International Journal of Vocational Education Studies 2024 Vol. 1/No. 2
https://doi.org/10.14361/ijves-2024-010206

Between Heterogeneity and Professionalization of TVET Teacher Education in Costa Rica

Pathways and Challenges

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Abstract *This article deals with the different forms of qualification and access routes to the teaching profession in TVET in Costa Rica and discusses the different requirements as well as the level of professionalization. This is done under the approach of describing the qualification of TVET teachers at the academic and non-academic level, the various access routes to the teaching profession in the TVET system and the discussion on the professionalization of teacher qualification in Costa Rica. The article concludes with a systematization of the characteristics of the forms of qualification and entry requirements in Costa Rica. This systematization allows us to derive the status of and the need for professionalization of TVET teachers in Costa Rica.*

Title *Between Heterogeneity and Professionalization of TVET Teacher Education in Costa Rica. Pathways and Challenges*

Keywords *TVET, Teacher, Qualification, Professionalization, Costa Rica*

1 Introduction

The role of teachers in Technical and Vocational Education and Training (TVET) and their qualifications are often not sufficiently appreciated. According to Grollmann (2008), there are two fundamental problems in the discourse on TVET teachers and their qualification. One is the low status of TVET itself and the other is the problem of

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raising the professionalization of TVET teachers (p. 535). In many late industrialized countries, TVET was even called a "semi-profession" (Etzioni, 1969) and always struggled with the problem of recognition. Nowadays, it is increasingly recognized at national and international level, that TVET teachers play an important role in enhancing the quality of TVET itself (Grollmann, 2008, p. 535). It can therefore be concluded that although TVET teachers play an essential role in promoting the upskilling of the workforce, they are not highly valued (European Commission, 2004). This is supported by the fact that TVET teachers cannot teach in general education schools, teachers from the general education system, however, can teach in TVET schools (Thomas, 2001, p. 9), which points to the value of the work of TVET teachers. For example, in many countries, teachers who teach TVET are not even required to have a specific TVET qualification, but only a general education pedagogical qualification. Furthermore, Misra (2011) describes that in almost all EU countries, for example, the TVET profession is not properly recognized, partly due to low pay. In his view, this has led to the TVET teaching profession becoming an alternative to unemployment rather than the first choice (p. 36; Faudel, 2002). Nevertheless, lower social status, lower salaries and less job security affect the prestige and quality of TVET teaching (Euler, 2015, p. 151). These aspects lead to the conclusion that TVET teaching is often an unattractive career prospect when compared to alternatives in industry and teaching in general education, as an example (International Labour Organization [ILO] and United Nations Educational, Scientific and Cultural Organization [UNESCO], 2018, p. 151). Furthermore, there is an enormous heterogeneity in terms of the tasks and roles that TVET teachers take on in individual national TVET systems or even the characterization of TVET teachers.

In Costa Rica, however, there seem to be some elements that have made the profession of TVET teacher quite attractive in the past in terms of salary. For example, before fiscal austerity and the 2022 labour reforms, TVET teachers were paid 40 % more compared to general education teachers.

Therefore, the question of this article is as follows: What are the academic and non-academic entry routes to the vocational teaching profession in Costa Rica, and what conclusions can be drawn about the degree of heterogeneity and professionalization in this country? This is accompanied by the following question: What qualification standards and requirements exist in Costa Rica for the integration of TVET teachers into the teaching profession? In order to answer these questions, the following chapters are dedicated to an introduction to the tasks and roles of TVET teachers. This is followed by a description of the various possible entry and qualification paths to working as a teacher at a TVET school and the corresponding teacher qualification programs in Costa Rica. Finally, a typology is presented that systematizes the characteristics of Costa Rican TVET teachers' qualifications and concludes with a discussion of the status and challenges of professionalization of TVET teacher qualification in Costa Rica. The entire work is based on a detailed document analysis and the systematization of the content obtained. The documents used include curricula and study program regulations, internal documents of the institutions on the recruitment requirements for TVET teachers, legal regulations

and requirements for study programs in Costa Rica, as well as the systematization of information from the ongoing study called "Teacher profile of TVET in Costa Rica".[1]

2 TVET Teachers within the TVET System and their Professionalization

When we speak of professionalization, various characteristics and emphases can be derived from professional knowledge. In more general terms, Hesse (1979) defines professionalization in occupational sociology as a systematically constructed pattern for the qualification and exchange of labour, which combines specific, mostly monopolized labour services with specific, mostly intensified qualification expectations as well as relatively high opportunities for earning and providing for oneself and for reputation and influence, and whose construction is primarily intended to serve the interest in the utilization of labour (p. 20, cited in Meyer, 2018, p. 3).

