enrolment and number of curricula /specialisations offered.	**2a), 9**
Effectiveness	- Programmes that target disadvantaged groups received a higher weight - Programmes located at higher levels of the education system received a lower weight than those at lower levels, since the latter ones have a larger potential to improve the educational outcome and labour market situation of the youth - Programmes with a work-based component received a higher weight over programmes that are purely school-based.	**5,7-8,10,12**

Source: own illustration.

4 Results

In this section, we present the results of the asset mapping and case studies.

4.1 Asset Mapping of Costa Rica

In the following, we give a short summary of the results of the asset mapping. The detailed asset mapping table can be found in Table A2 in Appendix A.

As described in chapter 2, the selection of TVET programme for the case studies was based on the theoretical framework for classifying formal and non-formal TVET programmes, where we aimed to represent at least one TVET programme per category per country for the cases that a programme with these characteristics were existent. In the following, we provide systematically the procedure of how we selected the TVET programmes for the case studies and provide information about the selected programmes.

In the asset mapping for Costa Rica, we found a total of nine TVET programmes, whereof three are formal and six are non-formal education programmes. Unfortunately, we did not find TVET programmes for the remaining categories. Details can be found in Table 5 below.

From these, we selected all three formal programmes for the case studies for the following reasons. We selected the Technical Colleges (*Colegios Técnicos, CTPs*) programme, because it is the most important formal TVET programme in Costa Rica at the upper-secondary education level in terms of enrolment: from 2013 to 2016, about 28.3 percent of all pupils in upper-secondary level attended the CTP programme. The second formal programme, the Invenio University programme, is part of tertiary education. We selected it, because, to the best of our knowledge, it is the only formal higher-education TVET programme in Costa Rica. Note that academic programmes offered at regular universities that include some vocationally oriented components, are not necessarily TVET programmes. Even though the Invenio University programme is not very important in terms of enrolment, the average number of enrolled students was 50 in the period from 2013 to 2018, this programme is very interesting and promising from a design point of view. It combines about 50 percent of in-classroom with 50 percent in-company training. This model only exists in a few countries- such as the dual colleges (“Duale Hochschule”) in Germany or Professional Education and Training (PET) Schools in Switzerland. Due to its extraordinary design and since its Costa Rica’s unique tertiary-level TVET programme, we also chose to describe this in a case study. As a third formal programme, we selected the parauniversity programme for the case studies, because it is an important post-secondary education programme in terms of enrolment (average about 6’000- 7,000 enrolled students p.a. in recent years).

Besides the three formal, we selected one non-formal TVET programme for the case studies: the Dual programme of the National Apprenticeship Institute (INA). We selected this programme, as it is very important in terms of design: it combines classroom with workplace training. Besides the pilot of the MEP to test a dual version of the CTP programme, this is the only dual programme at this level in Costa Rica. In terms of enrolment, the Dual programme is not the most important programme of INA. In 2016, only 5’124 students enrolled in this programme, compared to 46’190 students in INAS “Virtual” programme of the INA in 2016, compared to the Dual, the Virtual programme is of much shorter duration. Therefore, and because the Dual programme contains a work-based component, we selected it.

Table 5: Distribution of TVET programmes in Asset Mapping by category and finally selected TVET programmes for Costa Rica

Category number	Category	Total number of programmes in asset mapping	Names of TVET programmes selected for case studies
1	formal-formal	3	Technical Colleges (*Colegios Técnicos, CTPs*) programme, Invenio University programme, Parauniversity programme
2	formal-informal	-	-
3	non-formal-formal	6	Dual Programme of the National Apprenticeship Institute (INA)
4	non-formal-informal	-	-

Source: own illustration.

4.2 Case studies of Selected TVET Programmes

In the first part of this section, we give a short overview of the Costa Rican education system for a better understanding of the location of the TVET programme within Costa Rica's education system. In the second part of this chapter, we present the case studies.

4.2.1 The Context: Costa Rican Education System

Figure 5 illustrates the Costa Rican education system, which is planned and managed at all levels by the Ministry of Public Education (MEP) and structured into nursery and early childhood education, pre-primary education, primary education, lower secondary, secondary, and higher education (university).

The education system comprises 10 years of compulsory education: 1 year of pre-primary education (called transition cycle), 6 years of primary education (grades 1-6) and 3 years (grades 7-9) of lower secondary education (UIS, 2015). The last 9 years of this period constitute basic general education (*educación general básica*).

Three different programmes are offered at the upper-secondary education level: a general education or academic programme, a technical programme provided in professional technical colleges (*colegios técnicos profesionales, CTPs*) and an artistic programme. Upper-secondary education is voluntary and free of charge (UNESCO-IBE, 2010: 11). Upper-secondary education starts at the 10th grade and lasts 2 or 3 years.

The general education or academic programme mainly prepares for the possible subsequent higher education at universities or a direct entry into the labour market (MEP, 2004: 16). The technical programme offered at CTPs entails an additional school year, because the students have to complete a supervised internship or a graduation project in their last year (MEP 2004: 17). This programme gives students the possibility to obtain two different diplomas: at the end of the 11th or 12th school year, the students have the possibility to take the test of the general/academic programme to earn a general education certificate. If they pass the 12th year successfully, the students can attain the title of a so-called medium technician (*técnico medio*) with the mention of their chosen subject (UNESCO-IBE, 2010: 11, 24). It is also possible to earn the certificate of a medium technician without passing the final exams of general/academic pro-

gramme (ibid.). The possible specializations offered at CTPs of study are divided into three economic sectors: agriculture (with subjects such as agribusiness or irrigation and drainage), industry (e.g. electrical engineering or precision mechanics) and trade and services (e.g. accounting or healthcare)[4].

The entire public school system, from pre-primary to upper-secondary education, is free of charge, and the government, in addition, has also fostered the provision of (inspected) private education in order to allow freedom of choice within the education system (MEP, 2004: 2; UNESCO-IBE, 2010: 2, 10-11). Historically, the proportion of private education has been relatively low in Costa Rica (UNESCO-IBE, 2010). In 2011, the enrolment rate in private education constituted 11 percent of all students enrolled (without higher education and including private schools with state subsidy); moreover, this relative participation rate of private institutions (measured by its students) was about 16.9 percent in pre-primary, 8.9 percent primary and 12.6% in secondary education in 2011 (INEC, 2014).

In 2013 the combined drop-out rate for lower- and upper secondary education was around 19.6 percent (INEC, 2014). In addition, the failure rate for lower- and upper secondary was high at about 14.4 percent in 2013, which means that these people had to repeat the particular school year (ibid.).

Parauniversities (*parauniversitaria*) are institutions of higher education. The community college system in the United States was a role model for their establishment (Castro, 2010: 4). These institutions offer two to three-year training courses. However, parauniversities have lost their importance today. Starting from 1998-2003, enrolment shrunk to almost half. Ever since, they suffer from a general loss of reputation (Castro, 2010: 23-24).

Higher education in Costa Rica is offered at public and private universities, colleges (*colegios universitarios*) and institutes of higher education (*institutos de educación superior*) with different types of degrees (UNESCO-IBE, 2010: 11): undergraduate education (*pregrado*), graduate education (*grado*) and postgraduate education (*posgrado*) (UIS, 2012, Universia, 2011).

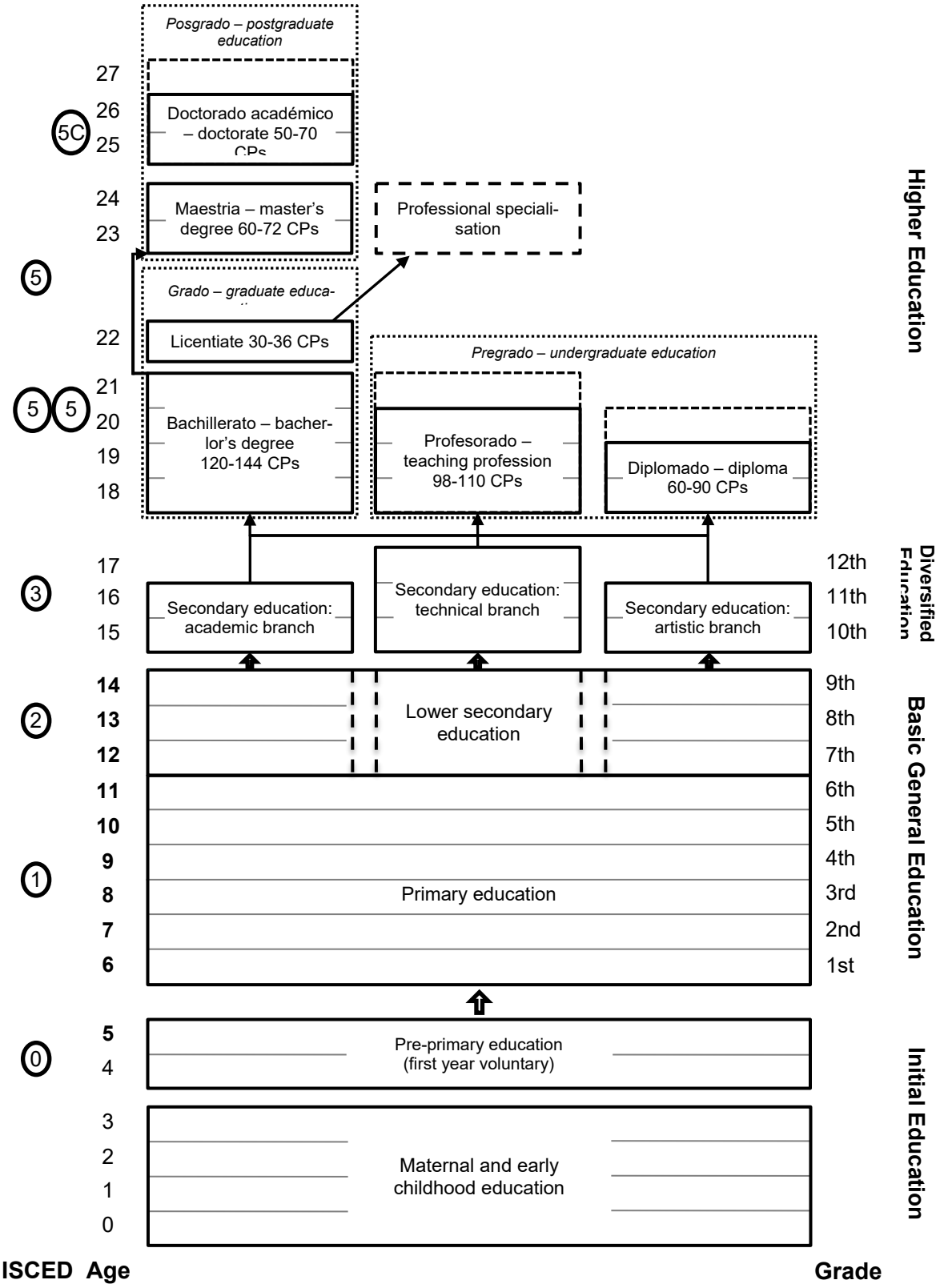
4.2.1 The Context: Costa Rica Structure of Economy

According to the OECD (2018:465), Costa Rica is an upper middle-income country. With a total population of 4.99 million people in 2018 (WDI, 2019), Costa Rica is a rather small country located in Middle America. The country ranks at the 63rd position out of 191 countries on the Human Development Index (HDI) of the United Nations. With an HDI of 0.79 points, Costa Rica is a so-called “high human development country” (UNDP, 2017).

Starting in the 1940s, Costa Rica has ventured through a transformation from a poor country to an upper middle-income country. The OECD (2013) stated that the abolition of its army and the permanent political stability were two factors contributing to this success. In fact, Costa Rica abolished its army in 1949 and decided to invest in human capital instead. Even though the development started out slowly, Costa Rica increased enrolment in tertiary education from 8.8 percent in 1970 to 55.6 percent in 2017. Still, this development was remarkable when compared to other countries in the region- for example Mexico, where tertiary enrolment increased from 5.3 to 38.2 percent in the years 1971-2017 (WDI, 2019).

[4] A complete list of all possible subjects can be found on the website of the MEP: http://www.mep.go.cr/educacion-tecnica.

Figure 4: Structure of the education system of Costa Rica



Sources: Castro (2010), INEC (2014), MEP (2004), UIS (2015), UNESCO-IBE (2010), Universia (2011), own display.
The ISCED classifications are an approximate and do not originate officially from the UNESCO.

This evolution towards more higher education somewhat mirrored the trend in its economy. From 1960 to 1980, Costa Rica's economy reduced its dependence on the agricultural sector by developing the industrial sector (OECD, 2013). Costa Rica has attracted one of the highest levels of FDI per capita in Latin America, due to political stability and it's relatively well educated labour force, as well as the incentives offered in the free-trade zones (CIA, 2014).[5] This led to the production of high value-added goods and services (including microchips), which reinforced the economy and broadened the export base (ibid.).

As depicted in Table 6, the tertiary sector is the most important sector in terms of employment (66.9 percent) and gross value added (69.2 percent), followed by the secondary sector (value-added: 25 percent; employment: 19.5 percent). As argued above, today the primary sector only plays a minor role for Costa Rica's economy.

Table 6: Breakdown of total value added and employment by sectors in 2012

Sector	Value added (%)	Employment (%)
Primary sector	5.6	13.4
Agriculture, hunting and forestry, fishing	5.6	13.4
Secondary sector	25.2	19.5
Manufacturing, mining and quarrying and other industrial activities	25.2	19.5
of which: Manufacturing	16.1	-
Tertiary sector	69.2	66.9

Source: The World Bank (2015)

Despite its economic success, inequality in Costa Rica is still high: according to the World Bank (2019) the country had a Gini coefficient[6] of 0.48 in 2016, which is high compared to Mexico (Gini: 0.43) and the USA (Gini: 0.41).

Labour force participation of youths in Costa Rica aged 15-24 at 43.4 percent was comparable to Mexico (44 percent) in 2016. However, youth unemployment was tremendously high: 21 percent, if compared to Mexico: 6.8 percent. About 20.1 percent of all employed people in Costa Rica, especially young people, worked in vulnerable employment in 2016- that is, either as contributing family workers or as own-account workers (WDI, 2019).

According to the WDI (2019) data, about 36 percent of Costa Rica's total labour force working in the non-agricultural sector was working in informal jobs. That is, they were working in jobs that lack social protection, health benefits, legal status, rights and freedom of association (WDI, 2019). About 30 percent of Costa Rica's GDP stems from the informal economy OECD (2017a).

To reduce informal employment, the OECD (2017a) advised Costa Rica to reform its labour market regulation, especially minimum wages, and to increase the efficiency of public spending to help reduce inequality. In light of recent low economic growth, widening inequality and weak productivity growth, the OECD (2017b) also recommended Costa Rica to reform its education system to improve quality and equity in access to education. Thereby, TVET plays an important role.

[5] The US-Central American-Dominican Republic Free Trade Agreement (CAFTA-DR) entered into force in January 2009, which has increased FDI in key sectors of the economy, including the insurance and telecommunications sectors, which have recently opened to private investors (CIA 2014).

[6] The Gini coefficient measures the differences in the income distribution (in some cases the consumption expenditure) of individuals or households. A coefficient of 0 means equal distribution of income. 100 resp. 1 corresponds to complete inequality where one individual or household possesses the total income (WDI, 2019).

4.2.2 Formal-formal TVET programme: Technical Colleges (Colegios Técnicos, CTPs) programme

The aim of this section is to explain the formal Technical High School (*Colegios Técnicos Profesionales; CTP - MEP*), or CTP programme offered by the Ministry of Education (MEP) in more detail. Thereby, we refer to this TVET programme as "CTP programme".

