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Technical Vocational Education and Research in Costa Rica - Development, Challenges, and Research Perspectives

Keywords: Technical Vocational Education and Training, Teacher Education, Research, Professionalization

Abstract

This contribution serves as an overview to the topic of Technical and Vocational Education and Training (TVET) and TVET research in Costa Rica. It offers a description and analysis of important current developments and challenges. This includes, among others, the institutionalization and promotion of TVET research, the adaptation of dual vocational training models to the Costa Rican context, and the broader policy and governance frameworks that shape these processes as well as aspects of TVET teacher qualification and its needs in Costa Rica. We also refer to the initiative CoRiVET – Costa Rican Vocational Education and Training, funded by the German Ministry of Education and Research (BMBF). The final section provides a summary and outlook, pointing toward future areas of research and strategic action.

1. Introductory Aspects

TVET in Costa Rica has gained significant attention across social, political, and economic spheres. This attention is linked to numerous reforms, restructuring efforts, and adjustment processes currently unfolding in the country. Notably, the implementation of a dual training system, the development of vocational teachers and trainers, and the growing research needs in this domain have become increasingly relevant. As a result, it is not surprising that the enhancement and strengthening of the TVET system in Costa Rica, along with the establishment of a dedicated research discipline, have been central to ongoing international cooperation between Costa Rica and

Germany. Specifically, principally efforts have been made in the project CoRiVET – Costa Rican Vocational Education and Training, funded by the German Ministry of Education and Research (BMBF). In general, it can be said, that Germany and Costa Rica have a long-standing interrelation in cooperation in TVET and TVET research with different institutions, stakeholders, and goals. Mainly, recent activities from the German government e.g., BMBF and GoVET (German Office for International Cooperation in Vocational Education and Training) and research institutions like the University of Osnabrück focused on the implementation of dual TVET structures, teacher education in TVET, and TVET research.

Nevertheless, like many other countries, the Costa Rican TVET system is facing challenges. These challenges include the urgent need to expand coverage substantially and align the supply of vocational education and training with both current and future labor market demands (CONARE, 2021). Furthermore, many formal job positions remain unfilled due to businesses' difficulties in finding highly qualified technicians. Approximately one-third of businesses in the industrial sector report that technicians are the most difficult candidates to recruit (Maravalle & González, 2023). A recurring issue in public and private discussions is the limited number of graduates in technical disciplines, while at the same time, the demand for a skilled labor workforce is increasing (Álvarez-Galván, 2015). As a result, the low vocational educational level proves to be an obstacle to development, as it limits the modernization of productive activities and the creation of higher-quality jobs, making it difficult to systematically reduce inequalities such as poverty and social exclusion (PEN, 2021). In this manner, TVET has become a strategic initiative in the Central American region, and in Costa Rica in particular, aimed at improving the low vocational educational levels of the majority of the economically active population and providing the workforce needed for productive transformations that require high levels of specialized knowledge (PEN, 2021; Rommel & Vargas Mendez, 2022).

Furthermore, due to the different reports about the TVET system in Costa Rica and its challenges (see Álvarez-Galván, 2015), Costa Rican TVET is struggling with vocational teacher qualification, a lack of practical training in TVET programs and missing research efforts. Although TVET is considered as an important and valuable alternative to enable the young population to enter the labor market, TVET research has not yet gained enough relevance to bring research efforts to the forefront (Alvarado Calderón & Mora Hernández, 2020). Furthermore, in Costa Rica, a sufficient supply and appropriate qualifications of TVET represents one of the major challenges for the system and therefore for the provision of technical skills (Álvarez-Galván, 2015). Not all TVET teachers have sufficient technical and professional pedagogical competencies. Therefore, improving professional development of TVET teachers is recognized as important action area for strengthening national

TVET (Álvarez-Galván, 2015). In this case the professionalization of TVET teachers, who are essential actors contributing to the development of workforce skills and thus to the economic progress of the country (Grollmann, 2009), becomes crucial for the quality of TVET.

The discussion about TVET has led in recent years to comprehensive reforms and efforts in Costa Rica, such as the implementation of a National Qualifications Framework for TVET (NQF-EFTP-CR), the Dual Training Act, and others. In this context, a brief introduction to Costa Rica's TVET system will be provided, followed by a discussion of measures, perspectives, and challenges.

2. Aims and Structure of the TVET System

In Costa Rica, TVET is defined as an educational domain designed to equip individuals with the knowledge, skills, competencies, and attitudes required to navigate a dynamic and ever-changing environment. This should be achieved through the provision of structured and comprehensive vocational education and training programs that foster active and responsible participation in both society and the workforce. A key component of its objectives is the promotion of values such as understanding, respect for human rights, inclusivity, equity, gender equality, cultural diversity, lifelong learning, and the cultivation of a sense of community coexistence, as is articulated by the National System of Technical and Vocational Education and Training (SINEFOTEP, 2022).