Meyer (2018) explains that professional knowledge as a form of expert knowledge is made up of several components. It consists of academic knowledge, which is usually acquired at universities, and traditional knowledge about professional activities in the sense of traditional experience and everyday knowledge. In addition, there is a third form of knowledge that can be described as problem-solving and interpretative knowledge (p. 4). These individual levels of knowledge are seen as characteristic for professionalization or professional knowledge.

The professionalization of teacher qualification is a crucial factor in shaping the identity of TVET teachers. Falcón-Linares (2021), cited in Matarranz (2023), points out that the professionalization of teachers is located at the theoretical level in order to define the teaching profession, its primary functions in professional performance and the roles they assume in the exercise of these functions. This is embedded in different scenarios in which they will develop and evolve (Martín-Romera & García-Martinez, 2018).

In this way, the discourse has been geared towards defining the teaching profile in static positions and under a technical view of the teaching activity determined by knowledge and expertise. This, according to Tardif (2016), presents an image of teaching as a "moral office" that serves as a lens for public opinion, rather than relating it to the work situations experienced by teachers and giving a more contextual sense to pedagogy, teaching and learning. This opens the way to a crossroads between the normative and the need to contextualize the professionalization of teachers, which becomes much more complex in TVET, as they are in a given context with specific technical training and

1 This article is based on a research that currently is ongoing at the Universidad Técnica Nacional (UTN), the Universidad de Costa Rica (UCR), the Tecnológico de Costa Rica (TEC), and Osnabrück University (UOS). Specifically, thanks to Osvaldo Murillo, Silvia Camacho and Jacqueline Garcia from UCR, Hugo Navarro and Jeison Alfaro from TEC and Laura Madrigal, Adriana Rodríguez and Lourdes Castro from UTN for their valuable contributions. Because of the need to standardize the professionalization of TVET teachers. In addition, the Costa Rican Ministry of Public Education (MEP) together with the College of Licentiates and Professors in Literature, Philosophy, Science and Arts (COLYPRO), and the National System of Technical and Vocational Education and Training (SINEFOTEP) are conducting a research process that will strengthen the information and results on the standardization of Costa Rican TVET.

diverse social environments (Montero and Gewerc, 2018). Nevertheless, one of the main challenges in Costa Rica is that not all TVET teachers have sufficient technical and professional pedagogical skills (Àlvarez-Galván, 2015, p. 66). Therefore, improving the professional development of TVET teachers is recognized as an important field of action to strengthen the national TVET system (Àlvarez-Galván, 2015, p. 68). However, efforts in this regard have not been utilized to date. But how can TVET teachers actually be characterized and what are their areas of expertise and places of work?

The definition of TVET teachers differs widely from country to country (Spöttl, 2022, p. 378). According to Grollmann (2008), TVET teachers generally are intended to work in secondary level schools and TVET colleges (p. 536). TVET teachers, furthermore, work in secondary or upper secondary institutions where they teach either theoretical subjects or practical skills in programs that are vocational or technical. In addition, they also teach general subjects (mathematics, language, history, etc.) to students in technical or vocational schools (UNESCO, 2014; Spöttl, 2022, p 378).

This article refers to the definition of teachers and lecturers in the formal TVET system. Applied to Costa Rican teachers, this means that we focus on the qualification of teachers who are qualified for the formal system of TVET schools of the National Ministry of Public Education (MEP). At the same time, however, an abbreviated view should also be taken of the qualification of teachers for the so-called non-formal system of the National Institute of Education (INA).

