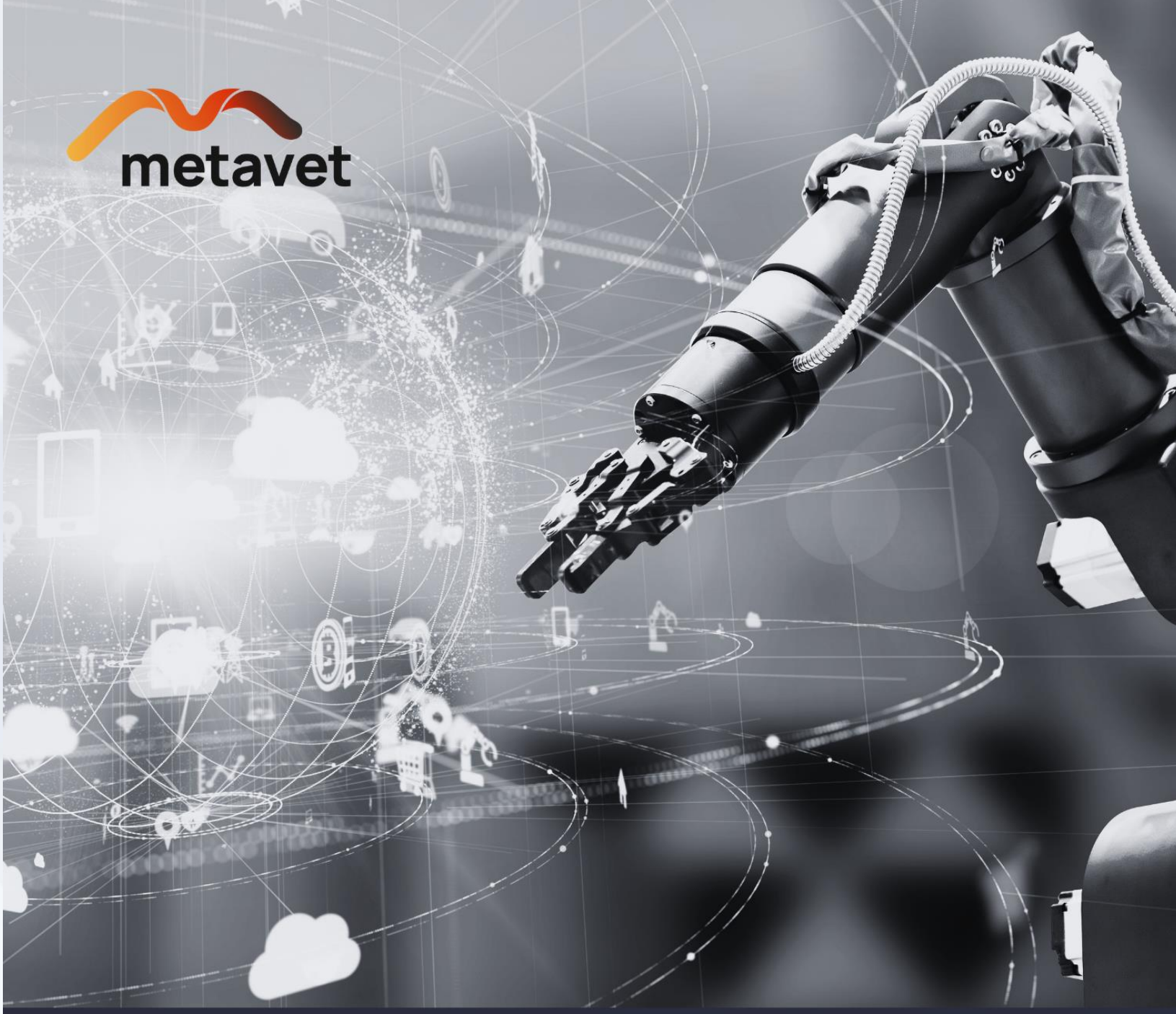

metavet

DESK STUDY

Fundación UOCRA - Argentina

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1. Introduction

In Argentina Technical and Vocational Education Training is characterized by two major elements. The first factor is the institutional and political relationship and setup of the TVE, that is, the TVE's operational dependence on the educational system. This feature marks a key difference between the Argentine system and that of other regional experiences of Latin American states. The second major element is the central role of the functional dependence relationship between the educational services of TVET and the Ministries of Education, along with the creation of decentralized bodies (with relative autonomy and budgetary independence) specialized in the planning and implementation of educational services at provincial jurisdiction level.

Vocational Education Training in Argentina is regulated by the National Technical Education Law (26.058). This law states the strategic framework for work oriented training based on the particular social, economic and educational structure of our country. The Ministry of National Education is the body responsible for establishing the general policies and guidelines, and then each jurisdiction through its own provincial ministries, are responsible for implementing the local policies.