This section was prepared with the contributions of M.Sc. Rocío Quirós Campos and M.Sc. Alberto Calvo, both officials of the Department of Technical Education and Entrepreneurship Abilities of the Ministry of Public Education of Costa Rica. The area also provided statistical information and additional information requested in the process.

A summary of basic information about the CTP programme can be found in Table 7 below.

Table 7: Stylised facts of the TVET programme: Professional Technical Education - Ministry of Public Education.

Short title of indicator	
Programme category	Formal education, formal labour market
VET pathway enrolment share out of all upper secondary (%)	28.3%
Programme enrolment share out of all VET pathway (%)	No info
Number of curricula/qualifications	56 specialties
Ø Share of time spent in workplace (vs. classroom)	None, 100 percent of the programme is school based.
Work contract (Yes/No)	No, the only contact within the business sector is a professional practice of 312 hours at the end of the programme for a graduation project, which is not paid.
Ø Share of vocation-specific content (vs. general) in classroom education	100% vocational specific content of the specialty that the student elected.
Classroom/workplace sequencing (Alternating, Sequentially)	100% Classroom.
Frequency of workplace learning (Annually, Semi-annually, quarterly, monthly, weekly)	There is no workplace learning.
Programme duration (Years)	3 years
Involved Actors	Government, Ministry of Education, Higher Educational Counselor, Unions, Teachers.
Reform Years	The reform of the curricula must take place every 6 years.
Reforms Summary	In 2018, the curricula had been revised, because of the Qualifications Framework, the curriculum, and the publication of a new educational policy.

Source: The World Bank (2015), summary of information given in text.

Introduction

The creation of the CTP programme dates back to the School of Arts and Crafts, which was founded by a Salesian religious group at the beginning of the 20th century. The predecessor to the School of Arts and Crafts, the Vocational College of Arts and Crafts (COVAO), served as the basis for the formulation of the Decree of 1943, with which the Industrial Technical School in Desamparados, in San José (Mainieri, 2009), was created as an official institution.

The legal basis for CTP's is laid down in the Fundamental Law of Education (1958). It establishes that ETP is located at the secondary education level and gives the *Superior Council of Education* the competence to define the curricula according to labour market needs (Madriz, 1998).

Having started with two schools in the beginning of the 20th century, by 1997, seventy-seven *CTP's* were already created (Madriz, 1998). By 2012, there were 110 professional technical colleges; 40 of them offering evening classes as well (Camacho, 2017).

In recent decades, the CTP programme has gone through four main reforms. In 1992, in-classroom practical training was introduced. In 1995, the 37 specializations programmes were restructured to four main areas: occupational health, business management, information technology, and specific technology. In 2006, based on the recommendations of a study performed by the National System of Technical Education (SINETEC), the curricular focus of the CTP programme was shifted to education based on practical experience and evidences. By 2017, Costa Rica started developing a National Qualifications Framework (NQF) for the CEP programme. As a result of the NQF, the fourth reform, which aims to put a larger emphasis on practical training, has been in effect since 2018. All study programmes must comply with the standards of the NQF.

The CTP programme is located in the last cycle of formal compulsory education, called "diversified cycle", which corresponds to the last three years of high school at the upper-secondary education level. Students are typically aged 15-18.

CTPs offer day-and night-time courses. Some CTPs offer night-time courses exclusively. Some day-time CTPs also offer night-time courses, so that when students enrol in a night-time course, they may also attend day-time courses. Students in the day-time course programmes typically enrol in a three-year plan (24 lessons per week of the technical specialization), with a duration of 2840 hours.

Graduates of the academic general education track who have successfully completed eleven years of schooling and wish to attain a degree from a CTP, can enrol in a two-year programme in order to get an intermediate technical diploma in a given specialization. To be admitted to day-time CTP, students must have completed general basic education and the ninth grade, i.e. lower-secondary education. To be eligible to enrol in a night-time course at a CTP, students must have either completed the ninth year of the academic track (high school) or must be over 18 years old.

Each CTP has its own internal regulation for the admission of students to the respective vocational specializations of the CTP programme. For instance, for the technical specialization of architectural design, some schools carry out an examination of drawing skills. All such kinds of additional admission criteria must be approved by the Direction of Technical Education and Entrepreneurial Skills (*Dirección de Educación Técnica y Capacidades Emprendedoras*, DETCE), which is the instance from the MEP in charge of the academic, curricular, and administrative management of the CTPs.

Each vocational specialization offered in CTPs has its own curriculum and study plan. Actors form the business sector (e.g. companies) do not participate in the design of curricula, but are consulted and have to give an approval to programmes related to their field of work. Once designed, all curricula need to be approved by the Council of Higher Education (CSE). The Constitution of Costa Rica legally establishes the role of the CSE. The CSE is in charge of setting the general direction for the entire formal education system, in accordance with article 81 of the Political Constitution of the Republic. This implies that all decisions regarding education in Costa Rica, at all levels, are made by the CSE, including those related to the MEP.

The CTP programmes are grouped into three types of vocational specializations[7]:

[7] All programmes are available at the following link: http://mep.go.cr/programmea-estudio?term_node_tid_depth=3384

- Agriculture – 7 specializations
- Industrial - 24 specializations
- Commerce and Services – 25 specializations

The CTPs combine academic and vocational subjects. The academic part includes general education subjects, such as mathematics, biology, chemistry, physics, languages, arts, Spanish, music, psychology, philosophy, social studies, civics, etc. The vocational section of the CTP programme includes technical subjects, such as agriculture, industry, and commerce and services. Furthermore, students receive practical training in their chosen specialization.

Despite some practical training, students spend most of the time in classrooms and practically no time at the workplace. A supervised practice or graduation project of 320 hours (11 percent of the total hours spent in the CTP programme) is required in order to graduate. In addition, as laid down in the curricula, students should spend about 2 percent of the schooling time in internships (40 hours maximum), site-visits to different companies in order to see what working in the chosen specialization means.

Students can obtain two different diplomas. First, at the end of the 11th or 12th school year, the students have the possibility to take the test of the general/academic programme to earn a general education certificate. Therefore, they have to take the same General Academic Test as the students from the general education/academic track. Therein, they are tested in Spanish, English or French, mathematics, civics, social studies, and one science (biology, physics or chemistry).

The standardized tests are designed and administered by the Direction of Management and Quality Evaluation of the MEP. To receive the technical degree awarded at the end of the programme, which is called Medium Level Technician (*Técnico Medio*) (the name of the specialization is included), the requisites are to:

1. pass the standardized tests, both technical (*Prueba de Peritazgo*) and academic test, which leads to the *Bachillerato*.
2. pass the professional practice,
3. approve all the technological subjects of their study plan (technical subjects in 12 level).

Table 8 shows different enrolment statistics for the CPT programme. Initial enrolment at grade 10 was 83 percent higher in 2018 than in 2010. The share of students enrolled in the vocational programme at CTPs also increased over time: from 21.6 percent in 2010 to 32.2 percent in 2018. Over the same period, more and more students opted for the night-time CTPs (25.4 percent in 2018), even though the share of students attending day-time CTPs is still three times higher (74.6 percent in 2018). Most students choose specializations that fall in the CTP category “Commerce and Services” (72.7 percent in 2018).

Table 8 also shows that only 52.1 percent of students who enrolled in 2010 graduated from the programme in 2013. The non-completion rate is still relatively high, even though the share of graduated people who initially enrolled in 2015increased to 68.5 percent in 2018.

One reason for this may be the following. Even though programmes at CTPs last one year longer than the general/academic programme, it is a challenge for students to pass both the academic and technical final tests. In addition, if students pass the 12th year successfully, is also possible to earn the certificate of a medium technician without passing the final exams of general/academic programme. This provides students who failed the final exams of the general/academic programme a high incentive to drop out before earning the *Bachillerato.* In fact, due to high failure rates in this final test, many are discouraged and never officially complete the CTP programme, as confirmed by the data in Table 8.

Table 8: Enrolment CTPs 2010-2018

Year	CTP total initial enrolment at grade 10	CTP initial enrolment as % of total upper secondary enrolment	Initial enrolment at daytime CTPs	Initial enrolment at night-time CTPs	CTP graduates	CTP graduates as % total initial enrolment 3 years after	Enrolment in specialization:		
							Agricultural	Industrial	Commerce & Services
2010	11'685	21.6	91.9	8.1	5'257		18.7	9.0	72.3
2011	11'751	21.9	91.2	8.8	5'712		19.7	7.3	73.0
2012	13'961	25.5	84.7	15.3	5'388		19.8	11.7	68.6
2013	16'914	29.5	79.9	20.1	6'091	52.1	18.5	8.1	73.5
2014	18'441	30.4	77.6	22.4	7'091	60.3	20.1	6.7	73.3
2015	19'710	30.8	78.3	21.7	8'507	60.9	20.8	6.1	73.1
2016	19'444	30.5	76.7	23.3	9'699	57.3	23.1	5.3	71.6
2017	20'309	32.2	75.3	24.7	10'854	58.9	22.1	4.9	73.0
2018	21'441	32.2	74.6	25.4	13'506	68.5	21.6	5.7	72.7

Source: MEP, 2018, data from MEP statistics department, UNESCO, 2019.

Costa Rica is currently (as of beg. 2019) undergoing some reforms, which intend to incorporate standards from the business sector, as part of the qualifications framework ratified at the national level. Moreover, over the last three years, there have been three bills for the implementation of Dual Education in Costa Rica. The bills have been studied by the Legislative Assembly; however, they have not yet become laws. During this process, the MEP carried out a pilot of the Dual Education programme in four CTPs, which are located in: *Golfito, Desamparados*, *Cartago* and *Alajuela*. The dual pilot ends in 2019, and will be evaluated to incorporate improvements.

Key Actors

In this section, we describe the main actors responsible for organizing the CTP programme.

Government bodies:

- The Superior Council of Education[8], responsible for the general direction of the formal education system at a national level. Its primary function is to establish the national education policy- including ETP at CTPs. The chairperson of this council is the Minister of Education.

[8] Article 81, Political Constitution of Costa Rica.

- The Ministry of Public Education (MEP) is part of the executive. It is responsible for all actions related to the promotion of education and culture, and the execution of laws and regulations that derive from the Political Constitution and from agreements of the Superior Council of Education.
- The Direction of Technical Education and Entrepreneurial Skills (DETCE) is the instance from the MEP in charge of analysing, studying, formulating, planning, advising, researching, evaluating, and disseminating all aspects related to professional technical education and general/ academic education. In addition, it is responsible for promoting programmes and projects which help to better picture the needs of the business sector in the curricula.
- Institutions of Higher Education such as the Costa Rican Institute of Technology, the University of Costa Rica, UTN (Technical National University), CONARE (National Rectors Council), the OLaP (the Labour Observatory of Professions), PEN (State of the Nation Programme) are consultative bodies in the preparation of the curriculum and in relation to the laws that affect CTPs.

Representation and advisory bodies

- For curricular consultation, MEP reaches out to actors from the private sector such as: the Costa Rican Investment Promotion Agency (CINDE), UCAEP (Costa Rican Union of Chambers of Commerce and Associations of Private Enterprises), COMEX (Ministry of Foreign Commerce), CAMTIC (Chamber of Technology, Information and Communication), the Costa Rican Industrial Chamber of Commerce, and other enterprises not associated with the previous bodies. These institutions are part of the tripartite board, where the decisions regarding Technical Education at MEP for CTPs are made. It includes representatives from the education system, trade unions and labour market representatives.. In addition, they work as consulting bodies when it comes to determining the labour market relevancy of the technical specializations of the CTP programme.
- The Costa Rican teacher union, which represents Costa Rican teachers, is part of the tripartite board in ETP for CTPs. Therefore, it participates in the curriculum design and gives its opinion on proposed laws that concern the CTP programme.

Education and training providers

- The CTP programme is taught at CTPs and two other kinds of high schools: Professional Community Education Institutes (IPEC) and the Integrated Adult Education Centres (CINDEAS). The IPECs are educational institutions for youths and adults. They offer formal and non- formal education programmes and courses with the main goal of contributing to individual and communal development. IPECs offer formal programmes preparing students for basic general education, secondary education or vocational degrees, such as medium level technicians (MEP, 2008: 6f.). The CINDEAS can be found in remote communities that do not have institutions offering basic or continuing education. Besides the regular formal education programmes for basic or secondary education, CINDEAS also offer vocational courses (MEP, 2010: 111).

Finance

The CTP programme is financed by three different sources: i) the regular budget of the Ministry of Education, ii) the surplus of the National Institute of Learning's (INA). By the Law 7372, the equivalent of 5 percent of the surplus of the INA is used to finance technical schools (CTPs); these financial resources are used for purchasing educational materials, tools, equipment and machinery and for maintenance and repair of infrastructure[9]; iii) the third type of income may come from cooperatives and small entrepreneurial activities

[9] Article N° 2, Law 7372, 1993.

carried out by some of the technical schools, such as sale of farming products, industrial services or other activities related to the specializations each school offers.

The CTPs orient their activities along the lines of the Institutional Development Five-Year Plan, which consists of the strategic planning by institutions based on the investment resources that come from the Law 7372.[10] This plan contains information about project development, planning of internal analyses and associated disbursement plans for each CTP. The following laws govern the distribution and use of resources: Law 7372[11], Regulations for the Registration and Control of the Centres Goods Administration[12], Internal Control Law[13], Public Procurement Law, Financial Administration Law[14], and Education Boards General Regulations and Administrative Boards.

The Administrative Boards of CTPs are independent legal entities that have their own assets and activities that are carried out in accordance with the current education policy. The Administrative Boards play a strategic role in addressing the needs of schools, such as infrastructure, furniture and equipment. They are financed through three different sources: the national budget, Family Allocation Fund (FODESAF), INA, and municipalities[15].

Curriculum Development

The curriculum is fundamental for the functioning of a training programme as it defines the framework and the (quality) standards of the programme. The development of a curriculum can be divided into a three-step process: curriculum design, a curriculum application, and a curriculum feedback phase. This theoretical concept is called the Curriculum Value Chain and is depicted in the picture below (CVC; for more details see Renold et al. (2016)).

In the “curriculum design stage”, the relevant participants decide on the standards regarding the curriculum content and qualification. Therefore, the discussion in the following three subchapters focuses on the degree and the amount of stakeholder participation concerning curriculum design. The “curriculum application stage” revolves around the implementation of the curriculum. Because learning environments differ heavily across countries—especially in regards to the prevalence of workplace learning—this sub-chapter focuses on these learning environments, specifically, where learning takes place and whether the curriculum dictates both school and workplace learning or only one of the two. Finally, curriculum outcomes can be collected and analysed in the “curriculum feedback stage”. This evaluation process is imperative as it may render a more refined curriculum design.

Curriculum Design Stage

The curricula for each specialization taught in CTPs are based on labour competency standards. They contain details about the contents of in-classroom training, on when it should be learned, how and how much time should be allocated to which content. However, teachers have the freedom of teaching additional topics and have some flexibility on how to design their lessons individually, as long as they do not neglect the compulsory topics and all students reach the learning outcomes laid down in the curricula. This is to ensure that all students of the same specialization learn the same content no matter at which CTP they are enrolled.

The curricula contain suggestions that shall help teachers defining the pedagogical methods and activities necessary to reach the curricular goals. In addition, the curricula contain criteria to evaluate student achievement. The criteria will allow the teachers to assess the progress of their students and to give them

[10] 7372 Law for the financing of technical education.
11 Article 2, Law for the Financing of Technical Education, Law 7372, 1993.
12 Regulations for the Registration and Control of Assets of the Central Administration. April 3 rd, 2003.
13 Internal Control Law, Law 8292, September 4 th, 2002.
14 Financial Administration Law of the Republic. June 7th, 1951.
15 General Rules of Administrative Boards and Boards of Education August 28 th, 2002.

feedback on their learning outcomes. The criteria for evaluating students' competences are the basis for preparing theoretical or performance tests since they reflect the final expected product.