INA was founded in 1965 and modified as an educational institution independent of the formal system, structured with an autonomy and flexibility unusual in Costa Rica and characterized by strong communication with the labour market (Article 2 of INA's Organic Law, 1983; INA, 2018, p. 8). The TVET programs provided by the INA aim to qualify people who do not have formal educational qualifications (Láscarez Smith, 2024), for example, because they have never completed a general education pathway, and are therefore aimed at a vulnerable group. According to the reform of the INA Law of 2021 (Article 3), the INA should design TVET and further education programs aimed at increasing the family income of low-income groups, as well as designing and implementing its programs to meet the needs of the economy (Reforma parcial y adiciones a la Ley Orgánica del INA, 2021).

Although this is counted as part of the non-formal TVET system in Costa Rica, the qualifications offered and access to teaching are comparable to the formal system. Therefore, the academic and non-academic qualification pathways for TVET teachers for the main TVET providers MEP and INA are described below.

3 TVET Teacher Qualifications and Alternative Routes for TVET Teachers in Costa Rica

3.1 Academic TVET Teacher Qualifications

In many Latin American countries, there are no teacher training programs specifically geared towards TVET (World Bank, ILO, UNESCO 2023, 150). In the case of Costa Rica, the qualification of TVET teachers is generally based on an academic approach (Guzmán,

2011, p. 262). The two main institutions for the qualification of TVET teachers with a specific degree for teaching in TVET are the National Technical University (UTN) and the Costa Rica Institute of Technology (TEC). UTN offers the qualification with the academic degrees profesorado and bachillerato. The TEC, on the other hand, offers study programmes at the academic level of licenciatura (similar to a Bachelor's degree level) and maestría (similar to a Master's degree level). In terms of academic TVET related teacher qualification in Costa Rica, these are the single degree programs offered by state universities. In total, there are five academic degrees to be obtained in the Costa Rican higher education system. The following table illustrates all five academic degrees and the corresponding duration of study.

Figure 1: Academic degrees in Costa Rica

Time of Study	Degree	Graduation Level
2 Years	Maestría	Post-graduate
1 Year	Licenciatura	Graduate
1 Year	Bachillerato	Graduate
1 Year	Profesorado	Pre-graduate
2 Years	Diplomado	

As figure 1 illustrates, UTN's programs to become a TVET teacher are at the pre-graduate and graduate levels and TEC's at the graduate and post-graduate level. The degree courses offered for professional teacher training differ in the level of the academic degree to be achieved, the possibilities of future career pathways, the professional profile to be achieved and the fields of work. In addition, many private universities in Costa Rica offer teacher training. In total, there are 52 private universities in the country (Barquero Mejías et al., 2022, p. 12) that offer pedagogical qualifications but do not specialize in TVET. A precise description and classification of these private universities' offers cannot be realized at this point due to the great heterogeneity and lack of access to valid data. Therefore, this article focuses on teacher training for TVET in the two programs of the state universities and the recruitment requirements for TVET teachers at TVET schools through INA and MEP in Costa Rica.

TEC Study Program in Technical Education

TEC offers a Bachelor's degree (Licenciatura) and a Master's degree (Maestría) in the field of technical education with a very wide range of future job possibilities for graduates. Both, the Bachelor's and Master's degrees are aimed at professionals from different technical fields – engineering, architecture, accounting, administration, design, and others – who require training that provides them with the necessary skills to work as teachers with technical specializations in their profession (TEC, 2022). With its nine modules, the TEC study program focuses on the following four main areas: Pedagogy, Psycho-Ped-

agogy, Research and Interdisciplinarity. The modules are organized as followed (see table 1).

Table 1: Modules study program in Technical Education of TEC

Licenciatura	
trimester	Introduction to the TVET curriculum Educational theory and socio-historical analysis Didactical foundations in TVET
trimester	Psychological education in TVET Didactical and curriculum planning in TVET Research methodology
trimester	Learning assessment Elective module Final graduation work
Maestría	
trimester	Technical education, vocational training, culture and society Technical education, environment and sustainable development Technical vocational education and vocational training for adults
trimester	Strategic planning, policies and trends in TVET Management administration of TVET Methodology for research in TVET
trimester	Planning and trends in curriculum design in technical education and vocational training Human talent management and organizational climate in technical education and vocational training Research seminar I
trimester	Institutional evaluation and programs in technical education and vocational training Formulation and evaluation of projects in technical education Research seminar II
trimester	Ethics, equity, administration and legislation in technical education and vocational training Research seminar III
trimester	Thesis Seminar