The National Institute of Technological Education (*INET*) is an organization which was created in order to streamline and develop policies related to Technical and Vocational Education. Its objectives include organizing, regulating, and taking action on public policies regarding Technical and Vocational Education and Training (TVET[1]) in general, including its three levels: Technical Secondary Education, Higher Technical Education (non-university), and Vocational Training. This Institute is responsible for promoting and strengthening technical and vocational education in the country. Among various activities, it also develops training programs for teachers, promotes the integration between education and the labour market, and supports the updates of educational offers. Additionally, there is a common curricular framework for technical and vocational education in Argentina, established by the Federal Council of Education. These reference frameworks establish the minimum content and competencies that students should develop in each area of training.

[1] Technical and Vocational Education and Training (TVET) comprises formal, non-formal, and informal learning with a focus on the world of work. Both young men and women acquire knowledge and skills, ranging from basic to advanced levels, in a wide range of institutional and work settings, across varioussocio-economic contexts. (UNESCO, 2016)

Vocational Education Training in Argentina, as one of the levels of Technical and Vocational Education as aforementioned, is the set of actions aimed at socio-occupational training for and within the workplace, oriented towards the acquisition and improvement of qualifications, as well as the retraining of workers. It is organized at the national level through different institutions and programs. The field of Vocational Training is internally organized according to the type of training purpose and the mode of access, including: Job Training, Initial Vocational Training, which is further organized into three levels of certification, and Continuous Vocational Training.

The specific objectives of Vocational Training are: to prepare, update, and develop individuals' capabilities for work, regardless of their initial educational situation, through processes that ensure the acquisition of scientific and technological knowledge and the command of basic, professional, and social skills required for one or more occupations defined in a broad occupational field, with integration into the economic-productive sphere. Vocational Training offers also include integration with literacy programs or programs for completion of levels and cycles included in compulsory and post-compulsory schooling.

When analyzing vocational education in Europe, and in particular in the European Union, it is worth paying attention to the large differences depending on the country resulting from many issues. These issues include primarily the local labor market and its needs resulting from the employers' demand for employees with specific professional skills. In the text, we will try to present a comparison of the system functioning in Argentina with one of the VET vocational training systems in the European Union country - Poland.

In the case of Poland, VET vocational education can be considered in two periods, before and after 1989, which concerned fundamental political changes in the country. It is, however, worth paying special attention to this second period of time. More than 30 years have passed between 1989 and now, when both the education system and the needs of the labor market have changed very dynamically. In Poland, supervision over vocational education is carried out by the Ministry of Education and Science - MEN, and the last major reform of education covering this area was carried out in 2017 (Warsaw, 11 January 2017. ACT of 14 December 2016 Education Law).

In Poland, it distinguishes the following structure of education2:
- 8-year primary school;
- 4-year general secondary school;
- 5-year technical school;

- 3-year first stage sectoral vocational school;
- 2-year second stage sectoral vocational schools;
- 3-year special school preparing for work;
- post-secondary school (maximum 2.5 years).
- Academic (Bachelor program 3-4 years + master 1-2 years or integrated 5-6 years)
- PhD 2-4 years

The compulsory education in Poland, as well as in most European Union countries, is about 9-10 years (there are countries where it is even 13 years) and usually applies to people aged from about7 to 16 years.
Education in Poland is free of charge at all the above-mentioned levels of education. In Poland, vocational education is very popular, as evidenced by the inclusion in the higher education system of the possibility of learning also in the form of part-time studies (during weekends), which allows you to combine the current profession of, for example, an engineer with the possibility of continuing education and improving competences and development professional. In Poland, the part-time form is becoming more and more popular every year. In addition, an important role in the process of preparing employees for the industrial sector is offered by courses with the possibility of implementing them as part of lifelong learning, these courses in many cases are free, reimbursed, subsidized or require a small fee.

Vocational education in Poland is supervised by the Ministry of Education and Science. European cooperation in vocational education and training has a long history, dating back to 2002 and the so-called Copenhagen Process, as well as the subsequent Bruges Actions and the Riga Conclusions3 . In addition, in November 2020, the "Osnabrück Declaration on vocational education and training as an enabler of recovery and just transitions to digital and green economies " was approved. This declaration was endorsed by ministers responsible for vocational education and training from EU Member States, candidate countries, EEA (European Economic Area) countries and European social partners. Vocational education and training has been identified as the main area of cooperation under the European Education Area initiative for 2021-2030.

On average, 50% of young Europeans aged 15-19 participate in I-VET (Initial Vocational Training) at upper secondary level. However, this EU average masks significant geographical variations in participation ranging from 15% to over 70%.[2]

It is worth noting that the institutions of the European Union have many opportunities to finance and support vocational education and training, which include, among others, the Erasmus + programs or the European Social Fund Plus. In

addition, as part of the strategic framework of the European Education Area for 2021-2030, a special Working Group was established to deal with the issues of Vocational Education and Training and Green Transformation. At the same time, a subgroup for schools - dealing with education for environmental sustainability - was included in the work of this group. The groups will encourage mutual learning and the exchange of information and best practices between Member States, which will certainly contribute to the development of vocational education in the European Union countries over the coming years. Since 1975, "Cedefop" has been operating in the European Union, i.e. the European Center for the Development of Vocational Training, which is one of the decentralized agencies of the EU. Since 1995, it has been based in Greece and its main tasks include supporting the development of European policy in the field of vocational education and training. At the same time, Cedefop assists the European Commission and EU Member States and their social partners in developing relevant European VET policies[3].