TVET in Costa Rica is provided by various Institutions like the National Learning Institute (INA) and the Ministry of Public Education (MEP), but also by private educational providers as well as higher education institutions that offer TVET education and more. In summary, the Costa Rican education system provides TVET through three main modalities and levels:

- **Secondary (formal) education:** Technical schools that offer the title of "technical diploma," under the authority of the Ministry of Public Education (MEP).
- **Non-formal education:** Various diploma programs and technical careers, managed by the National Learning Institute (INA) and public and private post-secondary institutes, such as the College of Limón (CUNLIMÓN) or the College of Cartago (CUC).
- **Higher education:** Universities such as the National Technical University (UTN) and the Costa Rica Institute of Technology (TEC) (UTN, 2020; Rommel & Vargas Mendez, 2022).

According to the modalities there are specific key characteristic of TVET in Costa Rica that can be described with the strict division into a formal and a

non-formal system. The main distinction between the two systems of non-formal and formal, lies in the fact that the formal system leads to a qualification that enables progression within the formal education system, whereas the non-formal system does not provide access to further (academical) formal education (Camacho-Calvo, 2022). Formal TVET is offered by professional technical colleges (Colegios Técnicos Profesionales, CTPs) under the MEP and is classified as technical education (Educación Técnica) at the upper secondary education level (SEC II). These programs are predominantly school-based and correspond to Level 4 (from a total of 5 levels) of NQF for TVET in Costa Rica. The programs of the MEP cover fields such as agriculture, commerce, services, and industry (Álvarez-Galván, 2015). Graduates of CTPs in the formal system obtain both a vocational education and training degree and a general education diploma, which grants them university entrance qualification (Camacho-Calvo et al., 2019; Rommel et al. 2024b).

Non-formal vocational training is provided by INA under the name *Formación Profesional* (Vocational Training) and are located on level 1-3¹ of the NQF for TVET in Costa Rica. The question why INA belongs to and is defended as a non-formal TVET system can be described as followed. INA was established in 1965 as a vocational educational institution independent of the formal system, structured with an autonomy and flexibility that is unusual in Costa Rica, and characterized by strong communication with the labor market (Article 2 of the Organic Law of INA, 1983; INA, 2018). The establishment of INA can be traced back to the initiative of a group led by the Minister of Labor and Social Welfare. This initiative aimed to provide vocational training opportunities for thousands of young individuals with limited economic resources and restricted access to the formal education system. Simultaneously, a key objective was to foster the country's economic development by adopting an import substitution model. This strategy necessitated rapid industrialization, which, in turn, required a technically skilled labor force—something Costa Rica lacked at the time. Consequently, the country sought to build an industrial foundation and strengthen its domestic consumer market. The policies implemented during this period were driven by the broader aim of promoting and developing Costa Rican society (Casanova, 1997). To this day INA offers both initial and continuing education and training in TVET in about 240 training courses in industry, farming, livestock, and commerce and service (Álvarez-Galvan, 2015), in addition to other services such as the accreditation of vocational educational institutions and the

¹ In general, it can be said, that the provided TVET offers of the non-formal system of INA are located under the formal programs of MEP, whereby the degrees of university TVET programs are the highest and at level 5. The levels of the NQF for TVET in Costa Rica provide a structured division of degrees in TVET regarding time of vocational education and training, the level of competences to be achieved as well as the entry requirements.

certification of competencies in the so called non-formal TVET system in Costa Rica.

Since the 1990s, various reform initiatives have increasingly emphasized the importance of practical training and hands-on experience within TVET programs. A key driver of this shift has been the introduction of the National Qualification Framework, which all programs are required to follow. Additionally, both the INA and the MEP offer dual VET programs in selected professional fields.

3. Current Developments, Challenges and Perspectives of TVET and TVET Research

3.1 TVET Teacher Education

The role of teachers in TVET, as well as their qualifications, is often insufficiently recognized. According to Grollmann (2008), two fundamental issues characterize the discourse on TVET teachers and their qualifications: the low status of TVET itself and the challenge of advancing the professionalization of TVET teachers. When discussing professionalization, various characteristics and focal points can be derived from the concept of professional knowledge. More broadly, Hesse (1979) defines professionalization in the context of occupational sociology as a systematically structured model for the qualification and exchange of labor. This model links specific, often monopolized labor services with particular—typically heightened—qualification requirements, along with relatively high prospects for income, self-sufficiency, reputation, and influence. Its primary purpose is to serve the interest in the effective utilization of labor (cited in Meyer, 2018). The discourse surrounding the professionalization and the role of TVET teachers in the country thus raises the question of how TVET teacher education, the required qualifications, and expectations are shaped.