As shown in Table 1, the Bachelor's degree (Licenciatura) takes less than one year (3 trimesters) plus the time the student needs to complete the final graduation work (thesis). The professional graduate of the Bachelor's degree (Licenciatura) in technical education program obtains the highest level of hiring of the Ministry of Public Education (MEP) for teachers of TVET. This degree offers the opportunity to work in the TVET system (mainly INA and the MEP) and in companies in further education. In this way, graduates can enter the national TVET system, such as technical colleges in the formal sector

or vocational schools in the non-formal sector. At the same time, they can work in the private business sector, e.g. to design training courses or further training programs (TEC, 2022).

With a Master's degree in technical education (Maestría), graduates have a wide range of possible jobs in the national TVET system, such as director of TVET schools, deputy for education, etc. The private sector is also suitable for these graduates in terms of being in charge of training and human resource development programs, or as consultants and having research responsibilities, among other roles (TEC, 2022).

Although access to the course information is limited, the individual modules taught in trimesters show that the TEC teaches pedagogical-psychological, didactic and research-related modules on TVET in its courses. The modules "didactic and curriculum planning in TVET", "didactical foundations in TVET" etc., for example, indicate that the two-degree programs are specifically geared towards TVET and suggest a higher degree of specialization in TVET.

The TEC programme at Master's level indicates a high degree of professionalization. Apart from being the only public institution in Costa Rica to offer teacher training for TVET at the highest academic level (Maestría), it can be considered unique in the Central America and Caribbean region.

The UTN Study Program

The UTN curriculum for TVET teachers includes the two lower academic levels of pregraduate (Profesorado) and graduate (Bachillerato) in the career called "Technical Specialization Education". The UTN program for TVET teachers is aimed at the pedagogical qualification of students who have obtained a diploma (Diplomado) in a technical field, but also for students from other fields such as languages and so on.. So, a degree in a technical field is not necessarily required, but an academic degree of diplomado (lowest academic degree in Costa Rica) is required to accesses the program. Graduates of the UTN program are mainly employed in technical colleges in the formal sector and in vocational schools in the non-formal TVET sector or are able to work in various private TVET institutions (Consejo Nacional de Rectores [CONARE], 2016).

In the following, the most important aspects of the Bachelor's degree in the so-called "Technical Specialization Education" are described. The description in the "Request for modification of the Bachelor's Degree in Technical Specialization Education (EET) with lateral exit for teaching in Technical Education at the National Technical University (UTN)" submitted to the Office of Higher Education Planning (OPES; CONARE, 2016).

The target group of the study program of the UTN, more precisely the Centre for Pedagogical Training and Educational Technology (CFPTE) of the UTN, are students with technical university degrees at diploma, profesorado and Bachelor's level who wish to prepare themselves as teachers, advisors, instructors, trainers in their areas of specialization, among others. The minimum entry requirement for this course is the academic degree of diploma in a technical or technological, or other discipline obtained in a university or para-university higher education institution equivalent to one of the degrees taught at UTN. In the case of a degree obtained in an external institution, it must be submitted for comparison with one of UTN's degree courses.

The degrees they can achieve are:

- Profesorado in Teaching (20 Credits): The certificate is obtained with the name of the technical discipline with which each student enters the Teaching Career of the Technical Specialty. For example: Professor in the Teaching of Accounting Specialty.
- Bachelor's degree in Teaching (31 Credits): In this case, it happens in the same way. The discipline indicated by the technical diploma with which each student enters the bachelor's Degree. For example: Bachelor's degree in the Teaching of Accounting Specialty.

The study program in total is developed in six trimesters, and integrates 17 courses in its curriculum.