A very important issue to be faced when analyzing the European vocational training system are the challenges of the ongoing industrial revolution 4.0, the ongoing energy transformation and challenges related to the demographic problems of the labor market. Therefore, it is so important

[2] (https://education.ec.europa.eu/education-levels/vocational-education-and-training/about- vocationaleducation-and-training).

[3] 5 https://www.cedefop.europa.eu/pl/about-cedefop

to adapt the current education system to the prevailing employment conditions. Due to the very dynamic development of digital tools, modern manufacturing technologies such as 3D printing, the increasing importance of automation and robotization of production and precise measuring tools, there are problems on the market related to finding employees with appropriate professional qualifications. It seems that VET education, especially at the level of sectoral vocational school, and a properly prepared offer of courses can contribute to solving the abovementioned problems.

2. VET analysis

There are specific institutions for technical and vocational education, such as Technical Education Institutes (IET), Technical Training Institutes (IFT), and Vocational Training Centers (CFP). These institutions offer technical and vocational training programs in a wide variety of fields, including electronics, mechanics, computer science, gastronomy, among others. The degrees awarded by these institutions have official certification.

Technical and vocational education in Argentina is also organized at the provincial level, as provinces have autonomy to establish their own educational policies and programs. While there are general guidelines at the national level, each province has the authority to adapt technical and vocational education to their specific needs and characteristics.

The National Ministry of Education, through Resolution CFCyE N°261/06, established reference frameworks as the essential elements that state the basic criteria and standards which define and characterize the substantive aspects to be considered in the process of certificate homologation and their corresponding educational offers. This provides the necessary tools to carry out analysis and comparative evaluation actions.

Both the National Institute of Technological Education (INET) and the Federal Commission of Technical and Vocational Education (CFETP) collaborate jointly to develop the reference frameworks, in agreement with the Federal Council of Culture and Education (CFCyE). The reference frameworks must include the certification presentation sheet, the defining and descriptive elements of each professional profile, and the minimum training trajectory requiredfor each certification.

Within this framework, the professional profile represents the organized and systematic, verifiable and comparable expression of a set of functions, activities, and skills that a professional can perform in the labour and production market. It defines their professionalism by describing the set of activities they can carry out, their field of application, and their requirements. The professional profile describes the set of professional achievements that a person can demonstrate in various

work situations within their occupational area. It serves as a fundamental, though not exclusive, reference for the training process. The professional profile also allows different stakeholders in the labour and production market to be aware of the competent performances expected from a specific professional, serving as a communication code between the educational and productive systems.

The National Institute of Technological Education (INET), with the participation of the Federal Commission of Technical and Vocational Education (CFETP), is responsible for conducting the assessment and systematization of professional profiles, as well as professional families. The development of professional profiles, in their levels of specification, is carried out within the framework of the relevant national and jurisdictional consultation processes, with the participation of the National Council for Education, Labour, and Production. However, this body is purely advisory and propositional and does not have decision-making authority. It is worth noting once again that all the mentioned organizations belong to the National Ministry of Education.

The training trajectory, in general terms, establishes a relationship between basic criteria and minimum standards required for different professional profiles. It specifies the professional capacities, technical contents, minimum hours, characteristics of professional practices, among other elements that make up the reference framework.

As mentioned earlier, each province establishes specific policies and regulations for technical and vocational education within its jurisdiction, through the education bodies (such as ministries or secretariats). Provinces often have their own educational institutions for technical and vocational training, such as technical schools, vocational training institutes, or training centers. These institutions offer training programs adapted to local needs and demands. Additionally, each province may have its own programs and projects to strengthen and improve technical and vocational education. These programs may focus on specific areas of economic development or the promotion of skills and competencies demanded by the local labour market.

Comparing the presented VET system in Argentina with the system in Poland, both common features and some differences can be noticed. It is worth noting that in Poland the unit 8 responsible for VET issues is the Department of Strategy, Qualifications and Vocational Education, which is responsible for the implementation of the Minister's tasks in the field of coordination of strategic planning and implementation of lifelong learning policy and coordination of state policy in the field of vocational education.

Based on current data provided by the Ministry of Education and Science in the school year 2022/2023 - 58.5% of students of all types and grades of secondary schools (including postsecondary schools) pursued vocational education, the remaining 41.5% of students pursued general education. For comparison, in 2020, in Germany, 59.6% of young people were in vocational education, and in France and Spain these percentages were at the level of 39.7% and

37.1%, respectively. In Germany, a very popular model of vocational training is the model of the so-called Dual mode, where the student is employed and works 3-4 days a week for the employer, realizing the practical part, and 1-2 days at school realizing the theoretical part.