The curricula also establish values and attitudes that are associated with the competences taught in each specialization. Teachers must assign activities to guarantee the development of these values and attitudes.

The following steps are taken into consideration when designing a curriculum:

1. The Direction of Technical Education (DETCE) at MEP begins the process by considering the National Qualification Framework. In addition, the National Catalogue of Occupations is considered in order to define standards that are established by the business sector. The standards include the required competencies for each specialization.
2. A technician (a specific adviser from the MEP) establishes a proposal for the curricula considering the standards mentioned in point 1, the National Policy of Education, the Curricular National Policy, and the curricular model for technical education.
3. The study plans are consulted with representatives from the business sector. Therefore, several consulting groups with business sector actors are established.
4. Once the curricula have been consulted and consensus is reached, they are sent to the MEP for their revision. The MEP sends the curriculum proposals to the Council for Higher Education (CSE) for their discussion and consultation with different actors such as universities and unions, which may modify certain parts.

   The study plans for each specialization are approved by the CSE and implemented by the CTPs. The Ministry of Public Education (MEP) issues the degrees. Each CTP is responsible for the execution of the study plans, but they must follow what was approved by the CSE and the guidelines given by DETCE. There is neither an institution that accredits the CTP programme, nor one that assess and assures its quality.

Curriculum Application Stage

Learning in CTP programmes takes place mainly in the classroom. In-classroom practical training is facilitated through different types of activities that are carried out at laboratories, farms, technical rooms, simulators, mechanical workshops, etc. As it was previously stated, there are also some internships and in-company site-visits.

Students are evaluated in their chosen vocational specialization, but also in general education topics on a trimestral basis. The respective examinations are design by the teachers. The professional practice is also included as part of the evaluation.

In order for teachers to enrol in a CTP, they have to participate in national job applications that are organized by the Civil Service Regime. MEP educators are chosen according to the classification established by this institution in the Teaching Career Regimen. The Teaching Career Regime includes specific professional categories for teachers in technical programmes, which are determined by their degree and level of education achieved**.**

Curriculum Feedback Stage

The feedback on curricula are carried out by the MEP itself through the curricular advisors at the DETCE and consultants from unions, the business sector and universities. Each specialization has its own curricular advisor at the DETCE. These persons were teachers at a CTP at some point in their career. This reassures that they know how each study plan is taught in class. The advisors and consultants give feedback based on their experience from site-visits to the CTPs to observe the class and learn from the dynamics how teachers implement the curricula. Therefore, they are aware and understand the problems and challenges that teachers face in the implementation of the study plan.

The advisors and consultants meet to analyse the relevancy of the specializations in the Costa Rican labour market and the necessary changes. The decisions that result from these meetings are reflected on the curricular changes that are made by each curricular advisor, approved by DETCE, and sent to the Superior Council of Education for their final approval.

4.2.3 Formal-formal TVET programme: Invenio University programme

In this section, we describe the formal Invenio University programme. This section was prepared with the contributions of M.Ed. Claribel Rodríguez Quirós, Academic Director of the Invenio University, who provided all the information regarding the operation of the University's Educational Model, also consulted was the University's website[16].

Introduction

The goal of the Invenio programme offered at the Invenio University is to combine higher education with in-workplace training, using the German “dual universities” which combine studying and in-company training leading to a Bachelor degree, as a role model,. The word “invenio” means “innovation” (not an acronym). Adrián Lachner, its founder, was concerned about dealing with violence in Latin America. His answer was that education is the pathway to change society. Table 9 summarizes information about the Invenio University programme.

Table 9: Stylised facts of the TVET programme: Invenio University programme

Short title of indicator	
Programme category	Formal education, formal labour market
VET pathway enrolment share out of all upper secondary (%)	Not applicable. Higher education programme.
Programme enrolment share out of all VET pathway (%)	-
Number of curricula/qualifications	Three: Bachelor on Industrial Engineering with emphasis in Operations, Bachelor on Mechatronics Engineering, Bachelor on Information and Business Communication.
Ø Share of time spent in workplace (vs. classroom)	56.25 percent academic in-classroom training 43.75 percent in-company training
Work contract (Yes/No)	No
Ø Share of vocation-specific content (vs. general) in classroom education	
Classroom/workplace sequencing (Alternating, Sequentially)	Alternating, 3 months on school and 3 months on the company.
Frequency of workplace learning (Annually, Semi-annually, quarterly, monthly, weekly)	quarterly
Programme duration (Years)	4 years
Involved Actors	CONESUP
Reform Years	No info.
Reforms Summary	No info.

Source: Summary of information given in text.

[16] Invenio University's website: http://invenio.ac.cr.

Invenio is a small university that is formally recognized by the MEP as part of the higher education system. It is the only “dual” university (i.e. combining in-classroom and in workplace training) in Costa Rica. The Invenio university programme focuses on equipping its students with labour-market relevant skills. Around 150 people live on campus located on the road to Tilarán in Costa Rica, including students, the Director, professors and lecturers, and university staff.

As it is based on the “dual education model”, students spend the first nine months of the bachelor programme on campus, before gaining experience at a company. The curriculum has been planned to alternate three months on campus with three months in the workplace. The time that students spend in the company is planned so that a rotation through various departments takes place; 56.25 percent of the programme is taught in the classroom and 43.75 percent takes place at work. At the end of the programme, all students must complete a supervised practice.

The programme lasts 4 years in total (8100 hours, 192 weeks and 48 months). Only a few students enrol at the Invenio University each year, as shown by the enrolment data. In 2013, 32 students were enrolled; in 2015, 41 students; in 2016, 49 students; in 2017, 66 students, and in 2018, 61 students. Students are typically aged between 17 and 25. The programme offers on-campus housing because not only does it receive students from the region where it is located (Guanacaste), but from all around the country.

Invenio offers three different careers: a Bachelor (*Licenciatura*) of Industrial Engineering with emphasis in operations, Bachelor in Mechatronics Engineering and Bachelor in Information and Business Communication. To enter the programme, students must have completed upper-secondary education (general/academic or vocational track), must pass an admission test, interviews, and an English test. The entrance examination for the programme includes cognitive and practical activities, studies of temperaments, and observation of initiative and leadership from the person.

Due to the dual educational model of the university, the focus of the programme is on both, in-classroom learning and in-company training. It is also important to emphasize that Invenio has a training centre for students who enter the university straight out of high school, and not from the Invenio parauniversity programme, in order to provide students with some practical skills that are not taught in the academic high schools in Costa Rica.

Private universities in Costa Rica are registered in the National Council for Private Higher Education (CONESUP). Since INVENIO is a private university, it had to follow the procedures dictated by CONESUP for the opening of a university and the registration of their career tracks, as will be described in the following chapter on parauniversities. The CONESUP is responsible for authorizing the operation of private universities, as well as the curricula that are taught there, in accordance with the General Regulation of the National Council of Private Higher Education, No. 29631-MEP. Hence, the registration through the CONESUP gives the Invenio University and its programmes the status of a formal education institution, i.e. which is part of Costa Rica’s formal education system. Graduates of the Invenio University can progress to post-graduate programmes in the discipline from which they graduated.

Normally, the national accreditation agency, SINAES, is responsible for the accreditation of educational programmes. However, since the Invenio University is a private institution, it has not been evaluated and cannot be accredited by SINAES. Nonetheless, it could opt for the accreditation of its career programmes with SINAES, if it decides to become a member SINAES.

Invenio is the only university in Costa Rica that applies the dual education model, which is why it is a pioneer in this innovative educational system. Because of this, it is often regarded as a role model in Costa Rica.

Key Actors

Among the key actors of the Invenio University are the CONESUP (by law in charge of approving the operation and the curricula of the careers that are taught at private universities), the Union of Rectors of the Private Universities (UNIRE), companies, teachers, students, and administrative academic staff of the university.

The main actors of the Invenio University can be described as follows.

Government bodies:

- CONESUP, is an entity that is regulated by the CSE, and is responsible for authorizing the operation of private universities based on a series of requirements established by law. In addition, when private universities open new career programmes or make changes to curricula, they must submit a list of documents for review. Even though the Invenio University is a private institution, it must adhere to the laws.

Representation and advisory bodies

- UNIRE, an institution that gathers all the deans of the private universities. It is responsible: of defending and guaranteeing the freedom of education, of encouraging the collaboration between the private universities, of guaranteeing their academic excellence, of asserting and defending their interests against public and private institutions. They are further responsible of encouraging and safeguarding the ethics of private universities, of promoting the quality accreditation of their careers, of serving as mediator, conciliator, or arbitrator on conflicts that can arise among private universities, and promoting that the State stimulates the private initiative in educational matters in accordance with the article 80 of the Political Constitution. The Invenio University has representation in the Institution and decisions made in this body affect the University.

Education, training, and providers

- Through cooperation agreements, the Invenio University has a close relationship with a number of private companies such as: Boston Scientific (mechanical industry), Florida Beverages (food and beverages), FT Technologies (software development), Ad Astra Rocket (space aeronautics) and TechShop (engineering and manufacturing), among others.

Finance

Since the Invenio University is a private intuition, it is mainly financed through the tuition fees paid by its students. However, since the Invenio University has a scholarship system, some students receive donations from international and national organizations, in order to give equal opportunities to all students.

Curriculum Development

Curriculum Design Stage

According to regulations in Costa Rica, universities must permanently review their curricula in order to update the curriculum in agreement with new international and national trends. Updating of curricula must take place at least once every five years. The curricular updates must be approved by the CONESUP.
The curriculum is developed by conducting consultations with employers, students, graduates, professors, administrators, and experts; thus ensuring a participative process.
Within the consultations done for the curriculum development, the most relevant actor is the business sector, as their judgement is important to ensure relevancy of taught skills.
The programme of the Invenio University could be accredited by the SINAES. So far, it has not taken this step.

The university is responsible for implementing the curricula. Despite the fact that the curricula are implemented in private companies as well, the Invenio University is responsible for ensuring that companies teach students the contents and skills that are expected to be learned in the company and that the training complies with the necessary quality standards.

Curriculum Application Stage

The curriculum of the Invenio University combines in-classroom and workplace training. Together with other involved stakeholders, such as the business sector, the university decides about the practical and theoretical learning contents and the learning places (classroom or company). Students alternate classroom and

workplace education every three months, which enables them to apply what they learned in theory at the workplace.

The university professors are in charge of ensuring that the in-workplace education content and quality complies with the goals and rules of curricula. In addition, the supervisor assigned in the workplace must also collect sufficient evidences to confirm that the students developed the necessary skills laid down in the curricula.

Curriculum Feedback Stage

Graduates are part of the feedback system in that they give their feedback to the Invenio University. In addition, students, graduates, employers, professors, administrative staff, and experts also give their opinion on what modifications should be made to the curricula.

Once the changes in the curriculum are made, the university submits the plan for review to the CONESUP, as established by the law.

4.2.4 Formal-formal TVET programme: Parauniversity programme

In this section, we describe the formal post-secondary education parauniversity programme. In the following, we will refer to these as “parauniversity programmes”.

This section was prepared with the contributions of M.Ed. Giselle Cruz, who at the time (2018) served as the general secretary of the Higher Council of Education (CSE), she also contributed statistics and data generated by the CSE. Table 10 summarizes the details of the programme.

Table 10: Stylised facts of the TVET programme: Parauniversity programme

Short title of indicator	
Programme category	Formal education, formal labour market
VET pathway enrolment share out of all upper secondary (%)	Not applicable. Post-secondary education programme.
Programme enrolment share out of all VET pathway (%)	-
Number of curricula/qualifications	113 curricula
Ø Share of time spent in workplace (vs. classroom)	0% of time spent in workplace; some of the curricula have a 200 hour practice, but no content is taught at the workplace.
Work contract (Yes/No)	No
Ø Share of vocation-specific content (vs. general) in classroom education	100 percent vocational-specific content.
Classroom/workplace sequencing (Alternating, Sequentially)	100 percent in-classroom training.
Frequency of workplace learning (Annually, Semi-annually, quarterly, monthly, weekly)	There is no workplace learning.
Programme duration (Years)	2 to 3 years
Involved Actors	Superior Council of Education Parauniversities
Reform Years	The reform of the curricula must take place once every 6 years.
Reforms Summary	The reforms are mostly curricular, but with the newly established Qualifications Framework, the curriculum must be revised, to fit the level they are teaching.

Source: Summary of information given in text.

Introduction

To be considered as a parauniversity, these institutions have to be recognized by the Higher Council of Education (CSE). The main objective of these institutions is to offer vocational and technical education programmes of two or three years to persons who graduated from general/ academic education. Parauniversities are classified as formal post-secondary education institutions. They were built according to the community college system in the United States (Castro, 2010: 4).

Parauniversities can be public or private institutes. In both cases, they offer careers at the medium technical level. To be allowed to style themselves as a "University College", parauniversities must have an agreement with some University for teaching purposes, so that the University can give their quality backup to the parauniversities.

Parauniversity education was conceived as an option for people who graduated from high school but could not enter regular universes, e.g. because of quota restrictions.

According to Article 2 of the Law No. 36289 that regulates the parauniversities, the purposes of parauniversities is to offer technical careers of two or three years, to extend training programmes, give technical assistance, provide consultancy services, work in social action projects and research to improve the communities, contribute to preserve communities, enrich and transmit the national culture, and, in general, to promote education alternatives for young people in order to increase their labour market mobility.

According to Article 3 of the same regulation, in order to achieve its aims, parauniversities shall offer academic programmes of recognized quality standards to contribute to the social and economic development in the country, as well as to increase job opportunities for young Costa Ricans. According to article 5, public parauniversities are directly administered by the government.

Currently, the two public parauniversities and the 23 private parauniversities offer 113 curricula between them. Table C1 in Appendix C contains detailed information on the parauniversity-specific curricula, enrolment and graduation rates, as well as the duration of these.

The vast majority of technical careers at parauniversities have a duration of two to three years, split into six or nine four-month-cycles. The curricula of the careers must have a minimum of 60 and a maximum of 96 credit points, the academic load may not exceed 19 credits per cycle and the number of courses in a curriculum shall not be less than 18. In its article 35, the law establishes that one credit point is defined as: *"…the value unit of the student's work, which is equivalent to three hours per week of work, for 15 weeks, applied to an activity that has been supervised, evaluated and approved by the teacher".* This holds for all types of courses: laboratories, workshops, field practices and theoretical-practical courses. Each lesson in these programmes lasts fifty minutes.

The parauniversities are mostly located in the Central Valley of Costa Rica, but institutions are also based in Limón, San Ramón, Cañas and Ciudad Quesada.

The purpose of the parauniversity programmes is to provide education and training for labour market integration and mitigation of poverty. The nature of education offered by parauniversities is mostly occupation-specific, sometimes firm specific. The curricula of parauniversities are designed for young people graduating from high school, women and disadvantaged groups.

To enter parauniversities, students must have completed upper-secondary general or vocational education.

The parauniversity programme is 100 percent school-based. Students are allowed to allocate 200 hours to internships in companies, but this practice is not compulsory. As defined in Article 8 of Law 6541, the final exams of parauniversity programmes are carried out by the parauniversities, but supervised by the Council of Higher Education (CSE), through the MEP. Most institutions decide to administer a written as the last requisite for graduation. In some cases institutions apply for a "supervised practice" test in a company instead of the written examination. For the supervised practices, each parauniversity has to verify that all the companies where the practice test takes place are formalized.