Table 2: Study program Technical Specialty Education for the profesorado and bachillerato of the CFPTE-UTN

Profesorado	
Trimester	Foundations of education General Didactics Educational planning
Trimester	Learning Resources I Evaluation in education
Trimester	Teaching practice
Bachillerato	
Trimester	Sport activity Humanities Education I Research Methods and Technique Specific Didactics
Trimester	Humanities Education Educational Psychology I Learning Resources II Introduction to the curriculum
Trimester	Cultural activity Humanities Education I & II Educational Psychology II

It should be noted that, according to institutional regulations, students must fulfil a series of requirements to obtain their degree, such as meeting a minimum number of credits, which in this case is 98 at the level of profesorado and 120 for Bachelor's degree:

- Successful completion of all courses and activities of the curriculum of the respective section.

- At the profesorado level, the student must have competed at least 98 credits: This includes the 20 credits of the profesorado section and the credits of the degree program he/she started with (the credits taken in technical career).

At bachillerato level, the student must have completed a minimum of 120 credits, including the 20 credits of the Teacher Training section, the 31 of the bachillerato, plus the credits of the degree course with which he/she entered.

If the student does not reach this minimum, the student must pass the subjects assigned by the National Technical University until the minimum is reached.

In order to graduate from the bachillerato, students must also complete 120 hours of University Community Work (CONARE, 2016, p.9). Graduates develop a series of competences that enable them to work effectively as teachers in technical-professional education in their specialty and/or as advisors in public or private secondary institutions, para-university, university colleges, and other organizations (CONARE 2016).

The profesorado aims to train teachers who combine technical knowledge with pedagogy to improve teaching and learning processes. The Bachelor's degree aims to train future teachers for vocational schools, focusing on humanism, social responsibility and ethics. The program includes specific didactics, research and curriculum design. It emphasizes psychological processes of teaching and learning, drawing on constructivism, behaviorism, and biopedagogy. (CONARE, 2016). Although this program is unique because of its focus on vocational education, the UTN program for training vocational teachers at the academic level is still under development. A study conducted by the UTN shortly after the launch of the program identified various challenges and shortcomings of the program, including deficiencies in vocational didactics and repetitive content in the individual modules (Castro Campos et al., 2016).

Since 2016, no studies have been conducted that could reflect improvements in the curriculum, until Rommel and Vargas revealed in 2021 that there is still a very general pedagogical approach and the subject on Costa-Rican TVET is only informally included in the curriculum.

3.2 Alternative Pathways into Teaching in TVET

In addition to the TVET degree programs for teachers from the state universities UTN and TEC, there are also alternative entry options for teaching in the TVET system in Costa Rica. The requirements that must be met in order to be hired by the educational institutions as a TVET teacher vary depending on the institution. Possible access routes to teaching in TVET are described below, using the INA and MEP entry requirements as examples. No claim is made to completeness, as the examples do not represent the entirety of entry routes in Costa Rica. The INA and the MEP determine different and individual personnel categories, depending on a person's previous education and professional experience. This is also linked to specific work tasks that apply to each category of teacher in the two institutions.

Entry Pathways and Requirements of MEP

Looking at the individual categories of MEP and the associated assignments of entry requirements for teachers in TVET, two main categories can be identified, which are specified by further subcategories. Therefore, the profiles of teachers for TVET from the MEP and the combination of qualifications that enable them to teach in technical colleges of MEP differ greatly. Thus, both people with and without university degree can hold the position of a TVET teacher. Teachers for TVET in colleges of MEP without a university degree must have a degree in relevant vocational training or fulfil other requirements. The two options are:

- graduates of vocational schools, arts and crafts, whose curricula are not less than five years.
- postgraduates of the Instituto de Formación Profesional del Magisterio (IFPM) – a teacher training institution – who have graduated from other state-approved educational institutions whose curricula are no shorter than two years. Persons who have not graduated from a professional or trade school, as well as all persons mentioned in this subsection who do not have a baccalaureate and high school graduates; also, teachers who obtained a special qualification certificate before 1955, who are appointed and teach special subjects.[2]
- Although this form of qualification for teachers in TVET no longer exists, there are still teachers in TVET schools who have completed this qualification pathway.

The second category refers to people with an academic degree in a technical field without a pedagogical qualification up to a technical degree with a pedagogical qualification in general education and vocational education.