Due to the dynamically progressing industrial transformation 4.0 and changes taking place in the energy industry, the labor market is starting to lack qualified employees, in particular in the metal, electronic, electrotechnical and energy industries. This situation has a direct impact on the increase in salaries of qualified employees, which makes VET vocational education more and more popular in Poland and almost throughout the European Union. Numerous sectoral vocational schools and vocational training centers are being established in Poland, which closely cooperate with industrial centers, which play the role of patrons of given majors/specialties, strengthening the laboratory base and practical issues of science. An important issue is the numerous of facilities and improvements that has been implemented in terms of tax reliefs for companies supporting public schools providing vocational education as well as public facilities and centers. This situation increases the quality of the training provided and the adjustment of the content of education to the expectations of the local employment market.

Comparing the two countries, many similarities can be seen in terms of, for example, the Center for Vocational Education, but in Poland these institutions do not issue certificates, but only prepare for the exam, where the certificate of professional qualification is issued by the Regional Examination Board.

The situation regarding curricula is similar in both countries, where both countries have general guidelines, but there is some autonomy at the regional/local level, which certainly increases the flexibility of education and improves its adaptation to local needs.

3. Structure of the National Offer in VET

In Argentina, the field of Vocational Training comprises: Initial Vocational Training (FPI, *Formación Profesional Inicial*), Continuing Vocational Training (FPC, *Formación Profesional Continua*), and Occupational Training (CL, *Capacitación Laboral)*).
Initial Vocational Training, in turn, has three levels of certification.

Certification Level I: this certification is assigned to Initial Vocational Training certificates that accredit the learning of basic operational knowledge and technical skills that are applied in specific occupations and enable individuals to competently perform a limited range of activities where standard solutions are applied to problems that arise in defined situations.

Certification Level II: is assigned to Initial Vocational Training certificates which certify the command of technical operational knowledge and skills, and to a limited extent, some managerial operational knowledge, which are applied in specific occupations and enable individuals to competently perform a moderate range of activities in which standardized procedures are put into practice in order to solve routine problems.

Certification Level III: is assigned to Initial Vocational Training certificates that certify the learning of theoretical scientific and technological knowledge specific to their professional field, and the command of technical and managerial operational knowledge applied in specific occupations. It enables individuals to competently perform a broad range of activities, involving the identification and selection of possible solutions among a wide variety of alternatives, to solve problems of low relative complexity that require professional insight.[4]
Continuing Professional Training allows for an extension in the professional development journey that adapts to the development needs of the socio-productive sector. It is conceived as a strategy of lifelong education and is closely related to each individual's initial training trajectory, whether it continues due to the need for updating processes, techniques, regulatory frameworks, etc., or for specialization in a specific aspect of professional functions or a subsector or grouping within the

professional field.

The central and distinctive characteristic of Continuing Professional Training, regardless of the initial Technical and Vocational Education and Training (TVET) framework it is articulated with and the formative purpose it is defined by, is that it is designed and developed based on the individuals' prior professional qualifications. This articulation presupposes, from the perspective of TVET planning, a coherent link in the training trajectory between initial TVET and continuing professional training proposals, implying a progressive advancement in the professional development of individuals. Within Continuing Professional Training, two variants of training can be distinguished based on the degree of intensification and depth of the formative proposal: Updating and Specialization.

Occupational Training refers to professional training actions aimed at developing individuals' capacities to adapt to the demands of a specific job or occupational role. They do not necessarily require a specific prior professional qualification. Labor Training actions are not based on professional profiles nor are they necessarily based on educational trajectories approved by the Federal Council of Education. Due to this condition, certifications in Labor Training, while being part of the professional training sphere, do not require the identification of the certification level of the formative proposal.[5]

The Argentine Ministry of Education, in collaboration with unions, carries out a great part of vocational training policies.

The Ministry of Labour, Employment, and Social Security, also implement training initiatives. An example of this is the Program for Certification of Labour Competencies.

[4]Res. 13/07- "Títulos y certificados de la Formación Técnico Profesional" [Degrees and Certificates ofTechnical and Professional Training]– CFE – Ministry of Education .

[5]Res. 288 -16. "Orientaciones y criterios para el desarrollo de la Formación Profesional Continua y la Capacitación Laboral" [Guidelines and Criteria for the Development of Continuing Professional Educationand Occupational Training] – CFE – Ministry of Education.

This program allows workers to obtain a public acknowledgement official that guarantees their knowledge in the trade they work in. Competency certification is achieved through an evaluation in work spaces or at Vocational Training Centers that are abled as certification institutions, and being acknowledged by the Ministry of Labour. The Ministry, Vocational Training Centers, employer associations, and labour unions define the labour competencies for each activity or job position to ensure consistent standards across the country.

Sectorial Councils plan Professional Training policies for each sector. They facilitate Social Dialogue, as they listen to all parties involved in order to address training needs with policies and training proposals, as well as aiming to have trained workers and companies with skilled employees, all of which contributes to economic growth. Representatives from workers, companies, educational organizations, civil society associations, and the State participate in these councils, coordinating their actions.[6]

The Vocational Training Centers, in conjunction with the Ministry of Labour, Employment, and Social Security, play a key role in organizing Initial Vocational Training at the national level. These entities establish policies and guidelines to ensure the quality and relevance of the training.