Parauniversity graduates obtain medium level technician degrees, which give them the opportunity to enter the labour market or continue studies at the university level. The parauniversity degrees are however not considered to be academic degrees.

A certain level of quality of education at parauniversities is guaranteed through its formal structure and the fact that its curricula are approved by the CSE, an instance that also certifies its operation by means of a law and a regulation. In addition, the National Accreditation System of Higher Education Institutions (SINAES) has an evaluation model exclusively for parauniversities. The SINAES accredits parauniversity curricula. However, participation in the accreditation process is voluntary. So far, only two parauniversities have submitted their curricula for accreditation: the University College of Cartago and Technical Agricultural and Industrial School, which have summited their curricula electronics and agricultural sciences.

Nonetheless, the official publication of the qualifications framework in 2018 presents a challenge for the parauniversities as they are obliged to align their curricula to the qualifications framework. Nonetheless, this subject is still up for discussion.

Key Actors

The main actor of parauniversities is the Council of Higher Education (CSE), which regulates parauniversities through laws and regulations. In addition, it also approves the educational offer a curricula of parauniversities.

The Council is composed of:

- The Minister of Public Education, who presides it.
- Two ex-ministers of Public Education, appointed by the Government.
- A member appointed by the University Council of the University of Costa Rica.
- A representative of the III cycle of basic general education and general/academic education, appointed by the directors of the educational centres of these cycles.
- A representative of cycles I and II of the general basic education and preschool, appointed by the regional directors, supervisors and directors of the schools of cycles I and II general basic education.
- A member designated by the organizations of education institutions registered according to the law, appointed by their corresponding directives.

In addition, for the direction and government of public parauniversities a Board of Directors is in charge. The Board of Directors is the highest body of the institution and it consists of seven members:

- A representative of the CSE;
- A representative from the administrative staff;
- A representative from the teachers and teaching-administrative staff;
- A student representative;
- A university professional from the community, appointed by the executive power;
- A representative of the community elected by the development association, if the community does not have a development association, the representative will be a university professional member of the Chamber of Industry of Costa Rica chosen by the same Chamber of Industry.
- A representative of the local government chosen by the Council, which should preferably be a university professional.

An Executive Director leads the private parauniversities, and the teachers and staff of these institutions are not unionized. In addition, there is no mediation or input from other institutions, as neutral advisory bodies.

There are 19 parauniversities that provide training:

No.	Name
1	Ibero-American Centre for Professional Development - CIDEP
2	Boston University College
3	Creative University College
4	University College of Cartago - CUC
5	University College of Limón – CUN Limón
6	IPARAMÉDICA University College
7	Panamerican University College– CUP
8	Technical Agricultural and Industrial School – ETAI
9	San Juan Bautista de la Salle Institute of Higher Technical Education – La Salle
10	Institute of Educational Services – ISESA
11	American Business Academy Parauniversity Institute - ABA
12	Plerus Parauniversity Institute - PLERUS
13	Institute of Health Sciences - INCISA
14	Invenio Institute of Emerging Technologies - INVENIO
15	Latin Institute of Integral Formation - ILAFORI
16	Parauniversity Institute Costa Rican Medical Services Association – Asemeco
17	International Polytechnic Parauniversity Institute
18	Yunun Parauniversity Institute Limited
19	Parauniversity Institute of the Isthmus S.A.

Source: own illustration.

Finance

The financing of the public parauniversities differs from the private ones, since the private ones are financed through student fees only. Article 41 of the Law, which regulates such institutions, states that the public parauniversities are financed by (the sums allocated in the General Budget of the Republic) the income from the fees charged to students and the activities organized by each institution, donations received by public or private institutions, national or foreign, the resources that come from agreements with national or foreign institutions of various kinds, public or private, and other subsidies that are established by special laws.

Curriculum Development

The Law regulates the development of the curriculum of the parauniversities; therefore, all public and private parauniversities must adhere to it.

Curriculum Design Stage

According to article 35, in order to be approved and accredited by the CSE, the tracks offered by parauniversities must fulfil the following requirements.

- They need to state the name of the proposed career of the specific track, probable enrolment and its projections, description of the career including the professional exit profile and career objectives.
- They must include information on general and specific objectives, contents, entrance requirements, strategies, and teaching resources, credits, evaluations and bibliography of each course in the track as well as graduation requirements.

- For its approval, each track must be submitted for an assessment by a professional in the area who evaluates the submitted material. The respective professional is select by the CSE.

Often, parauniversities conduct consultations with the business sector to discuss the curricula. After receiving the evaluation, parauniversities have 90 days to resolve the requests that are formulated, as established in the second paragraph of Article 4 of Law 6541 of November 19, 1980.

Article 36 states that after their approval, the career tracks offered at parauniversities can be changed or modified as long as the career exit profile does not change, or as long as no more than 33 percent of the content is changed. Otherwise, the ordinary procedure evaluating a new career track will be applied.

In summary, each parauniversity institution is in charge of the design of the curriculum and the CSE of its approval.

Curriculum Application Stage

As the curriculum of parauniversities is 100 percent school-based, each institution provides its own classrooms, laboratories, organizes in-company visits and is responsible for hiring its teaching staff. The implementation of the curriculum is supervised by the CSE.

According to article 40, each parauniversity must track where students who opted for the in-company practice of 200 hours perform their work. They have to register the student's name, name and exact address of the organization where the practice will take place, the contact information of the person in charge of supervising the student, student practice schedule and any other information that serves to guarantee control and supervision of the student. The in-company practice must be carried out in a period no shorter than one month, at an 8-hour working day, for a total of max. 200 hours.

As mentioned above, students can choose to take a written or practical final test.

Curriculum Feedback Stage

Article 37 establishes that, every six years, parauniversities are obliged to get approval from the CSE, to update and modify their curricula. *Changes to the curricula* can be implemented by the Department of Private Teaching Centres or by the Board of Directors of the respective parauniversity, depending on whether the institution is public or private.

Any changes to curricula should adequately represent the demands of the labour market. Otherwise, the CSE will make the corresponding request for correction that can be implemented within 90 days, In case a parauniversity does not make the required changes, the respective career track will be banned from its educational offer- in accordance to article 4 of Law No. 6541.

Therefore, parauniversities must evaluate the outcomes of their students and the labour market relevance of the programmes at least once every six years; otherwise, the CSE can intervene and force the institution to carry out curricular updates.

4.2.5 Non-formal-formal TVET programme: National Institute of Learning (INA) Dual programme

The aim of this section is to explain the Dual programme at the National Apprenticeship Institute (INA). This section was prepared with the contributions of Ing. Hilda Ugarte Medina, who works as a curricular advisor for INA and with specific information given by the Executive Directorate of the INA. In addition, some information comes from INA's web site.[17]

Table 11 summarizes the details of the programme.

Table 11: Stylised facts of the TVET programme: INA Vocational Training

Short title of indicator	
Programme category	Non-formal education, formal labour market
VET pathway enrolment share out of all upper secondary (%)	Not applicable, since target group not only youth after lower secondary school.
Programme enrolment share out of all VET pathway (%)	-
Number of curricula/qualifications	15
Ø Share of time spent in workplace (vs. classroom)	At least a 60 percent of the course content must be delivered at the workplace in a company.
Work contract (Yes/No)	No, Costa Rican laws do not allow for students to have a work contract.
Ø Share of vocation-specific content (vs. general) in classroom education	For Dual reform, INA took the school base curricula and studied which contents could be taught in the work place, and the chosen ones were transferred to the companies.
Classroom/workplace sequencing (Alternating, Sequentially)	Alternating in the dual programme.
Frequency of workplace learning (Annually, Semi-annually, quarterly, monthly, weekly)	Depends on the curricula, INA studies the contents and determines which contents are best taught in the classroom and which ones in the work place.
Programme duration (Years)	The different curricula last from one year to three years, nonetheless, it is difficult to measure in years since it depends on the chosen specialisation, and because the Qualifications Framework in the programme duration is given in hours.
Involved Actors	• Government • Companies • Board of directors • Supervisors • Teacher-tutors • In-company instructors
Reform Years	The reform started two years ago. As of August 2019, the programme is still undergoing a reform.
Reforms Summary	Two mayor reforms have occurred: 1. The programme was changed from 100% school-based to dual. 2. The programmes are being aligned with the Qualifications Framework established in the country

Source: Summary of information given in text.

[17] INA's website: http://www.ina.ac.cr

Introduction

The National Apprenticeship Institute (INA) is an autonomous entity created by the Law No. 3506 on May 21, 1965. It was reformed by its Organic Law No. 6868 of May 6, 1983. Its main task is to promote and develop vocational education and training to contribute to the improvement of the living and working conditions of Costa Ricans.

Currently, the INA offers three different "modalities" (*modalidades*) to deliver courses and programmes. The modality of delivery usually depends of the particular needs of the candidates and their availability in terms of time and geographical location. The three modalities of delivery are:

1. **Presencial:** This modality implies that students need to be present in all classes of a programme. This modality includes the Dual programme, which is described in this case study. In the Dual programme, students need to attend the programme either at school or the company.
2. **A distancia**: For courses and programmes in this category, students do not need to be present in schools or companies. This modality, for instance, includes virtual classes.
3. **Combinada**: This is a mixture of the "Presential" and "Virtual" modality.

INA programmes are delivered in three different ways:

i) The program is 100 percent **school-based.**
ii) The program is executed in schools but in the end, there's a **practical module** that is executed within a company. This module is usually called "Practica Didáctica Supervisada". The main objective of this module is to put all the knowledge – theoretical and practical- that the student learned in school into practice. For this module, there is a person in the company who is in charge of guiding, supervising and evaluating the student: In addition, there is a professor from INA who is in charge of selecting the companies, to assign the student, co-evaluate the student, and visit them at the company for the respective follow -up.
iii) **Dual Programs**: In this case, at least a 60 percent of the course content must be delivered at the company workplace. The in-company share can be set to be higher. The remaining time of the programme should be delivered at school.

There is no official document from the INA that contains specific information about which INA programmes are 100 percent school-based, have the practical module or are Dual.

In the following, we will explain the Dual programme in more detail.

In 1989, the INA was visited by advisors from the German Foundation for International Development (GIZ) who had the goal of promoting dual vocational education and training in Costa Rica. In 1993, the first dual training programmes for the occupations metal mechanics, automotive mechanics, electronics and secretary were implemented. In 1995, the Ministry of Public Education (MEP), the INA and the Association of Owners of Industrial Maintenance Workshops (APTAMAI) designed the occupational qualification: "medium technician in automotive mechanics". In 2000, the dual programme was extended to the graphic industry. In 2009, the newly founded Didactic and Pedagogical Unit (UDIPE) of the INA initiated an internal project to promote the dual programme in the main subject areas and regions of the INA. The UDIPE designed modules for the training of tutors, monitors and participating students of the dual programme. In 2011, further specializations of the dual programme were created in the field of vehicle mechanics and tourism; in 2016, for the areas trade and services and vehicle mechanics and for the field electronics in 2017 (INA, 2018). Details are shown in Table 12. Table 12 also summarizes the 15 occupations for which the Dual programme has been developed so far.

Table 12: Overview over 15 specializations offered in the Dual programme and introduction year

Field	Occupation offered in dual programme	Year of introduction
Vehicle Mechanics	1. Heavy machinery mechanic 2. Vehicle body tinsmith 3. Vehicle body painter	2011
Trade and Services	4. Cashier	1993
	5. Software quality controller	2016
Tourism	6. Hotel receptionist 7. Chamber maid 8. Cook 9. Professional bartender	2011
Graphic Industry	10. Offset printing 11. Typography 12. Graphic design 13. Digital pre-press 14. Industrial binding	2000
Electronics	15. Specialized technician in energy efficiency	2017

Source: INA (2018).

The main purpose of the dual programme is initial education and training, integration into the labour market and poverty mitigation. The target groups of the programme are youths, women, and disadvantaged groups. In addition, the programme presents an alternative for students after their last year of school (sixth), the ninth year of high school, and as a university alternative after the eleventh year of school (INA, 2018).

The minimum entrance requirements to the Dual programme are:

1. Age: 15 to 20 years (inclusive)
2. Schooling: having completed the sixth grade of primary school (Certificate of Completion of Studies I and II, Basic General Education Cycle)
3. Passing the selection process.

The dual programme alternates in-classroom training at the INA with in-workshop training in companies. At least a 60 percent of the course content must be delivered at the company workplace. The in-company share can be set to be higher. The remaining time of the programme should be delivered in school. The share of school- to work-based training varies by occupation.

In-company training has the advantage that students are exposed to real production environments, are confronted with working in a team and with clients. In contrast, in-classroom training simulates theory and practice. Including the business sector in the programme allows for the teaching of theory that is job-relevant.

In order to reassure that students not only work in companies, but also learn something, each company has to provide instructors ("*monitores*") for workplace training. These are qualified workers who are in charge of workplace training of students. They are in charge of guiding, teaching, and evaluating the student at the workplace. They have to make sure that in-company training complies with objectives of the training programme. In addition, workplace instructors collaborate in the development and implementation of the training programme and have to ensure the safety of students. A single instructor is responsible for a maximum of two students, advising and guiding them. The instructors are expected to evaluate the students learning in collaboration with the teacher-tutors from the INA, with whom they are expected to maintain regular communication (INA, 2018).

In addition, so-called "teacher-tutors" from the INA are in charge of coordinating the dual programme between: the INA, companies and students and to assure the quality of in-company training. They help to elaborate the students' training plans, participate in selection of companies, placement of students, advise the in-company instructors how to evaluate students' performance, check that in-company training is in

accordance with the training plans, help students in case of difficulties and give them feedback on their evaluation (INA, 2018).

The incentives for companies to participate in the dual programme are, among others, that they get qualified personnel at the culmination of the training. The personnel is trained specifically according to their needs and culture, which reduces recruitment costs. This could lead to increased product quality. Among others, the incentives for students to participate in dual training are a potentially improved employability after the programme and access to work experience (ibid.).

In coordination with companies, INA can update the curricular design of the programmes, which guarantees the labour market relevancy of the skills taught in the programme. In addition, the collaboration between INA and the companies allows updating the in-classroom teaching staff with new technologies in companies and a possible reduction of infrastructure costs by sharing the cost of training equipment, machinery and technology (ibid.).

The dual education programme from INA has been under a curricular reform for two years to adjust its curricula to the levels and criteria of the Qualification Framework that was developed from 2016 to 2018.

In 2015, about 4’376 people enrolled in the different curricula of the Dual programme and 5’124 in 2016, Furthermore, 2’501 students completed the programme in 2016, and about 2’684 students in 2017, respectively. The data for 2017 and 2018 is not yet available.

In general, the quality of the technical education administered by INA programmes is mediocre. Since the programmes are non-formal, they do not provide access to higher education, which potentially attracts a greater share of students with lower abilities, which impacts programme quality. The INA programmes have not been evaluated and are not accredited by an external entity; the creation of the curricula is circular within the institution. Since all the processes are carried out internally, it is difficult to assess the quality of the programmes. Likewise, the final exam that the students have to write is elaborated, validated, and applied by the INA.

Key Actors

The key actors of the educational offer at INA are within the institution of the INA itself, owing to their role in providing all the training within the different centres they have across the country. Since INA is an autonomous institution, its decisions are autonomous, and contingent upon the Minister or the Ministry of Education or Ministry of Labour. The institution has an executive director, appointed by the current government, who manages the institution with independence of decision.