The different sub-categories of the second route of entry via academic qualifications include vocational teachers with pedagogical qualifications independent of the pedagogical field, people with a technical university degree and a pedagogical qualification at university level (Álvarez-Galván, 2015, p. 74).

In general, Álvarez-Galván (2015) points out that the pedagogical requirements for vocational teachers in MEP TVET institutions are clearly formulated, they do not appear to be fully enforced due to the shortage of teachers in specific fields (Álvarez-Galván, 2015, pp. 66–67).

The following figure illustrates the individual categories non-academic and academic with the respective subcategories and visualizes the different qualification requirements and access routes to the teaching profession for TVET teachers of the MEP.

2 This was amended by Article 1 of Law No. 5783 of 19 August 1975.

Figure 2: Qualification requirements for TVET teachers MEP

Non-academic	Academic
Without a university degree but with vocational training and supplementary pedagogical qualification	a) Degree for primary school teaching or from a university of applied sciences at Diplomado level b) University degree in a specific field (e.g. engineering) without pedagogical qualification c) University teaching qualification at Profesorado or Bachillerato level and a qualification in a subject area (regardless of level) d) Doctorate, Master´s or Licenciatura´s degree with pedagogical qualification in secondary or primary education

As can be seen in figure 2, non-academic access to the MEP is via vocational training degrees and corresponding pedagogical qualifications. Academic qualification requirements, on the other hand, are divided into four sub-categories. These sub-categories describe the different access options according to academic qualification, with different pedagogical qualifications being required or not. Thus, there can be different academic levels and specialization, ranging from a degree at the lowest academic level (Diplomado) in primary education or applied science without a pedagogical qualification to a PhD, Master's or Bachelor's degree with a pedagogical qualification, but not necessarily in TVET.

The figure illustrates that the access routes to the teaching profession at technical colleges in the MEP are very heterogeneous. The question remains open as to how exactly the tasks and fields of activity of the individual profiles differ in practice and whether there is any differentiation at all between tasks and responsibilities depending on the qualification.

In relation to the four academic qualification programs offered by UTN and TEC, graduates of the UTN program can be classified in the third category with a university degree and the TEC in the fourth category. The two universities thus serve the highest qualification categories of the MEP for TVET teachers.

Entry Pathways and Requirements of INA

In comparison to MEP, the INA takes a different approach in hiring TVET teachers for vocational schools. In general, they are called trainers at INA and are divided into four categories. Here, candidates with a TVET education or a university degree in a technical field can enter the teaching profession. Furthermore, the INA categories include professional experience in the relevant specialty and differ from vocational education and work experience but no academic degree to university degree in a technical field with corresponding practical experience, depending on the level of the university degree. The higher the academic degree (e.g., in engineering), the less practical experience is required, which is categorized as follows according to the INA's Class and Position's Manual:

- Technical Trainer 1 A: Graduate from either INA or vocational/technical secondary school in a given field of study, two to three years of work experience.
- 1B: Diploma in higher education career with 18–24 months of experience in the specialty.
- 1C: Bachelor´s university degree with 12–18 months of experience in the specialty.
- 1D: Master´s degree with up to 12 months of experience in the specialty.

Furthermore, the INA set as a prerequisite for its teachers that they complete a specific pedagogical and didactical training course offered by the INA itself. This training refers to the INA's didactic and pedagogical guidelines for teaching in TVET programs they offer (INA, 2019; Álvarez-Galván, 2015, p. 67).

So, while the MEP focuses on the academic preparation of their teachers, the INA places more emphasis on their teachers' work experience and provides specific pedagogical training that they organize (Álvarez-Galván, 2015).

In general, it can be stated that the different requirements and prerequisites of the individual TVET institutions illustrate that the required knowledge, skills and qualifications of TVET teachers are heterogeneous in Costa Rica. Currently, there are no significant scientific endeavours to homogenize entry-level TVET teaching requirements across institutions (Rommel et al., 2024, p. 231), which would promote homogenization of the teaching profession in TVET.

4 Systematization of Entry Requirements and Qualification Pathways of TVET Teachers in Costa Rica

The skills and competencies of teachers are critical to the success of teaching processes and their implementation (King Rice, 2003; Rivkin et al., 2005). One way to improve the quality of TVET is to raise the level of qualifications and skills required of TVET teachers.