The vocational training policies promoted by trade unions seek to promote worker mobility, job stability, the incorporation of technological innovations, as well as certify competencies and knowledge for unemployed workers. In this way, the trade unions have committed themselves to Vocational Training in a significant way.

Fundación UOCRA operates within this scope, overseeing more than 30 Vocational Training Centers (CFPs) where theoretical and practical courses are offered in various professional pathways or trajectories, in an open and free manner. However, the centers are primarily focused on training of working-age individuals, whether employed or not at the time of training.

[6] https://www.argentina.gob.ar/trabajo/formacionycapacitacion/certificacioncompetencias

The course offers at the centers are mostly concentrated in the afternoon and evening shifts, which attract the highest enrollment, as many participants access training after their workday. The morning shifts often offer courses upon request from the Ministries of Labour or Social Development, as a training requirement for beneficiaries of programs like "Potenciar Trabajo." The course offers are organized into four-month modules or annual programs, providing flexibility and adaptable technological content to accommodate the diverse career paths of workers in the sector.

Regarding the types of courses offered, they mainly cover construction-related fields, especially professional profiles that allow student-workers to organize their work life in independent activities that provide autonomy and short-term employment opportunities.

The course offers also include complementary paths to traditional construction trades, such as administration, computer-aided design, and PC operation. Many of these training programs attract female participants to Vocational Training institutions, and once enrolled, they join other courses such as ceramic installation, integrating groups where male participants are predominantly present.

The composition of the student body varies greatly in terms of age, social status, and basic education. In many cases, Vocational Training Centers facilitate the means to connect participants with adult education opportunities in the area, allowing them to obtain certification for primary or secondary education levels as required. In this diversity, directors agree on a common point, whichis the need for job placement.

Vocational education in Poland is carried out in two ways, depending on the age and situation of the employee. The first way assumes vocational education by completing a five-year technical secondary school or (two stages) sectoral vocational school, which is divided into a first-level sectoral vocational school and a second-level sectoral vocational school. The second way is related to lifelong learning and the implementation of preparatory courses for specific types of professions or participation in training.
In the case of the classic form of education, major changes have been made since 2019 to improve the vocational education process9 . One of the key issues is the extension of technical education (ISCED 354) from 4 to 5 years, followed by the vocational exam and the matriculation exam, the passing of which entitles you to apply for further academic education. In addition, basic vocational schools were replaced by the introduction of (two stages) sectoral vocational school.

- First stage sectoral vocational school (ISCED 353)) lasts 3 years and ends with a vocational examination. In addition, it allows you to obtain professional qualifications after passing a professional exam confirming qualifications in a given profession. After graduating from this school, there is a possibility of further education in the 2nd year of high school for adults or in a second-stage sectoral vocational school.

- A second-stage sectoral vocational school lasts two years, and you can start studying there after graduating from a first-stage sectoral vocational school. After graduating from a second-stage sectoral vocational school, another vocational exam and the matura exam take place, which also entitles students to pursue further academic education.

At the same time, the vocational education system includes:

- three-year special schools preparing for employment (ISCED 243) for people with special educational needs, which allow obtaining a certificate confirming readiness for work,
- work preparation units for people with special educational needs in primary schools (ISCED 243).

Moreover, at the post-secondary level, vocational qualifications can be obtained in post-secondary schools (ISCED 453) lasting from one to two and a half years. These schools are oriented strictly towards vocational training as they do not offer general education. In order to be able to attend such a school, candidates should have a secondary or vocational secondary education. The level work-based learning (WBL) varies according to the type of school. The lowest WBL is for technical colleges and the highest for post-secondary schools. This is due to the fact that they have a general education component. Practical classes are conducted in school workshops, continuing vocational learning centres, vocational training centers and industry/factory (at the employer's). In technical and post-secondary schools, and in the future also in sectoral (secondary) vocational schools, vocational (industrial) apprenticeships increasing the level of VET education are obligatory and last from 4 to 12 weeks, depending on the type of profession.

The persons may obtain/supplement professional qualifications at any age, e.g. by participating in qualification vocational courses conducted by: Organizational units of the education system, i.e. public and private, and entities outside the education system (not subject to pedagogical supervision by education superintendents) such as[7]:

- continuing education institutions,
- vocational training centers,
- schools providing vocational education: 1st degree sectoral school, 2nd degree sectoral school, technical school, post-secondary school;
- labor market institutions
- entities conducting educational activity

[7] https://www.gov.pl/web/edukacja-i-nauka/kkz-wazne-informacje

An important information is the fact that the certificate of completion of the vocational qualification course issued after its completion does not confirm professional qualifications (list of qualifications[8]), because the only official document confirming the possession of professional qualifications is the certificate of professional qualification issued by the regional examination board to a person who has passed the professional examination. Qualification courses can be held in daytime, stationary and extramural mode. Participation in the course is free.