Representation and advisory bodies

The Board of Directors is composed of the following members:

- Executive President INA
- Representative of the Cooperative Sector
- Deputy Minister of Public Education
- Minister of Labour and Social Security
- Three representatives of the business sector
- Representative of the solidarity sector
- Representative of the trade union sector

The tutors, monitors or supervisors are not unionized. In addition, there is no mediation or input from other institutions, as neutral advisory bodies, although some consultations are made for curricular definition to chambers of entrepreneurs, companies, and unions, who are consulted on the reforms and the needs of the country.

Finance

INA is a public institution financed by the following sources:

- 1.5 percent of the payroll amount of the private companies in all economic sectors with at least five workers
- 0.5 percent of agricultural enterprises with more than ten workers
- 1.5 percent of the total amount of the payroll of the autonomous, semi-autonomous and state companies
- Income from the sale of products, exploitation of goods and provision of services generated by the INA as an ordinary activity of its programmes
- Loans for the fulfilment specific institutional purposes
- Legacies
- Donations
- Inheritances

INA's annual budget for 2018 was about 132'500 million Costa Rican Colon (USD 233'279.5). Since companies pay for INA's programmes through the payroll tax, Costa Rican-based companies have refused to pay students in the dual programme a wage, which is against the legal regulations. The Apprenticeship Law No. 4903 of 17 November 1971 regulates the apprenticeship contract. Accordingly, only the INA is empowered to carry out this type of training contract with companies. The apprenticeship contract is defined as a fixed-term employment contract that lasts for the time of training and gives Dual programme students all rights of normal workers (salary, vacation, Christmas bonus, etc.). Only students who are no younger than 15 years and no older than 20 years old can sign the apprenticeship contract. The apprenticeship wage cannot be less than the minimum wage and must increase gradually over time to about 50 to 100 percent of the reference salary of the training company. In addition, the training company must pay social security contributions and health insurance for the apprentice. All these regulations make training very expensive for companies and lead to low participation rates (AED, 2016).

Since Costa Rican-based companies have refused to pay students in the dual programme a wage, they pay students a "scholarship" in order to support them for food, transportation and other expenses they may have during the training period (ibid.). The cost benefits of the programme have not yet been calculated.

Instead of the apprenticeship contract, INA developed the "Supervised Didactic Practice Agreement", which is a civil cooperation agreement signed between the INA, the company and the student, with the purpose to regulate the "supervised practice" of students' in-company training in the Dual programme. Despite this legal agreement, companies have complained that a clear regulation of roles and responsibilities in the Dual programme is still lacking. Therefore, actors from the Ministry of Public Education, Ministry of Labour, the INA and the National Insurance Institute have formed an "Alliance for Employment and Productive Development" with the aim to develop a law regulating dual training in Costa Rica (ibid.). INA offers many scholarships, especially for low-income students.

Curriculum Development

INA's process of curriculum development can be described along the lines of the Curriculum Value Chain from Renold et al. (2016).

Curriculum Design Stage

The identification of a need for a training programme in a particular occupation may come from companies. If there is no existing programme that fulfils the company's training need, a new programme may be developed for this occupation or an existing one may be redesigned (AED, 2016).

Business chambers, companies and unions (who are consulted on the reforms and the needs of the country) are involved in the curriculum design of the Dual programme. Involving actors from the business sector, allows for obtaining first-hand information on new technologies and occupational profiles. As a result, training plans contain training that is relatively more relevant for the labour market.

In the first step of the curriculum design, experts from INA make a first draft of the school-based and workplace-based curricula. In a second step, employers, representatives of employers, tutors, and in-company instructors are consulted to check the relevancy of skills laid down in the curricula. Once this is done, the Board of Directors approves the curricula and their updates. The INA's curriculum experts also design the final test.

Curriculum Application Stage

As an autonomous entity, the INA is fully responsible for the implementation of the programme. This is done through its tutor-teachers and in-company instructors, who are responsible for executing the curricular contents previously defined by the curricular advisors; curricular supervisors and instructors in charge of ensuring that the curriculum contents are taught. This task is accomplished through surveys and interviews with students.

As already mentioned, the companies do not establish a contract with the students, since the laws of Costa Rica do not allow it. By paying taxes, companies subsidize all the INA programmes. Companies also pay for equipment for in-company training.

The INA itself develops and administers the final test of the programme. It is implemented in INA's regional centres.

Curriculum Feedback Stage

The INA collects feedback from curricular advisors, teacher-tutors and the in-company instructors about the Dual programme. Teacher-tutors are important factors to guarantee the quality of the Dual programme. They help preventing mistakes during the application phase, collect information on deficiencies of the programme and help if complications, e.g. during in-company training, arise. This information is taken to the curricular advisors who systematizes, analyses, and makes the necessary curricular changes. Any curricular changes resulting from this stage do not have to be approved by the Board of Directors, since the curriculum has already been approved at this stage.

There is no external institution that evaluates and accredits the quality of the INA programmes. INA evaluates the results of its curricula internally, the certified teaching, and people competences.

5 Conclusions and Outlook

Conclusions

In this country case analysis, we described three formal and one non-formal TVET programme in Costa Rica. First, the formal Technical Colleges (*Colegios Técnicos, CTPs*) programme, which lasts three years. It is the most important formal TVET programme in Costa Rica at the upper-secondary formal education level in terms of enrolment: from 2013 to 2016, about 28.3 percent of all pupils in upper-secondary level attended the CTP programme. It is mainly school-based. Students completing the programme can earn two final degrees: a general and an academic education degree that provides access to universities (*Bachillerato*), and a technical degree, "Medium Level Technician (*Técnico Medio*), in a chosen specialization. However, even though its sounds alluring to earn two degrees, fulfilling the requirements to earn both degrees in just one additional year than the general/academic education track seems a challenge for many students. From the 19'710 students initially enrolled in CTPs in 2015, only 68.5 percent graduated in 2018 (three years after). However, this was even worse a few years before: in 2013, only 52.1 percent of the initially enrolled students from 2010 graduated. This is a relatively low achievement rate. This partly happens because students who pass the 12th year successfully can earn the certificate of a medium technician without passing the final exams of general/academic programme. This provides students who failed the final exams of the general/academic programme a high incentive to drop out before earning the *Bachillerato.* In fact, due to high failure rates in this final test, many are discouraged and never officially complete the CTP programme. A second weakness of the CTP programme is the quasi non-existent link to the business sector. The CTP programme neither contains workplace-based training nor does the business sector play an active role in the curriculum design. This weakness has been addressed in recent years. Costa Rica is currently (as of beg. Of August 2019) undergoing some reforms, which are geared to incorporate standards from the business sector, as part of the qualifications framework subscribed at the national level. Moreover, during the last three years, there have been three bills for the implementation of Dual Education in the CTP programme. However, this has not become a law yet. In addition, the MEP carried out a pilot of the Dual Education programme in four CTPs. The dual pilot ends in 2019, and will be evaluated to incorporate improvements.

Second, we studied the formal four-year Invenio University programme, which is part of tertiary education and leads to a Bachelor degree. To the best of our knowledge, this is the only higher-education TVET programme in Costa Rica. It is a dual programme where students spend the first nine months of the bachelor programme on campus, before gaining work experience in a company. Students spend about 56 percent of the programme in the classroom and 44 percent in the companies. This programme is very interesting and promising from a design point of view. This model only exists in a few countries- such as the dual colleges ("Duale Hochschule") in Germany or Professional Education and Training (PET) Schools in Switzerland. Due to its extraordinary design and since its Costa Rica's unique tertiary-level TVET programme, we also chose to describe this in a case study. However, in terms of enrolment, the Invenio University programme is not yet very important, as the average number of enrolled students was 50 from 2013 to 2018. It would be a candidate programme for upscaling.

Third, we selected the post-secondary education parauniversity programme for the case studies. Parauniversities aim to provide education and training for labour market integration and mitigation of poverty. The curricula of parauniversities is designed for young people graduating from high school, women and disadvantaged groups. To enter parauniversities, students must have completed upper-secondary general or vocational education. Most specialisations offered by parauniversities have a duration of two to three years. The community college system in the United States was a role model for the construction of parauniversities (Castro, 2010: 4). According to Castro (2010), parauniversities have lost their importance today as they suffer from a general loss of reputation.

Besides the three formal, we selected one non-formal TVET programme for the case studies: the Dual Programme of the National Apprenticeship Institute (INA). It is a promising programme in that it combines

in-company and in–classroom training. However, it is very small in scale. In 2016, only 5'124 students were enrolled in the programme, which corresponds to about one quarter of the enrolment in the formal CTP programme with 19'444 enrolled students in the same year. However, INA's programmes have never been evaluated externally and are not accredited by an external entity, which could have impacts on programme quality. In addition, since all of INA's programmes are non-formal, they do not provide progression routes for higher education, which potentially attracts students with relatively lower abilities.

Overall, TVET programmes in Costa Rica often lack the active involvement of the business sector in training - from the design of curricula to the application of knowledge. Currently, in-company training is partly prevented through regulations that make training unprofitable to the firm, such as high minimum wages companies have to pay if they employ students as workers (see for example the "Finance" section of chapter 4.2.5). The responsible ministries also realized that integrating the business sector is important for successful TVET programmes. As a result, actors from the Ministry of Public Education, Ministry of Labour, the INA and the National Insurance Institute (the "Alliance for Employment and Productive Development") elaborated a draft for a "dual education decree", which was approved after an extensive process of negotiation on August 5, 2019[18]. This is a promising step towards a better integration of the business sector in TVET in Costa Rica.

Principal limitations of this study were the unavailability of systematic information. Therefore, we had to ask experts from the respective institutions to get information directly from them. In addition, finding experts in the respective institutions who could provide us the necessary information was a challenge.

Outlook

In section 2.2, we argued that TVET programmes that link actors from education and employment system (i.e. where TVET takes place in schools and firms), have a higher likelihood of achieving relatively better labour market outcomes than programmes where education and labour market actors do not interact (i.e. TVET is either purely school- or workplace-based). Involving firms in the design of curricula and organization of training increases the labour market relevancy of skills. Involving schools provides that skills are not too firm specific, which increases the likelihood that students find jobs in other but the training firms and can upgrade their skills set later on.

In a related study, Caves et al. (2019) measure the linkage (or power sharing) between actors from education and employment system of TVET programmes in Benin, Chile, Costa Rica and Nepal by means of an expert survey. Based on the results of this survey, they construct the KOF Education-Employment Linkage Index (KOF EELI), which quantifies the "degree of linkage" between actors in a TVET programme with respect to key processes in the curriculum value chain; namely, curriculum design, curriculum application (programme delivery), and curriculum updating. Thereby, an index score of seven implies complete linkage, i.e. equal or power sharing between actors; an index score of zero implies that there is no linkage between actors, i.e. actors from the education system have all the power with respect to deciding about key processes in the curriculum value chain.

For Costa Rica, we constructed the KOF EELI for the CTP programme. The KOF EELI for the CTP programme depicts a score of 2.0, which is the second lowest overall index score among the other countries in the study, Benin, Chile and Nepal. Costa Rica's low score comes from the curriculum updating phase at 1.6, followed by design at 2.0 and application at 2.4. Although employers have some small role in curriculum design, there is almost no role for them in updating the VET curriculum. This makes it unlikely that the program will stay up to date, jeopardizing graduates' transitions to the labour market. As a conclusion, it would be desirable better involvement of employers into the CTP program to achieve better linkage. In that regard, the CTP programme has the same weakness as other TVET programmes in Costa Rica- as for example the non-dual programmes of INA.

[18] See for example the web site of the Costa Rican newspaper "El Pais": https://www.elpais.cr/2019/08/05/aprobado-en-primer-debate-proyecto-de-educacion-dual/ (accessed Aug. 16, 2019).

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Appendix

Appendix A. Asset Mapping of TVET Programmes in Costa Rica

Table A1: Template for Asset Mapping for one Programme

Short title of indicator	Question and reasoning
Title of the programme	Please write the name of the programme
1. Form of education	**O formal** **O non-formal**
2. a) Number of students enrolled in the programme	**Specification**: How many students are enrolled in this programme in a given year? Please state enrolment in absolute numbers, no percentages.
	Reasoning: In general, the number of students in a specific programme is a good proxy for its importance, as it tells how many students can be reached by the programme.
2. b)Optional: Number of students who completed programme	**Specification:** How many students graduate from this programme in a given year? Please state graduation in absolute numbers, not in rates.
	Reasoning: Helps understanding successfulness/effectiveness of programme.
3. Duration of the programme	**Specification:** How long does the programme last (typically)? Duration of the programme in weeks/months or years; indicating a range is better than setting an arbitrary mean.
	Reasoning: The duration of a programme may say much about its quality. We include this indicator to help demarcating TVET programmes from training programmes that we would not classify as TVET, e.g. active labour market programmes.
4. Geographical location/spread of the programme	**Specification:** Is it a nation-wide programme or is it geographically restricted? If it is restricted, what is the smallest geographical unit used in your national language to describe the programme's scope?
	Reasoning: It may be helpful to create a map to illustrate the coverage of a programme geographically - e.g. by colouring regions on a map.
5. Age of the average student or typical age-range of students	**Specification:** What is the age of a typical student in the programme? OR: How old are the students in the programme on average?
	Reasoning: This information can help disentangling certain vocational programmes from TVET, e.g. from training in the course of active labour market programmes. This may be an important criteria when selecting programmes.

6.	**Main function/purpose of the programme**	**Specification** - Initial education and training - Continuing education and training - Labour market integration: from unemployment to employment in formal sector - Labour market integration: from informal to formal sector employment - Poverty alleviation - Increase share of people with formal education, formalize the education system - Other: specify!
		Reasoning: This indicator helps to identify TVET programmes and to delineate it from other programmes, such as active labour market programmes.
7.	**Target group of the programme**	**Specification** - Youth - Women - Disadvantaged groups (e.g. from excluded ethnicities) - Informal sector workers - Returnee migrants who have been working abroad - People affected by environmental disaster or war - Other: specify! - No specific target group
		Reasoning: Same as before.
8.	***Prior education needed to enter programme and other entry requirements***	**Specification:** What is the type and level of education (e.g. primary education) that is needed to be able to enter the programme? If possible, please also mention the name of the degree that is needed to enter the programme. - Are there other entry requirements or maybe requirements that have to be fulfilled in addition to a completed degree? If yes, please also state these here! - For example, for the CQP programme in Benin, students only need to have 5 years of education (with or without degree), need to be at least 14 years old, must have worked for at least half a year in a workshop along with a master.
		Reasoning: This indicator has several aspects. First, it helps to position a programme within the formal education system. In case of non-formal programmes, this indicator nevertheless helps to get an idea of the position of these programmes in relation to the formal education system. Second, this indicator also says something about the potential of the programme to improve the educational background of the students and thereby their labour market situation, which is one of our criteria for the selection of programmes. For example, if a student, who has not finished primary school, participates in a training programme that helps him improving his chances of finding a job and probably provides him the opportunity for further education in the formal educations system.
9.	***Number of curricula covered by the programme***	**Specification:** Are there curricula for the programme? If yes, how many curricula are there? Are they available in written-from? If possible, please list all sectors and/or trades for which curricula are offered. - For which sectors and/or trades does the programme have curricula? Please specify these!