Two different models can be distinguished for the recruitment of teachers for TVET based on qualifications. One is the academic teacher qualification and the other is what is often referred to as "alternative recruitment". In alternative recruitment of TVET teachers, the qualifications obtained through this route are often lower than those obtained through academic recruitment (Lynch, 1998). Nevertheless, this "alternative recruitment" is still a relevant strategy for acquiring teachers for TVET. This can also be illustrated by the example of Costa Rica.

A systematization (Table 3) of the individual possibilities was created in order to systematically present the possible qualification pathways and access routes with academic and non-academic pathways and to point out the high heterogeneity (MEP 2014; INA 2014; TEC 2022; CONARE 2016). This systematization shows which paths are possible, whether practical experience, studies with and without TVET are necessary, at which level qualifications belong and in which TVET schools the respective teachers work.

Table 3: Qualification and recruiting pathways for TVET teachers in Costa Rica

Pathways and entry requirements		**Fields of work and positions**
Non-academic without practical experience	Refers to staff with no post-secondary/tertiary education who have graduated from a technical college and have complementary pedagogical training.	Technical collages of the formal TVET system of MEP
Non-academic with practical experience	Graduate from either the INA or a vocational/technical secondary school in a given field of study. Have two to three years of work experience in their own specialty.	Vocational schools of INA counted as non-formal TVET system
Academic degree in technical subjects and practical experience	Diploma university degree with 18 or 20 months of experience in their specialty. Bachelor´s university degree with 12 to 18 months of work experience in their specialty.	Vocational schools of INA counted as non-formal TVET system
Academic degree in technical subjects and/or general pedagogy, without practical experience	Degree for primary school teaching or a pedagogical degree from a university of applied sciences at diplomado level	Technical collages of formal TVET system MEP
	University degree from at least profesorado in a subject area without pedagogical qualification	Technical collages of formal TVET system MEP
	University degree at profesorado or bachillerato level and qualification in a subject area	Technical collages of formal TVET system MEP
	Doctorate, Master's degree or Licenciatura with secondary or primary education required pedagogical qualification	Technical collages of formal TVET system MEP

Pathways and entry requirements		Fields of work and positions
Academic degree in technical subject and pedagogy with reference to TVET, without practical experience	Profesorado in Technical Education Teaching of the National Technical University (Universidad Técnica National, in Spanish (UTN)	Technical collages of the formal TVET system of MEP and vocational schools from the non-formal system of INA
	Bachillerato in Technical Education Teaching of the UTN	Technical collages of the formal TVET system of MEP and vocational schools from the non-formal system of INA, trainers in company for further education
	Licenciatura in Technical Education of the Technological University of Costa Rica (Tecnológico de Costa Rica, in Spanish (TEC)	Technical colleges of the formal system, university collages, university education and the non-formal TVET system, also planning and providing further training and education in companies
	Maestría in Technical Education of TEC	Positions designated by the Civil Service (MEP), such as: Education Advisor, Assistant to the Directorate of Educational Control, Director of TVET schools, Deputy director of education, Deputy director of higher education. In the INA Director of Training and Development, Director of Technological Centers and Vocational Trainer.

In order to discuss this heterogeneity and better classify its significance, an analysis by Grollmann and Rauner (2007) can be used to draw conclusions about the qualification and recruitment models in Costa Rica. Their analysis of TVET teacher preparation pathways and formal qualifications in 11 countries, Grollman and Rauner (2007) identified four dominant models. The first model focuses on the recruitment of professionals from specific fields who receive training in teaching methods leading to a teaching certificate. The second model involves studying the subject at Bachelor level and acquiring general teaching skills in a designated program. The third model combines the study of subject and educational science and leads to a Bachelor's or Master's degree, which sometimes also includes vocational. The fourth model is based on an integrated approach to vocational disciplines and emphasizes competence development in a profession-specific context. These diverse pathways illustrate the complexity of TVET teacher preparation and the need for tailor-made approaches that respond to the specific needs of each context. On the other hand, it seems necessary to bring order to the matter and develop typical routes with the same standard.