Important centers providing vocational education are Centers of Vocational Education – (in polish Centrum Kształcenia Zawodowego - CKZ) and Centers of Continuing Education. These centers, through a rich laboratory base and education focused mainly on vocational education, allow for achieving very good learning outcomes. In addition, in order to intensify the work on the development of VET in Poland, the Ministry of Education and Science developed and in 2022 published a special action plan in the field of vocational education and training for the years 2022- 2025[9]. The key activities under this program related to the VET industry include:

- support for people with disabilities in transition to the labor market,
- expanding the offer of additional professional skills and industry qualifications, including thoserelated to the energy and digital transformation,
- expanding the offer of multimedia materials used in VET education,
- digitization of professional exams, - application of micro-qualifications,
- improving the quality and preparing new staff in the VET industry,
- monitoring the careers of graduates,
- increasing the educational mobility of students,
- coordinating the lifelong learning policy.

[8] https://efs.mein.gov.pl/wp-content/uploads/2019/07/Za%C5%82%C4%85cznik-nr-12-Szczeg%C3%B3%C5%82owa-lista-kwalifikacji-o-kt%C3%B3rej-mowa-w-kryterium-dost%C4%99pu-nr-5.pdf

[9] Ministerstwo Edukacji i Nauki, Plan działań w zakresie kształcenia i szkolenia zawodowego na lata 2022-2025, Warszawa 2022

At the moment, vocational education is provided in 229 professions, where qualifications are distinguished. These qualifications are sets of knowledge, skills and competencies, after which one can perform specific tasks and perform specific activities. In the first-level sectoral vocational school, one qualification was distinguished, while in the occupations taught in the second-level sectoral vocational school, or technical and post-secondary schools, one or two qualifications were distinguished. The description of education in individual professions, including the set of compulsory teaching content, has been described in the form of expected learning outcomes. In addition, the criteria and the method of their verification, defined by the core curriculum for vocational education in VET education, are also presented in detail. The core curriculum also includes all other necessary aspects, such as school equipment necessary to provide education in the field of individual qualifications and the minimum number of hours to implement the teaching content. The vocational curriculum is developed by the school in cooperation with employers or employers' organizations, which allows for the adaptation of the teaching content to the needs of the local market represented by employers. In order to unify the teaching process, the program must take into account the core curriculum for a given profession, but it may also include teaching content that goes beyond the scope of the core curriculum, which allows it to be adapted to the changing needs of the labor market and to the dynamically progressing technological development as part of the ongoing industrial revolution 4.0. Professional qualifications are confirmed in the system of external professional examinations and are carried out separately for each specific qualification. In the case of a positively completed exam, a certificate of professional qualification is issued, and a person who has confirmed all qualifications in a given profession and has the appropriate level of education receives a professional diploma. Comparing the detailed data on the structure of the vocational education systems in Argentina and Poland, there are clear similarities with the focus on three main categories: initial vocational education, continuing vocational education and vocational education. The division of certification levels is also similar, taking into account **the** Polish Industry Schools. Of course, there are differences in the required professions, technologies used, however, the approach model in terms of VET seems to be similar.

4. Private offer

Within the scope of what could be called the "Private Offer," different alternatives coexist. One of them is driven by the Ministry of Labor, Employment, and Social Security, the Tax Credit program. This is a public policy that proposes to companies and cooperatives to increase their productivity and competitiveness through the implementation of training actions for their workers or unemployed individuals, and/or the certification of the quality of their processes. Access to the program is granted through the submission of a training and/or quality certification proposal. Once the execution is completed, an economic settlement is made, and upon approval of the settlement, a Tax Credit is issued in favour of the responsible companies and/or worker cooperatives to offset national tax obligations (Resolution No. 4559/2019)[10]. This type of training is funded by the government but carried out by the companies and cooperatives themselves.

On the other hand, there are numerous private institutes that offer courses in Vocational Training, with different durations and covering various topics. It is important to note that most of these institutions do not have official certification recognized by the Ministries. Additionally, it should be mentioned that these courses have fees, unlike the public offerings described in the previous section, which are free for attendees.

Finally, we can mention the training courses managed by private companies, whether conducted internally or provided by external training agencies. This type of training usually focuses on specific topics or the operation of specific machinery. These actions are funded by the companies themselves, meaning they are free for employees but not open to the general public.

[10] https://www.argentina.gob.ar/trabajo/creditofiscal

Analyzing the Polish private market of vocational education, it can be said that only a small part of it covers secondary education, i.e. sectors schools or technical schools. To a large extent, however, it is focused on the offer of courses improving professional qualifications or preparing for passing a professional exam.