	Reasoning: The number of curricula tells something about the importance of the programme in terms of scope. Knowing the distribution of curricula across sectors and/or trades can help to identify further programmes (e.g. by searching in sectors for that no programme has been discovered so far).
10. Percentage school- and work-based training	**Specification:** What share of the overall time in education and training do students spend in school and what share in the workplace?
	Reasoning: This indicator helps us understanding the nature of the programme.
***11.* Examination at end of programme**	**Specification:** Is there an examination that marks the end-point of the programme? Is it a formal, officially recognized exam? - If no formal examination exists, is there any other way in which the skills of the students are assessed at the end of the programme? What serves as a "standard" for the evaluation (if there is one)? Who tests the skills of the students?
	Reasoning: This indicator reveals whether or not there is a curriculum for the programme setting standards for the student's skills. This is an indicator to determine the quality and degree of formality of a programme.
12. Progression routes from programme	**Specification:** Does the programme allow progressing in the formal education system? What is the name of the awarded degree upon completion? If the programme does not provide access to the formal education system, does it provide access to non-formal programmes? What is the name of the programme to which it is possible to transfer?
	Reasoning: This indicator helps understanding whether or not the programme is formal, it is effective in helping getting access to other formal programmes and to find other (formal or non-formal) programmes.
***13.* Accreditation of programme**	**Specification:** Is the programme accredited? Which body does the accreditation and what kind of body is that (independent, public, private)?
	Reasoning: Assessing whether or not the programme is accredited by some formal body is an indicator to determine the quality and degree of formality of a programme.
14. Implementation of the programme	**Specification:** Who is responsible for the implementation of the programme?
	Reasoning: Helps identifying one of the main actors in the programme.
15. Formality of firms in which training takes place	**Specification:** Does the majority of the training firms pay taxes and social security contributions for their employees?
	Reasoning: With this indicator, we can assess the degree of formality of a programme.
16. Formality of the programme	**Specification:** - Is the programme structured in terms of learning objectives, learning time or learning support (from a trainer, instructor or teacher) and typically leads to a formal recognition (diploma, certificate)? - Does the programme entail planned activities not explicitly designated as learning (in terms of learning objectives, learning time or learning support)? Does it lead to a formal degree that allows to progress within the formal education system? - Does education and/or training in the programme result from daily life activities related to work, family or leisure? Are these activities intentional or structured in terms of objectives, time or learning support? Does the programme lead to a formal degree?

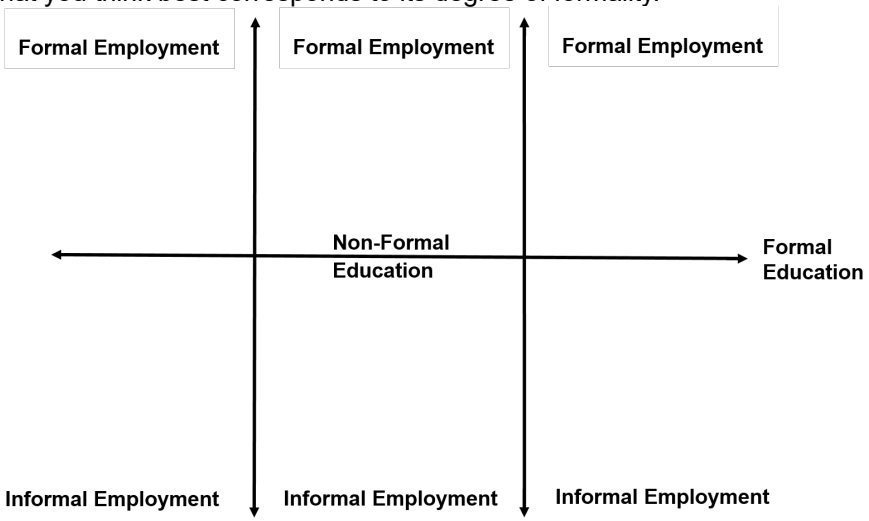
	Reasoning: With this indicator, we can assess the degree of formality of a programme.
17. Insert graph of sextant category programmes	**Specification:** Please place the programme in the position in the sextant that you think best corresponds to its degree of formality. 
	Reasoning: With this indicator, we can assess the degree of formality of a programme.

Table A2: Results of Asset Mapping Costa Rica

Invenio University (Bachelor on Industrial Engineering with emphasis in Operations, Bachelor on Mechatronics Engineering, Bachelor on Information and Business Communication)

Short title of indicator	Question and reasoning
Title of the program	Invenio University (Bachelor on Industrial Engineering with emphasis in Operations, Bachelor on Mechatronics Engineering, Bachelor on Information and Business Communication).
1. Form of education	Formal
2. a) Number of students enrolled in the program	2013 : 32 enrolled 2014 : 00 enrolled 2015 : 41 enrolled 2016 : 49 enrolled 2017 : 66 enrolled 2018 : 61 enrolled
2. b) Optional: Number of students who completed pro-gram	18 students have graduated from the three programs.
3.Duration of the program	Hours: 8100 Weeks: 192 Months: 48 Years: 4
4.Geographical location/spread of the program	7,5 Km vía Los Ángeles de Tilarán, Guanacaste, Costa Rica
5. Age of the average student or typical age-range of students	From 17 to 25 years old
6.Main function/purpose of the pro-gram	Integration into the labour market: from unemployment to employment in the formal sector at the bachelor's level
7.Target group of the pro-gram	High school bachelors (Men and women)
8.Prior education needed to enter program and other entry requirements	Bachelor in middle education Comprehensive admission test
9. Number of curricula covered by the program	Bachelor on Industrial Engineering with emphasis in Operations, Bachelor on Mechatronics Engineering, Bachelor on Information and Business Communication.
10.Percentage school- and work-based training	56,25% academia 43,75% program
11.Examination at end of pro-gram	Supervised practice
12. Progression routes from pro-gram	The program is enrolled in formal education with a Bachelor's degree, so students can progress toward postgraduate school in the discipline in which they graduated.
13. Accreditation of program	The program is not accredited, however It could opt for the accreditation the programs with the National System of Accreditation of Higher Education (SINAES).
14. Implementation of the program	Invenio University.
15. Formality of firms in which training takes place	Yes, these must comply with the requirements established by regulations.
16. Formality of the program	Yes, the program has a curriculum approved by the responsible entity in Costa Rica (CONESUP), and at the end of the program the students have a higher education degree.
17. Category of the program	Formal Education – Formal Employment

Professional Technical Education - Ministry of Public Education

<table>
<tr><th>Short title of indicator</th><th>Question and reasoning</th></tr>
<tr><td>Title of the program</td><td>Professional Technical Education - Ministry of Public Education.</td></tr>
<tr><td>1. Form of education</td><td>Formal</td></tr>
<tr><td>2.a) Number of students enrolled in the program</td><td>Enrolment CTPs 2010-2018
<table>
<tr><th>Year</th><th>CTP total initial enrolment at grade 10</th><th>CTP initial enrolment as % of total upper secondary enrolment</th><th>Initial enrolment at daytime CTPs</th><th>Initial enrolment at night-time CTPs</th><th>CTP graduates</th><th>CTP graduates as % total initial enrolment 3 years after</th></tr>
<tr><td>2010</td><td>11’685</td><td>21.6</td><td>91.9</td><td>8.1</td><td>5’257</td><td></td></tr>
<tr><td>2011</td><td>11’751</td><td>21.9</td><td>91.2</td><td>8.8</td><td>5’712</td><td></td></tr>
<tr><td>2012</td><td>13’961</td><td>25.5</td><td>84.7</td><td>15.3</td><td>5’388</td><td></td></tr>
<tr><td>2013</td><td>16’914</td><td>29.5</td><td>79.9</td><td>20.1</td><td>6’091</td><td>52.1</td></tr>
<tr><td>2014</td><td>18’441</td><td>30.4</td><td>77.6</td><td>22.4</td><td>7’091</td><td>60.3</td></tr>
<tr><td>2015</td><td>19’710</td><td>30.8</td><td>78.3</td><td>21.7</td><td>8’507</td><td>60.9</td></tr>
<tr><td>2016</td><td>19’444</td><td>30.5</td><td>76.7</td><td>23.3</td><td>9’699</td><td>57.3</td></tr>
<tr><td>2017</td><td>20’309</td><td>32.2</td><td>75.3</td><td>24.7</td><td>10’854</td><td>58.9</td></tr>
<tr><td>2018</td><td>21’441</td><td>32.2</td><td>74.6</td><td>25.4</td><td>13’506</td><td>68.5</td></tr>
</table></td></tr>
<tr><td>2. b)Optional: Number of students who completed program</td><td>See table above.</td></tr>
<tr><td>3. Duration of the program</td><td>The educational offer of the professional technical High schools (CTP) has daytime and night-time schedules. During the daytime, the students receive the three-year plan (24 lessons per week of the technical specialty), with a duration of 2840 hours. Additionally, the CTP can offer a two-year program for graduates of diversified education who wish to pursue studies to opt for a technical diploma at the intermediate level in a specialty.</td></tr>
<tr><td>4. Geographical location/spread of the program</td><td>The professional technical colleges are located throughout the national territory. There are 135 CTP Diurnal, 2 CTP Nocturnal, and 88 CTP Diurnal with Nocturnal Sections. Below is the link where the georeferenced CTP schools can be found, by province and canton.
http://eccti.or.cr/talento-humano-tecnico.html</td></tr>
<tr><td>5. Age of the average student or typical age-range of students</td><td>The average age of entrance to diversified education is at age 16, in Diurnal CTP. The average age of admission to the two-year study programs is 17. The average age of the students in the technical night sections is 18 years.
<table>
<tr><th colspan="7">Public Technical Education of Costa Rica
Average age of students by level attended</th></tr>
<tr><th>Schedule</th><th>7°</th><th>8°</th><th>9°</th><th>10°</th><th>11°</th><th>12°</th></tr>
<tr><td>Diurnal</td><td>12,6</td><td>13,6</td><td>14,5</td><td>15,5</td><td>16,5</td><td>17,5</td></tr>
<tr><td>Nocturnal</td><td>N.A.</td><td>N.A.</td><td>N.A.</td><td>24,1</td><td>24,7</td><td>26,2</td></tr>
<tr><td colspan="7">N.A. Does not apply for the schedule</td></tr>
</table></td></tr>
</table>

6. Main function/purpose of the program	• Integration into the labour market: from unemployment to employment in the formal sector • Integration into the labour market: from informal employment to the formal sector • Poverty alleviation • Increase the proportion of people with formal education, formalize the education system
7.Target group of the program	The Costa Rican population in general, a lot of emphasis is placed on young people and women
8. Prior education needed to enter program and other entry requirements	The minimum requirement for the entrance of the students in the Diurnal CTP is the approval of the General Basic Education. The requirement for students to enter the two-year programs is graduated from diversified education. In the night technical sections and Nocturnes CTP graduated from diversified education or be over 18 years. In addition, in the night technical sections and Night CTP can enter people over 18 and be enrolled in a modality to complete the bachelor title in secondary education. - Each CTP has an internal regulation for the admission of students to technical specialties, which is approved by the Direction of Technical Education and Entrepreneurial Skills. - To opt for the title of average technician in the specialty: Approve the professional practice, Pass the comprehensive test of knowledge (Test of the subjects that are in the program of study of the specialty), Approve the sub-areas of the technological core of the last level (technical subjects). The technical specialties offered in technical education have programs and study plans, which are approved by the Higher Council of Education (CSE). This is an organ of a constitutional legal nature, with instrumental legal personality and its own budget, is in charge of the general direction of official education, in accordance with article 81 of the Political Constitution of the Republic. Attached is the link where the study programs are located: http://mep.go.cr/programa-estudio?term_node_tid_depth=3384 - The technical specialty programs are grouped into three categories: Agriculture (7 specialties), Industrial (24 specialties) and Commercial and Services (25 specialties).
9. Number of curricula covered by the program	The technical specialties offered in technical education have programs and study plans, which are approved by the Higher Council of Education (CSE). This is an organ of a constitutional legal nature, with instrumental legal personality and its own budget, is in charge of the general direction of official education, in accordance with article 81 of the Political Constitution of the Republic. Attached is the link where the study programs are located: http://mep.go.cr/programa-estudio?term_node_tid_depth=3384 - The technical specialty programs are grouped into three categories: Agriculture (7 specialties), Industrial (24 specialties) and Commercial and Services (25 specialties).
10. Percentage school- and work-based training	The curriculum lasts 2840 hours. A supervised practice or graduation project of 320 hours (11%) is required as a graduation requirement; Additionally, internships (40 hours maximum), technical visits and company tours are contemplated in the study plans, with an average of 2% of the total hours of the study program.
11. Examination at end of program	A comprehensive test of general knowledge of the specialty is carried out (subjects included in the study programs). This test is standardized by the

	Direction of Management and Quality Evaluation of the Ministry of Public Education
12. Progression routes from program	The study programs of the technical specialties taught in the CTP are part of the formal system. The degree awarded at the end of the program is called Technical at the Medium Level (the name of the specialty is included). The National Qualifications Framework for Professional Technical Education and Training of Costa Rica (MNC-EFTP-CR) provides for a process of recognition of competencies among the entities that provide technical programs. The study programs have to be recognized by the corresponding entities. Students who attend the Technical Level, can continue with university education.
13. Accreditation of program	The study program is approved by the CSE and the degree is extended by the Ministry of Public Education (MEP) through the CTP. There is no institution that proves the quality of the programs.
14. Implementation of the program	The Direction of Technical Education and Entrepreneurial Skills (DETCE) is the MEP instance in charge of analysing, studying, formulating, planning, advising, research, evaluating and disseminating all aspects related to professional technical education in III Cycle and diversified education, as well as how to promote programs and projects to strengthen their links with labour markets. - Each CTP (high school) develops the program and curriculum approved by the CSE and the DETCE guidelines.
15. Formality of firms in which training takes place	Supervised practice and internships are curricular activities therefore there is no employment relationship.
16. Formality of the program	The study programs of the technical specialties are designed based on the education model based on labour competency standards. These programs reflect the intentionality of providing added value for the life of the student, with a programmatic structure that explains in detail the contents that should be developed in each sub-area and in each unit of study, which allows the teacher to guide ordered the process of construction of knowledge in the workshop and in the environment. The teacher can develop other content in addition to those presented here, but should not substitute this in order to provide equal opportunities in all schools. The Learning Outcomes included in the program have a degree of generality to provide the teacher the opportunity to develop specific Learning Outcomes. Thus, the Learning Results written by the teacher must reflect the changes in behaviour that the student must achieve in the short term, daily or weekly; in the level of knowledge, values, attitudes, abilities and skills. Suggested teaching and learning strategies are just that. The teacher must make use of all his or her creativity and experience to use the most appropriate strategies in achieving the specific Learning Outcomes. These suggestions will serve as orientation or starting point, others considered as more appropriate, without losing sight of the fact that teaching and learning strategies should encourage the development of the thinking of the student community to build their learning. The application of cognitive strategies is promoted to contribute to the formation of a critical and analytical student, such as: comparison, classification, organization, interpretation, application, experimentation, analysis, identification, discussion, synthesis, and evaluation, approach of solutions among others that contribute to the formation of a critical and analytical student. The procedures are suggestions so that from them they define pedagogical methods and techniques, in addition to the necessary practices for the fulfilment of what is established in the study unit.