Applying this definition of requirement and qualification models by Rauner and Grollmann (2009), in the case of Costa Rica it can be said that it is a model based on a combination of three models: recruitment of practitioners, additive model and vocational didactics model. Therefore, the entry requirements here are extremely heterogeneous. It is possible to enter the teaching profession with or without an academic

degree. An academic degree does not necessarily have to be TVET-oriented; a pedagogical university degree also appears to be sufficient for secondary education I or II. However, the various institutions have different recruitment requirements. While the MEP relies on a pedagogical academic degree without compulsory practical experience, the INA concentrates on practical experience and then qualifies its teachers accordingly in pedagogical terms.

5 Discussion and Conclusions

Recent discussions on the qualification of TVET teachers in Costa Rica illustrate that there is a lack of standardization in teacher training with regard to the recruitment requirements of TVET providers (Rommel et. al., 2024). It is indicated that the qualification of teachers for TVET takes place at the academic level in Costa Rica, based on previously obtained academic degrees in a technical field and complemented by a pedagogical qualification.

Although the qualification for TVET teachers in Costa Rica is also at an academic level, the lack of standardization and homogenization of the entry requirements to work as a teacher in TVET hinders both the degree of standardization of the teacher's qualification as well as the degree of professionalization. Ultimately, it can be deduced from the above that to date there are no concrete standards – such as competencies to be achieved – for the qualification of teachers for TVET that would determine the qualifications required for the professionalization of the profession itself.

The two state universities UTN and TEC have been offering academic degrees for a number of years, which are declared as specific training for teaching in TVET, both for the formal and non-formal system. However, a concrete description of the standards for the degree courses can only be provided via the entry requirements for the individual academic levels to be aspired to. Furthermore, these have no specific reference to future work as a TVET teacher. However, the entry requirements for working as a teacher can also be described outside of the academic qualification. The two main actors of TVET in Costa Rica – here the MEP and the INA – therefore follow different guidelines. These different guidelines also allow people without an academic degree or pedagogical qualification to work as a teacher for TVET.

Costa Rica faces challenges in terms of the provision and qualification of teachers for TVET. According to the Organization for Economic Co-operation and Development (OECD, cited in Álvarez-Galván, 2015), one problem is that MEP teachers do not have adequate pedagogical training, while the preparation of teachers at the MEP seems to be too academically oriented. At the same time, the demand for TVET teachers in Costa Rica has increased, which is confirmed by the fact that the INA in particular is hiring more teachers than in previous years.

The requirements for INA and MEP teachers as the two main TVET actors in Costa Rica are not equivalent and homogenized, which makes the exchange of teachers more difficult. The OECD recommends a clear homogenization of qualification requirements for INA and MEP teachers (Álvarez-Galván, 2015; Láscarez-Smith & Baumann, 2017, p. 103). This would allow for a better understanding and recognition of teacher profession-

alization in Costa Rican TVET. In addition to allowing other aspects such as the permeability of teachers in the system.

As can be seen from the descriptions, the access routes for teachers in TVET in Costa Rica can be presented at different levels of professionalization of teachers in TVET. On the one hand, there is academic qualification that enables access to the teaching profession with a corresponding academic degree. On the other hand, Costa Rica has a total of four degree courses offered at state universities for TVET teacher training, which are neither coordinated or harmonized with each other and also do not have the same understanding of the skills to be acquired as a minimum requirement for academic education. At the same time, however, other entry routes are also possible which do not necessarily require an academic qualification. These access routes were described using the INA examples and are systematized and presented in tabular form in Chapter 4. It became clear that there is also access via practical experience without an academic qualification. In conclusion, it can be said that the access routes and qualification paths for teachers in Costa Rica ultimately also depend on the individual TVET institutions and their own requirements. However, the explanations clearly show that there is a very high degree of heterogeneity with regard to the possible routes into teaching in TVET. During the process, it was established that no concrete standards can be used for teacher training in TVET. But, in the context of the discussion on the professionalization of teachers in TVET in Costa Rica, a decisive impetus could be provided here. The formulation of minimum standards, such as competencies to be acquired, could be considered possible.

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