In the context of raising the competences of employees present on the labor market or entering the market, courses conducted by specialized companies providing technology are of great interest. An example can be courses on CNC machine tools, 3D printers, welding, CAD and CAM software conducted by distributors of machines and devices. Such courses, however, are usually paid, but they allow you to quickly acquire knowledge about a given technology and enable you to take up employment using it. Of course, these courses allow for raising the competences of already employed employees as well as acquiring them by new ones entering the labor market. Unfortunately, these courses do not end with a national certificate, but only with a company confirmation of participation or passing the exam. This short form of training will certainly develop very dynamically due to the needs of the industrial market and the need to implement modern industry 4.0 tools. Perhaps it would be worth introducing the possibility of certification of such industrial short training courses in both analyzed countries.

5. Fields of Innovation

Within the technological framework that affects small and medium-sized enterprises in the sector,the following elements may be identified:

- Proposed transition: from a traditional industry to a knowledge-based industry, that is, to an organizational/sectorial model that integrates multiple value chains, where management technologies are linked together with operational technologies.
- Challenge of productivity: where the source of productivity lies not only in labour but also in knowledge-based productivity, data science, digitalization, process control, home automation, new representation technologies, among other elements.
- Challenges of sustainability: these involve changes in the business structure towards energy transition and a sustainable economy, associated with decarbonization, diversified energy matrices, new products associated with renewable energies, a circular economy, and environmentally friendly practices.
- Challenges related to training and qualification through the application of new technologies in vocational training: simulators, virtual reality, and digital education that facilitate the transfer and access to new technologies for the entire workforce in the sector.

Four specific fields of innovation are identified for the SME segment:

Sustainable construction: This is related to policies and regulations concerning environmental protection, which have had an impact on innovation and the development of new materials. It has also led to modifications in production practices and changes in the organization of work.

Digitization: where specific characteristics of this technological revolution can be identified. It promotes the integration of cyber-physical devices, which combine physical infrastructure with sensors, nanotechnology, digital communication technology, etc. These devices modularly control physical processes.

Industrialized construction: In this case, work processes are also modified, and new equipment, materials, and tools that workers need to master are developed.

Renewable energy: This involves a complex and new set of legal and regulatory developments that require the development of new professional knowledge by

workers in the industry.

The changes that have occurred in recent years show two main trends: the increase in specialization in all construction areas and, as part of this process, the work data, especially in terms of construction management. The growing specialization that shapes new areas of work is a long-standing phenomenon in the labour market. Additionally, the demand for human resources and adequately qualified occupational profiles for increasingly diverse and highly skilled areas is a key element. In other words, the technological potential of these small and medium-sized enterprises is associated with a certain focus and specialization strategy as part of a development centered on the high technological content of activities and an organizational pattern intensive in skilled labour. As the adoption of new technologies spreads, training processes must adapt to these dynamics of specialization.

Changes in the construction industry occur in a stratified manner across different niches or segments. While processes such as construction management, administration, control, and auditing are more open to adopting technology, construction processes on-site, which involve increasing automation, are less open. This scenario of progressive, fragmented, and uneven changes has an impact on daily work processes and career paths, with differential impacts based on hierarchies and segments or niches within the construction industry.

Technological development in the sector is directed towards construction schemes that modify work processes and methodologies, making them more economically efficient and providing greater potential and diversity in terms of functionality and aesthetics of products, as seen in the field of industrialized construction.

Another factor of technological development is everything which is associated with the field of Industry 4.0 technologies, which aim to achieve effectiveness in products and processes and improve efficiency in terms of time and productivity. This can be observed in the development of software that facilitates the standardization and normalization of processes, data management, and connectivity for both entrepreneurs and workers on-site. The development related to home automation (domotics) and the Internet of Things can also be closely linked to this.

The new focus of technological change in the construction sector of SMEs is on constructions that transform work methods, improve production costs, and enhance aesthetic design in products. Technological changes are evident in two ways. The first way we identify, in the broader context of the construction sector, is the emergence of a new mode of construct. There are now buildings and functional units that fully operate digitally and this has required the design and production of electrical supplies

that can handle higher currents and comply with new regulations. Additionally, productivity control systems generate new possibilities for understanding and analyzing all the characteristics of production processes. Secondly, the creation of software for process and product standardization and the communication possibilities offered by technological devices and the internet improve production process times. Technological advances have increased in various
aspects. According to the construction sector, parametric modeling through software such as REVIT or BIM is among the most notable innovations in the field.[11]

When analyzing the Polish vocational education market and the European Union in terms of innovation, it is worth paying attention to several issues. First of all, very dynamic changes in the aspect of energy transformation are currently underway. Such a situation means that new jobs are created regarding the employment of people dealing with new energy technologies, their assembly, operation, service activities, etc. These technologies are relatively new on the market, which means that they are not always used during currently implemented training, courses and vocational education. The solution to this problem on the Polish labor market may be the recently implemented formula of patronage by industrial companies of classes, for example in Vocational Training Centers for sectoral vocational schools, which will give students access to a modern equipment base, and employers to qualified employees.