In many Latin American countries, there is a significant gap in teacher education programs specifically designed for TVET (World Bank, ILO, UNESCO, 2023). In Costa Rica, the qualification of TVET teachers largely follows an academic-theoretical approach (Guzmán, 2011), but also a non-academic pathway by recruiting practitioners. The entry requirements for these pathways differ across institutions and are influenced by the educational background and professional experience of the candidates. These varying entry requirements reflect the specific conditions and standards set by institutions offering TVET programs. Consequently, there is considerable heterogeneity in

requirements, limiting teacher mobility and exchange across institutional boundaries and arise the question of the level of standardization (Rommel et al., 2024c). This brings into discussion the understanding and needs of professionalism and required professional knowledge for TVET teachers. Meyer (2018) in that context explains, that professional knowledge, as a form of expert knowledge, comprises several components. These include academic knowledge, typically acquired through university education, as well as traditional knowledge associated with professional practice, such as experiential and everyday knowledge as well as problem-solving and interpretative knowledge. These distinct layers of knowledge are key characteristics of professionalization and professional expertise. It refers to the extensive competencies associated with a profession, ranging from academic qualifications to individual skills acquired through practice.

The OECD (as cited in Álvarez-Galván, 2015) notes that teachers in the MEP lack sufficient pedagogical training, focusing more on academic content rather than practical teaching skills. While the MEP emphasizes academic training for its teachers, the INA places more value on professional work experience and provides targeted pedagogical training through its own programs (Álvarez-Galván, 2015). As a result, TVET teachers enter the profession through different qualification pathways, holding varying qualifications—from vocational or academic credentials in the relevant technical field to pedagogical degrees or other forms of teacher preparation.

However, this leads to the assumption that a lack of standardized qualification requirements across institutions like INA, MEP, Don Bosco, and private TVET providers impedes teacher mobility and exchange and the level of standardization of qualification pathways and required skills and training. Therefore, the OECD recommends harmonizing these qualification standards to enhance teacher professionalism and mobility within Costa Rican TVET (Álvarez-Galván, 2015; Láscarez-Smith & Baumann, 2020; Rommel et al., 2024c).

One of the main challenges in Costa Rica remains the lack of focus on technical and pedagogical qualifications for TVET of many TVET teachers (Álvarez-Galván, 2015). Moreover, recent discussions on the qualification of TVET teachers in Costa Rica emphasize the lack of standardization in teacher training, particularly regarding the recruitment requirements of TVET providers (Rommel et al., 2024b). The lack of standardized and unified entry requirements hinders the consistency of teachers' qualifications and the professionalization of the field. Therefore, it can be concluded that, to date, there are no common standards—such as specific competencies—that define the qualifications necessary for the professionalization of TVET teaching (Rommel et al., 2024c), and by extension, the role and significance for the TVET system itself across the institutions. Consequently, enhancing the professional development of TVET teachers is widely recognized as a crucial

area for strengthening the national TVET system (Álvarez-Galván, 2015, cited in Rommel et al., 2024c). For this reason, teacher training in TVET is gaining increasing attention in the ongoing debate surrounding TVET in Costa Rica.

3.2 Dual VET in Costa Rica

According to Láscarez and Schmees (2021), Costa Rica's employment system struggles to integrate young people into skilled jobs. In response to high youth unemployment, the government aims to both expand job opportunities for skilled workers without higher education and align vocational education more closely with labor market needs. Inspired by dual systems in countries like Austria, Switzerland, and Germany, several pilot projects were launched between 1991 and 2000 in Costa Rica (Mittmann, 2001). Since that time many efforts have been made to foster dual VET offers in the Costa Rican system. For example, a series of policies have been defined, and various institutional structures have been established, shaping the current form of dual VET in the country with significant efforts taken for years by both the INA and the MEP, in collaboration with German organizations such as GoVET and the University of Osnabrück, to strengthen the dual vocational education system in Costa Rica.

In 2019, the Costa Rican Congress passed a law to implement a dual apprenticeship structure in the TVET system. This was the result of decades of discussion on the design of TVET in the country. The law, presented as a breakthrough, was intended to respond to the growing problems caused by the high rate of people not in education, employment, or training and to counterbalance the highly confrontational attitudes of employers and workers (Schmees & Láscarez Smith, 2024). The implementation of the Dual Apprenticeship Act of 2019 brought significant changes, such as providing employers with greater flexibility, replacing the salary requirement with a scholarship system funded by the INA, and ensuring that employers benefit from reduced accident insurance costs through the INA. Nevertheless, it can be argued that to date the passing of the law is an important legal step and is helping to standardize Dual VET, the impact of that law according to its implementation and conduction into the practice is still an ongoing process.

To support Dual VET meeting the technical and vocational training demands of Costa Rica's population and regions, the INA and the MEP dedicated their efforts between 2020 and 2021 to developing a second proposal for the implementation of dual vocational education and training in the country (Camacho, 2023). In recent years, the discussion surrounding the implementation of dual programs in Costa Rica has gained increasing attention. Alongside this discourse and the effort to dualize certain TVET