	The criteria for the evaluation of competences refer to evaluable evidence; they are observable and measurable products that are expected of the student. The achievement of these, will allow the teacher to follow up on the individual progress of the student and give feedback to the learning process, when required by the student. The criteria for the evaluation of competences are the basis for preparing theoretical or performance tests, since they reflect the final product expected in each objective. The student, upon fulfilling the graduation requirements of the program, obtains the technical degree at the middle level in the specialty enrolled. At the beginning of each study unit, an estimated time for its development is considered. This time allocation is flexible; the teacher can extend or decrease, prudentially, the number of hours, based on their experience and the use of appropriate procedures, without detriment to the depth with which the topics should be developed. The values and attitudes that are specified in each unit of study, should be a topic of reflection at the beginning of the day and also assign some learning experiences to achieve the development and experience of values, such as case analysis, projects, among others. At the beginning of each study unit, an estimated time for its development is considered. This time allocation is flexible; he or the teacher can extend or decrease, prudentially, the number of hours, based on their experience and the use of appropriate procedures, without detriment to the depth with which the topics should be developed. The values and attitudes that are specified in each unit of study, should be a topic of reflection at the beginning of the day and also assign some learning experiences to achieve the development and experience of values, such as case analysis, projects, among others.
17. Category of the program	Formal Education - Formal Employment

Freedom Park (Gardener Technician, Centre of Technology and Visual Arts (CETAV)

Short title of indicator	Question and reasoning
Title of the program	Freedom Park (Gardener Technician, Centre of Techno logy and Visual Arts (CETAV)
1. Form of education	No Formal
2.a) Number of students enrolled in the program	**Enrolment:** ● Gardener Technician: 15 students per year ● Centre of Technology and Visual Arts (CETAV): 60 students in total, 20 students in each career every 2 years.
2. b)Optional: Number of students who completed program	● Gardener Technician: this diploma started in January 2018. ● Centre of Technology and Visual Arts (CETAV): 143 students
3. Duration of the program	● Gardener Technician: 10 months. 1093 hour of technical school base formation and 188 hours in transversal programs. ● Centre of Technology and Visual Arts (CETAV): The technical programs last 5 quarters of 15 weeks each, completing 20 months. It is a full time program of 40 hours per week and includes, in addition to technical training, the English language (the majority certifies

	TOIEC), empathic communication, development of creative thinking and entrepreneurship.
4. Geographical location/spread of the program	It is a program that takes place in the Freedom Park and that gives priority to young people from the cantons of Curridabat, Desamparados and La Unión, but who receive young people from all over the country.
5. Age of the average student or typical age-range of students	Between 17 and 24 years.
6. Main function/purpose of the program	Initial education and training Integration into the labour market: from unemployment to employment in the formal sector Mitigation of poverty
7. Target group of the program	Youth, women and disadvantaged groups.
8. Prior education needed to enter program and other entry requirements	● Gardener Technician: Sixth school year concluded. For admission they must go through an interview process, induction workshop and presentation of required documents. ● Centre of Technology and Visual Arts (CETAV): The entry requirements are completed high school and previous knowledge in design programs such as Photoshop and Illustrator. These courses are taught constantly at very low cost in the Computer Centre of La Libertad Park. In addition to the conferred baccalaureate and knowledge in the aforementioned design programs, the candidates to enter the CETAV must comply with a registration protocol to the selection process that implies: induction to the programs, aptitude tests, socioeconomic interviews (IMAS) and interview individualized.
9. Number of curricula covered by the program	We have three technical programs with a completed high school admission profile and 20 months of continuous training and a technician with a ninth grade admission profile and 8 months of continuous training. All have a program of studies designed to meet specific demands of the business sector in areas related to art and technology and all are endorsed and accredited by the INA.
10. Percentage school- and work-based training	● Gardener Technician: The program was designed to apply learning-by-doing. The technical training includes 30 hours per week, and the transversal programs 6 weekly hours, approx. ● Centre of Technology and Visual Arts (CETAV): The working method is constructivist and learning by doing. Active professionals teach 100% of the courses of the study program from the specific areas and not teaching and 100% of the projects carried out are real projects. Therefore, since the beginning of the first semester, although from the Freedom Park, they are in contact with potential employer companies. The issue of skills for employability, team work and the second language, as a requirement of companies for this type of technical careers, is of paramount importance.
11. Examination at end of program	The students must have approved all the modules of the program to qualify for the final title of Technician. Although the program is accredited by the INA, and they don't in-

	clude a project or final exam, the Freedom Park has included a graduation project and / or supervised practice at the end of it to qualify for the degree.
12. Progression routes from program	• Gardener Technician: The students graduate as Gardener Technician and can opt for informal specializations. • Centre of Technology and Visual Arts (CETAV): Students receive a technician diploma and we have managed to validate with some universities so that in addition to having access to quality jobs, they can continue their studies.
***13.* Accreditation of program**	INA accredits the programs.
14. Implementation of the program	Freedom Park.
15. Formality of firms in which training takes place	Doesn't apply.
16. Formality of the program	• Gardener Technician: The program complies with the structuring of learning based on INA methods. Some complementary teachers have their own companies and extensive experience in the field of training. • Centre of Technology and Visual Arts (CETAV): Attached link to the CETAV curricula http://www.parquelalibertad.org/cetav/
17. Category of the program	Non Formal Education - Formal Employment

Costa Rican Coalition of Development Initiatives - CINDE

Short title of indicator	Question and reasoning
Title of the program	Costa Rican Coalition of Development Initiatives - CINDE
1. Form of education	Non-formal – No formal
2.a) Number of students enrolled in the program	n.a.
2. b)Optional: Number of students who completed program	n.a.
3. Duration of the program	CINDE leads, facilitates and coordinates different initiatives in order to link universities, companies and young people; therefore, the timing of the programs is diverse and range from short courses to 1-year initiatives.
4. Geographical location/spread of the program	Because the CINDE programs are carried out in partnership with companies and universities, most of them have the large metropolitan area as a geographical area that includes the provinces of San José, Cartago, Heredia and Alajuela.
5. Age of the average student or typical age-range of students	Between 18 and 25 years.
6. Main function/purpose of the program	Continuing education and training
7. Target group of the program	Youth and working people in Costa Rica.

8. Prior education needed to enter program and other entry requirements	That young people have finished high school.
9. Number of curricula covered by the program	The most consolidated programs of companies in the line of non-formal education: ● SYKES - Sykes Academy: http://www.sykescostarica.com/sykes-academy/ ● P & G - Joint Chair: Project Management, Supply Chain, IT. Taught at the university to close gaps in specialized knowledge. ● Moodys Analytics - Training Portfolio: Equity Analyst Training Program, Advance Training, Analysis of Corporate Bonds, CRM and Time Management. Taught at universities and also open call to the population to take place at the company's installations. ● Boston Scientific: Problem Solving, Process improvement. Taught at universities. CINDE, for its part, has promoted and serves as coordinator in many cases in: ● Technical Program in Microbiology for the Medical Industry - UCR ● Technical Program in Metrology - TEC ● Specialized offer for companies with support from the academy - example: the relationship between U. Cenfotec and IBM Offer with universities / foreign centres: ● RICE University: Design for innovation (taught in CR) ● IoPP (Institute of Packaging Professionals): Fundamentals of Packaging Technology (taught in CR) ● UW Stout: Specialization in packaging for medical devices (people were sent to the UW Stout) ● Georgia Tech: Cybersecurity, data analysis, lean six sigma, supply chain, technical English for industries, simulation (taught in CR) ● Texas Tech: Testing (tests) (taught at CR, TTU campus) ● CIID (Copenhagen Institute of Interaction Design): Intro to People Centreed Research (Design for Interaction, Design with Biology, Prototyping as a Process, Introduction to Arduino, Introduction to Data Visualization), Intro to Service Design, Machine Learning (Design of connected products), Design of Interactive Spaces (Advanced Physical Computing and IoT), Designing for Inclusion (taught in CR)
10. Percentage school- and work-based training	Most of the programs are taught in universities, but the courses are taught by businesspeople who have specialized knowledge in the specific subject, which is why the university - company link is provided.
11. Examination at end of program	The universities are in charge of the final examination of the course.
12. Progression routes from program	It is implemented in universities or companies, CINDE facilitates the link process.

***13.* Accreditation of program**	The different universities accredit the programs.
14. Implementation of the program	Universities and companies, coordinated by CINDE.
15. Formality of firms in which training takes place	Doesn't apply.
16. Formality of the program	The programs are formal and non-formal at the same time, because they are taught in the universities, with the help of different companies, but all the companies allied to CINDE have been formally legalized in Costa Rica.
17. Category of the program	Non Formal Education - Formal Employment

Sykes programme

Short title of indicator	Question and reasoning
Title of the program	Sykes
1. Form of education	No Formal
2.a) Number of students enrolled in the program	**Enrolment:** ● About 400 students per quarter.
2. b)Optional: Number of students who completed program	● About 50 students per quarter complete the program.
3. Duration of the program	About 560 hours, 96 weeks, 24 months, 2 years
4. Geographical location/spread of the program	Classes are delivered in Heredia and San Jose.
5. Age of the average student or typical age-range of students	28 years old approx.
6. Main function/purpose of the program	Continues Education and formation.
7. Target group of the program	People with an English level of 80%, so we can hired/promoted them after being graduated.
8. Prior education needed to enter program and other entry requirements	To have an English level of 80%
9. Number of curricula covered by the program	The program cover the courses needed to be certificated in: a. CompTIA A+ b. CCNA Routing and Switching c. LPIC
10. Percentage school- and work-based training	Because the program is thought in the enterprise, the students practice immediately what they learn every day.
11. Examination at end of program	For each course, we have a written exam (40%) and a LAB exam (60%)
12. Progression routes from program	The program, have a progression route that is thought also in Sykes, for more specialized certifications.
***13.* Accreditation of program**	Because the program is made up of international certifications, is accredited by each of the companies that it accredits.

14. Implementation of the program	Sykes
15. Formality of firms in which training takes place	Doesn't apply.
16. Formality of the program	The program has a curricula design by Sykes formation academy.
17. Category of the program	Non Formal Education - Formal Employment

National Institute of Learning (INA) – Presential Dual

Short title of indicator	Question and reasoning
Title of the program	National Institute of Learning (INA) – Presential Dual
1. Form of education	No Formal
2.a) Number of students enrolled in the program	**Enrolment:** ● 2015: 39.631 ● 2016: 43.766 ● 2017: The data is not yet available
2. b)Optional: Number of students who completed program	● 2015: 22.243 ● 2016: 24.712 ● 2017: The data is not yet available
3. Duration of the program	There are 199 curricula, ranging from 58 hours to 3002 hours, varying within that range.
4. Geographical location/spread of the program	All around the country.
5. Age of the average student or typical age-range of students	● 2015: 23 approx. ● 2016: 29 approx. ● 2017: The data is not yet available
6. Main function/purpose of the program	Initial education and training Integration into the labour market: from unemployment to employment in the formal sector Mitigation of poverty
7. Target group of the program	Youth, women and disadvantaged groups.
8. Prior education needed to enter program and other entry requirements	The entrance requirements to the programs vary according to the level of the technician, within the requirements requested are: ● Certificate Completion Studies I and II Basic General Education Cycle ● Graduate of Media Education. Approve the vocational guidance process for the selection. ● Certificate Completion Studies III Basic General Education Cycle ● Graduate of Media Education. Technical requirements: Ms Windows approved or recognized by the INA, and submit to the selection process. ● Graduate of Media Education. ● Bachelor in Media Education. ● Services of the executive program (a) in English for services (csid2012) approved.

9. Number of curricula covered by the program	199 different curricula.
10. Percentage school- and work-based training	Most of the programs are school base, only 39 programs are dual, with a range that varies between 30% and 80% of training in the company.
11. Examination at end of program	All programs have an exam at the end.
12. Progression routes from program	The program doesn't have progression routes.
***13.* Accreditation of program**	INA accredits the programs.
14. Implementation of the program	INA does the implementation.
15. Formality of firms in which training takes place	For the dual programs INA verifies that all the firms are formalized.
16. Formality of the program	All the programs taught by the INA have a curricular structure approved by the INA Board of Directors.
17. Category of the program	Non Formal Education - Formal Employment

National Institute of Learning (INA) – Virtual

Short title of indicator	Question and reasoning
Title of the program	National Institute of Learning (INA) – Virtual
1. Form of education	No Formal
2.a) Number of students enrolled in the program	**Enrolment:** ● 2015: 50.055 ● 2016: 46.190 ● 2017: 34.596 ● 2018: 33.323
2. b)Optional: Number of students who completed program	● 2015: 49.640 ● 2016: 45.472 ● 2017: 33.908 ● 2018: 32.372
3. Duration of the program	There are 77 curricula, ranging from 30 hours to 678 hours, varying within that range.
4. Geographical location/spread of the program	All around the country.
5. Age of the average student or typical age-range of students	● 2015: 30 approx. ● 2016: 30 approx. ● 2017: 29 approx. ● 2018: 28 approx.
6. Main function/purpose of the program	Initial education and training Integration into the labour market: from unemployment to employment in the formal sector Mitigation of poverty
7. Target group of the program	Youth, women and disadvantaged groups.

8. Prior education needed to enter program and other entry requirements	The entrance requirements to the programs vary according to the level of the technician, within the requirements requested are: ● Certificate Completion Studies I and II Basic General Education Cycle. ● Graduate of Media Education. Approve the vocational guidance process for the selection. ● Certificate Completion Studies III Basic General Education Cycle ● Graduate of Media Education. Technical requirements: Ms Windows approved or recognized by the INA, and submit to the selection process. ● Bachelor in Media Education. ● Services of the executive program (a) in English for services (csid2012) approved. ● Know how to read and write and knowledge in basic mathematical operations. ● Submit a medical certification and a copy of the ID.
9. Number of curricula covered by the program	77 different curricula.
10. Percentage school- and work-based training	All of the programs are virtual.
11. Examination at end of program	All programs have an exam at the end.
12. Progression routes from program	The program doesn't have progression routes.
***13.* Accreditation of program**	INA accredits the programs.
14. Implementation of the program	INA does the implementation.
15. Formality of firms in which training takes place	There's no training
16. Formality of the program	All the programs taught by the INA have a curricular structure approved by the INA Board of Directors.
17. Category of the program	Non Formal Education - Formal Employment

National Institute of Learning (INA) – Distance learning

Short title of indicator	Question and reasoning
Title of the program	National Institute of Learning (INA) – Distance learning
1. Form of education	No Formal
2.a) Number of students enrolled in the program	**Enrolment:** ● 2015: 5.714 ● 2016: 2.753 ● 2017: 3.233 ● 2018: 3.980

2. b)Optional: Number of students who completed program	● 2015: 5.587 ● 2016: 2.467 ● 2017: 2.745 ● 2018: 3.644
3. Duration of the program	There are 14 curricula, ranging from 10 hours to 200 hours, varying within that range.
4. Geographical location/spread of the program	All around the country.
5. Age of the average student or typical age-range of students	● 2015: 31 approx. ● 2016: 32 approx. ● 2017: 32 approx. ● 2018: 33,5 approx.
6. Main function/purpose of the program	Initial education and training Integration into the labour market: from unemployment to employment in the formal sector Mitigation of poverty
7. Target group of the program	Youth, women and disadvantaged groups.
8. Prior education needed to enter program and other entry requirements	The entrance requirements to the programs vary according to the level of the technician, within the requirements requested are: ● Certificate Completion Studies I and II Basic General Education Cycle ● Graduate of Media Education. Approve the vocational guidance process for the selection. ● Certificate Completion Studies III Basic General Education Cycle ● Graduate of Media Education. Technical requirements: Ms Windows approved or recognized by the INA, and submit to the selection process. ● Graduate of Media Education. ● Bachelor in Media Education. ● Services of the executive program (a) in English for services (csid2012) approved.
9. Number of curricula covered by the program	14 different curricula.
10. Percentage school- and work-based training	100% School base
11. Examination at end of program	All programs have an exam at the end.
12. Progression routes from program	The program doesn't have progression routes.
***13.* Accreditation of program**	INA accredits the programs.
14. Implementation of the program	INA does the implementation.
15. Formality of firms in which training takes place	There's no training.
16. Formality of the program	All the programs taught by the INA have a curricular structure approved by the INA Board of Directors.