Another issue is the progressing digitization and challenges related to the training of employees already operating on the labor market. The problem of digitization is not only about the transition to a digital format, but about ensuring wide access to information online (for example in the cloud) and, most importantly, ensuring a high level of security of stored data. As the statistics show, there are currently a lot of hacker attacks in manufacturing companies and other industrial sectors, where the attack is on technology data, product information and personal data, hence it isso important to raise employees' awareness of cybersecurity during work through courses and training. In the aspect of digitization, it is worth noting that currently there is a very dynamic transition to the digital model and the implementation of many industrial tools included in the group of Internet of Things or Mobile technologies, the operation of which also requires training.

[11] Granovsky, P., Gerolimetti, M. (2023), documento de trabajo

The key issues determining changes in the curricula of vocational education and curricula of courses and trainings are the aspects of technological progress and the need to implement production optimization in the era of LEAN manufacturing and changes resulting from the need to reduce energy consumption. This also determines the implementation of control equipment or modern technological systems at workstations that allow for increasing work efficiency and reducing defective products. Such a model means that employees must adapt their skills to the currently implemented tools in order to maintain employment. It seems that the model of work in the cloud implemented by the use of new digital technologies also determines in many cases a new model of work partially or completely online. In terms of new technologies, it is worth paying attention to the need to implement modern laboratory equipment in Vocational and Continuing Education Centers due to the need to ensure a level of education quality adapted to current needs. It is clearly visible how the degree of complexity of all products is increasing: cars, telephones, household appliances, and in many cases vocational education and training is focused on learning how to service, repair and operate such devices, which is a real challenge due to the pace of implementing innovations in products everyday use. Comparing the technological challenges of both countries, there are clear similarities in key areas, such as the challenges related to the digitization of industry and emerging cybersecurity issues. In addition, it is a great challenge to start the implementation of modern teaching tools in VET education in both countries, such as simulators, digital software, precise measuring instruments, 3D printing and many others related to the ongoing industrial revolution 4.0. In both countries, problems related to the energy transformation and challenges that vocational training centers must face in order to adjust the educational offer to the current needs of renewable energy and modern tools related toit have been noticed.

6. Conclusions

There is an articulation and coordination between Vocational Training Centers and the socio- productive environments in the institutional management policy, although the consolidation of certain mechanisms that provide institutionalization and continuity is still under development.

When companies seeking to hire personnel contact the Centers, the connection are facilitated through Fundación UOCRA because not necessarily those who are "good" students perform equally well in the workplace therefore ensuring a better match between students' skills and abilities and the requirements of the labour market

Companies can also post notices on the Centers' bulletin boards providing information about their current job openings. In the case where a productive project requires the development of certain profiles, specific courses are organized by Fundación UOCRA to meet the specific training needs. In some cases, companies offer training to their employees on internal processes, and it is difficult to integrate them with the training provided by the Vocational Training Centers since these are not certified courses but rather internal or external training on specific topics relevant to the companyoffering them.

Regarding the characteristics of articulation between companies and the Centers, it can also be inferred that in many instances, the search for workers takes place in work environments rather than in training environments. This can be seen in the need of ensuring that workers acquire some experience and knowledge through their professional practice, especially in roles or occupations that require lower qualifications.

Upon a changing context like the present one, with an increase in specialization of the labour market, the surging uptake of technology will undoubtedly impact the occupational profiles that will be in demand in the future. In the coming years, the hiring of professional profiles related to Industry 4.0 technologies and the ability to manage, handle, and work with data will be prioritized. These complementary skills will be essential alongside direct execution of the production process. This issue is not limited to the construction industry but will be widespread across all branches of the industry. It is a significant challenge for Vocational Training to stand by and complement these processes in order to provide a response, both to the business sector and to workers, enabling better pathways to employment and enhancing their career trajectories.

Moving on to the vocational education system in Poland and analyzing the labor market and its needs, several conclusions can be drawn:

Thanks to the introduction of many changes in vocational education in 2019, the cooperation of industry (employers) with vocational education centers has been improved, which should certainly 20 contribute to a better adjustment of the education program and make it much more focused on practical skills with the use of an industrial equipment and training base.

Extending the period of education in technical secondary schools from 4 to 5 years should also improve the quality of education, in particular when combining European tools to improve mobility, for example, which is implemented under the Erasmus + program in all European Union countries.

It is worth noting that Poland has now started monitoring the careers of employees who were educated within VET, which will certainly allow for even more efficient and flexible adjustment of VET education forms to the needs of employers.

The offer of Qualifying Vocational Courses organized, for example, by Vocational Training Centers, addressed to all age groups, will certainly allow for systematic improvement of competences and, after completing the courses, passing the exam and obtaining a professional qualification certificate.

Due to the very dynamic development of industry and digitization, there are problems related to the provision of appropriate staff responsible for conducting didactic classes, which is certainly an important challenge in many European Union countries, including Poland.

Summing up the situation of Vocational Education both in Argentina and in Poland, it can be said that in fact the organizational structure and the challenges to be faced are very similar. However, due to the differences in the needs of local labor markets and functioning in different economic environments, the exchange of experience between the VET staff of both countries can bring many benefits on the way to development and further cooperation.

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