17. Category of the program	Non Formal Education - Formal Employment

Parauniversity Diploma Degrees

Short title of indicator	Question and reasoning
Title of the program	Parauniversity Diploma Degrees
1. Form of education	No Formal
2.a) Number of students enrolled in the program	Enrolment: 2014 ➔ 6858 2015 ➔ 6796 2016 ➔ 7212 2017 ➔ They have not yet submitted all the information
2. b)Optional: Number of students who completed program	2012 ➔ 1238 2013 ➔ 1337 2014 ➔ 1271 2015 ➔ 1330 2016 ➔ 1300 2017 ➔ 1347
3. Duration of the program	Diploma courses in Parauniversity Higher Education lasts from 2 years to 3 years. This is defined in Article 5 of Law 6541. "Short careers, referred to in the second article of this law, are those that have an adequate number of credits, as appropriate, for a period of two or three years." The vast majority of Diplomado careers are for a duration of 2 years, distributed in 6 semesters. According to the Regulation to the Law that Regulates the Institutions of Higher Parauniversity Education, Decree No. 38639-MEP: "Article 34.-Diploma courses will last two or three years, will be organized in six or nine four-month cycles of fifteen weeks, as appropriate, and will conclude with the delivery of the diploma certificate. Careers must meet a minimum of 60 to a maximum of 96 credits, the academic load may not exceed 19 credits per semester and the number of courses in a curriculum will not be less than 18. Article 35.-A credit is defined as the value unit of the student's work, which is equivalent to three hours per week of work, for 15 weeks, applied to an activity that has been supervised, evaluated and approved by the teacher. This definition is applied to all types of courses: laboratories, workshops, field practices and theoretical-practical courses. Article 36.-The lesson will last fifty minutes. "
4. Geographical location/spread of the program	The Parauniversity Higher Education Institutions are mostly located in the Central Valley, but institutions are also available in Limón, San Ramón, Cañas and Ciudad Quesada.
5. Age of the average student or typical age-range of students	The main objective is to offer short programs. As defined in Article 2 of Law 6541. - "Higher education institutions for universities are those recognized by the Higher Council of Education, whose main objective is to offer full-time courses of two or three years to graduates. of diversified education.

	The level of higher education careers for a university is intermediate, between diversified education and university higher education. " Article 5 clarifies that: "Short races, referred to in the second article of this law, are those that have an adequate number of credits, as appropriate, for a duration of two or three years."
6. Main function/purpose of the program	The Higher Parauniversity Education was conceived as an option to serve all the population graduated from high school that could not enter (outside by quota or other factors) to Higher Education University, which for 1980, was only the University of Costa Rica.
	• Integration into the labour market: from unemployment to employment in the formal sector • Mitigation of poverty • Initial education and training
7. Target group of the program	Youth, women and disadvantaged groups.
8. Prior education needed to enter program and other entry requirements	As defined in Article 2 of Law 6541, this level of education is aimed at "graduates of diversified education", so the indispensable requirement for admission is the Bachelor's degree in Secondary Education or its equivalent. Thus defined in Article 28 of the Regulations to the Law Regulating Institutions of Higher Education Parauniversitaria, Decree No. 38639-MEP: "To enrol in the degree courses in public parauniversity institutions is required the condition of Bachelor in Secondary Education, or its equivalent."
9. Number of curricula covered by the program	Currently there are 113 programs between the 2 Public Parauniversity Institutions and the 23 Private Parauniversity Institutions.
10. Percentage school- and work-based training	100% school based formation, with a practice in the company for 200 hours.
11. Examination at end of program	As defined in Article 8 of Law 6541. - "Upon completion of their studies, the student will undergo the graduation tests established for the case, which will be carried out by the institution and supervised by the Higher Council of Education, through the Ministry of Public Education". Most of the Institutions have the option of "Comprehensive Test" defined, but in some cases the option of "Supervised Practice" is available.
12. Progression routes from program	The student obtains a Diploma, which gives him the possibility of entering the labour market or continuing studies at the university level. Because it corresponds to an intermediate level between high school and University Education, there is currently no academic articulation for recognition. With regard to Parauniversity Higher Education, Article No. 34 of the Regulations Governing the Functioning of Parauniversity Higher Education Institutions provides that diploma courses will last two or three years, will be organized in six or nine four-month cycles of fifteen weeks, as appropriate, and will conclude with the delivery of the diploma certificate. Careers must meet a minimum of 60 up to a maximum of 96 credits, the academic load may not exceed 19 credits per semester and the number of courses in a curriculum will not be less than 18.

	For its part, the Convention on the Nomenclature of Degrees and Titles, states that the University Diploma, comprises at least 60 credits and 90 maximum, with a minimum of four school cycles of 15 weeks or its equivalent, with a maximum of 6 cycles. From the aforementioned, it is valid to note that both modalities are integrated by different requirements and terms, among which it is distinguished in the case of the undergraduate Parauniversity, that a final evaluation of graduation is applied, since this is a short terminal career in itself, made from which a difference in the training received by the applicant is generated, which makes it impossible for both to be homologated. It is necessary to emphasize that the undergraduate character that the Diploma has, that the parauniversities teach like element that facilitates the access of the graduated one to the university superior education, whereas that granted by this one, it is integrated under the same condition of undergraduate, but within the same curricular structure ready for a wider career.
13. Accreditation of program	SINAES accredits the programs.
14. Implementation of the program	The Parauniversity Diploma programs are the responsibility of the Dean in the case of the Public University Colleges (CUC and CUNLIMON) and the Directors of the Private Institutes.
15. Formality of firms in which training takes place	For the supervise practices each parauniversity institution verifies that all the firms are formalized.
16. Formality of the program	Each Diploma course has exit profiles defined for its students and have a general and specific objective for the development of each course.
17. Category of the program	Formal Education - Formal Employment

Appendix B. Expert Interviews in Costa Rica

Table B1: List of individual attributes of experts of the TVET system and their institutional affiliation for the formal and informal sector

Thematic field	Formal sector	Informal sector
Government	- High-ranking/key officials who work directly on TVET - In all relevant ministries, - At all levels where TVET is administered - Institution of expert has to be large enough to be representative for its "thematic field"	n.a.
	Examples: Ministry of Education, Ministry of Labour	
Intermediaries	- High-ranking/key individuals who work directly on TVET - In bodies filling all roles played by the private sector in TVET - In bodies representing important sectors of the economy - In organizations representing employees interests - Institution of expert has to be large enough to be representative for its "thematic field" **Examples:** - Chambers of commerce (of a certain sector), trade associations, clusters of companies e.g. the Chambres de Métiers Régionales (CMR) or the Confédération Nationale des Artisans du Bénin (CNAB) in Benin, or the UCCAEP in Costa Rica - Unions, other kinds of employee representatives	- High-ranking/key individuals who work directly on TVET - In bodies filling all roles played by the private sector in TVET - In bodies representing important sectors of the economy - (Social) institution of expert has to be large enough to be representative for its "thematic field" **Examples:** Chambers of commerce (of a certain sector), trade associations e.g. the Chambres de Métiers Régionales (CMR) or the Confédération Nationale des Artisans du Bénin (CNAB) in Benin, or the UCCAEP in Costa Rica Important leaders, such as clan chefs
Researchers	Senior scholars who work directly on TVET… With advanced degrees in relevant fields, With demonstrable history of research on TVET, In all research institutes dealing with TVET **Examples:** Universities, private research institutes, NGOs	
Non-governmental institutions or Institutions composed of actors from two or more of the above categories	High-ranking/key individuals who work directly on TVET… **Examples:** Educación 2020 in Chile; Instituto Nacional de Apredizaje (INA) in Costa Rica	High-ranking/key individuals (who work directly on TVET or are important for the TVET sector) **Examples:** Foreign development aid agencies as for example SDC and others in Nepal Clans, guilds

Source: Extension of Table 3.2. in Renold et al (2016), p. 18.

Table B2: Information about selected experts for interviews

Type of actor	Institutional Affiliation	Reason for selection
Government	Curriculum advisor of the Department of Technical Education and Entrepreneurship Abilities, MEP.	Interviewed person knows about Technical High schools at MEP.
	Head of the curriculum section at the Department of Technical Education and Entrepreneurship Abilities, MEP.	Interviewed person knows about Technical High schools at MEP.
	General secretary of the Higher Council of Education.	Person interviewed has updated information on parauniversity institutions.
	Academic Vice-Ministry, MEP.	National Expert on the Costa Rican Educational System.
	Curriculum advisor in the National Institution on Learning.	Expert in curriculum design at INA's.
Academic	Tecnical Institute of Costa Rica (university) expert.	National TVET Expert
	Tecnical Institute of Costa Rica (university) expert.	National TVET Expert
Business	Coordinator of the technical education area at Sykes.	Implements a technical program in the company.
Non-Governmental	President of the Freedom Park.	The interviewee knows about non-formal programs and their implementation in partnership with the INA.
	Coordinator of technical programs of the Freedom Park.	The interviewee knows about non-formal programs and their implementation in partnership with the INA.)
	Coordinator of technical programs of the Freedom Park.	The interviewee knows about non-formal programs and their implementation in partnership with the INA.)
	Lead, Investment Climate at CINDE Costa Rica	Carried out different technical initiatives in order to help young people in Costa Rica to have abilities needed to enter the labour market.

Appendix C: Tables from Case Studies

Table C1: Data from the Parauniversity institution's curricula

Name of the Parauniversity Institution	Curricula	Enrolment	Students who completed programme	Duration
Iberoamerican Centre for Professional Development - CIDEP	Administration of Small and Medium Enterprises and Criminal Investigation.	2014 : 31 enrolled 2015 : 83 enrolled 2016 : 143 enrolled 2017 : The data is not available	The Superior Council of Education does not have the data.	1 year, distributed in 3 quarters.
Boston University College	Executive Secretary, Accounting, Business Administration, Bilingual Executive Secretariat, Marketing and Customer Service and Human Resource Management.	2014: 2519 enrolled 2015: 1949 enrolled 2016: 1727 enrolled 2017 : The data is not available	The Superior Council of Education has approved 245 titles for their emission.	1 year, distributed in 3 quarters.
Creative University College	Fashion Design, Web Design and Development, Digital Audiovisual Production, Digital Photo, Internal Design, Digital Animation and Architectural Drawing and Management	2014: 209 enrolled 2015: 434 enrolled 2016: 625 enrolled 2017 : The data is not available	The Superior Council of Education has approved 55 titles for their emission.	Technician: 4 quarters / 200 hours of firm practice, Diploma: 6 quarters / internal project of graduation and MEP examination.
University College of Cartago - CUC	Dental Mechanics, Electronics. Business Administration and Management, Tourism, Information and Communication Technologies, Executive Secretariat, Criminal Investigation	2014: 6435 enrolled 2015: 6789 enrolled 2016: 6799 enrolled 2017 : The data is not available	The Superior Council of Education has approved for them 3014 titles for their emission.	6 quarters
University College of Limón – CUN Limón	Business Computing, Accounting and Finance, Business Management, English as a Second Language, Port Logistics Operations, Logistics Management, Port Terminal Operations Management, Tourism Services Management, Production Management and Services and Networks	2014: 3358 enrolled 2015: 2995 enrolled 2016: 2432 enrolled 2017 : The data is not available	The Superior Council of Education has approved for them 1040 titles for their emission.	6 quarters

Name of the Parauniversity Institution	Curricula	Enrolment	Students who completed programme	Duration
IPARAMÉDICA University College	Telematics, Electromedicine, Insurance Administration, Risks and Finances, Dissection and Tanatopraxia, Gerontology and Medical Cytology	2014: 286 enrolled 2015: 539 enrolled 2016: 234 enrolled 2017 : The data is not available	The Superior Council of Education has approved for them 195 titles for their emission.	6 quarters.
Panamerican University College– CUP	Accounting, Human Resources Administration, Business Administration and Computing Systems	2014: 286 enrolled 2015: 539 enrolled 2016: 234 enrolled 2017 : The data is not available	The Superior Council of Education up to 2016 had not approved them any titles.	6 quarters.
Technical Agricultural and Industrial School – ETAI	Agricultural Sciences, Business Administration, Services and Ecotourism Activities, Accounting and Finance, Agroindustrial Technologies, Biotechnology and Forest Management	2014: 448 enrolled 2015: 147 enrolled 2016: 333 enrolled 2017 : The data is not available	The Superior Council of Education has approved 147 titles to them.	6 quarters.
San Juan Bautista de la Salle Institute of Higher technical Education – La Salle	Business Administration and Family Sciences	2014: 237 enrolled 2015: 240 enrolled 2016: 244 enrolled 2017 : The data is not available	The Higher Council of Education has approved 1 title for its issuance.	6 quarters.
Institute of Educational Services – ISESA	Accounting, Bilingual Executive Secretariat, Business Administration, Information Technology and Criminology	2014: 133 enrolled 2015: 175 enrolled 2016: 79 enrolled 2017 : The data is not available	The Superior Council of Education has approved 15 titles.	6 quarters
American Business Academy Parauniversity Institute - ABA	Business Administration, Accounting and Executive Secretariat in Spanish	2014: 611 enrolled 2015: 992 enrolled 2016: 1234 enrolled 2017 : The data is not available	The Superior Council of Education has approved 117 titles for their emission.	6 quarters.
Plerus Parauniversity Institute - PLERUS	Medical Images, Medical Imaging, Medical Records and Health Information Systems	2014: 2106 enrolled 2015: 2092 enrolled 2016: 2258 enrolled 2017 : The data is not available	The Superior Council of Education has approved 379 titles for their emission.	6 quarters
Institute of Health Sciences - INCISA	Administrative Assistant of Health Services, Assistant of	2016: 309 enrolled 2017 : The data is not available	The Superior Council of Educa-	6 quarters.

Name of the Parauniversity Institution	Curricula	Enrolment	Students who completed programme	Duration
	Chemical-Clinical Laboratory and Domiciliary Care		tion has not approved them the emission of titles.	
Invenio Institute of Emerging Technologies - Invenio	Operation and Maintenance of Energy Plants, Software Development, Information and Communication Technologies, Operation and Maintenance in Renewable Energy Systems, Design and Manufacturing of Mechatronic Systems and Management of Business Processes	2014: 562 enrolled 2016: 518 enrolled 2016: 577 enrolled 2017 : The data is not available	The Superior Council of Education has approved 185 titles for their emission.	7 trimesters.
Latin Institute of Integral Formation - ILAFORI	Culinary Arts, Interior Design and Decoration and Dental Technique	2014: 41 enrolled 2016: 12 enrolled 2016: 1 enrolled 2017 : The data is not available	The Superior Council of Education has approved 83 titles for their emission.	6 quarters.
Parauniversity Institute Costa Rican Medical Services Association – Asemeco	Medical Records and Health Statistics, Pharmacy Assistant and Laboratory Assistant	2014: 320 enrolled 2016: 635 enrolled 2016: 941 enrolled 2017 : The data is not available	The Superior Council of Education has approved 37 titles for their emission.	6 quarters.
International Polytechnic Parauniversity Institute	Gastronomy and Culinary Arts	2014: 764 enrolled 2015: 766 enrolled 2016: 925 enrolled 2017 : The data is not available	The Superior Council of Education has approved 379 titles for their emission.	6 quarters.
Yunun Parauniversity Institute Limited	Accounting	2014: 57 enrolled 2015: 120 enrolled 2016: 0 enrolled 2017 : The data is not available	The Superior Council of Education has approved 4 titles for their emission.	6 quarters
Parauniversity Institute of the Isthmus S.A.	Accounting, Business Administration and Logistics, Purchasing and Storage	2014: 35 enrolled 2015: 51 enrolled 2016: 58 enrolled 2017 : The data is not available	The Superior Council of Education has approved 6 titles for their emission.	6 quarters.

Source: Information provided by the Higher Education Council.