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Origin and Trajectories of Secondary Vocational Education and Training in Portugal: The New Normality in the Context of the Coronavirus Disease Framed in a European Scenario

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Abstract: This article approaches secondary Vocational Education & Training (VET) in Portugal from a historical-educational perspective, namely the professional courses introduced in 2004 in public secondary schools. Its implementation aimed to obtain a qualified technical workforce and to fight against the high failure rate and school dropouts registered in technological courses. It was also proposed, to complete 12-year compulsory education, qualifying students for the exercise of a profession as level IV technicians of the national qualifications framework (NQF). As a result, the number of students enrolled in this modality has progressed from a residual value of 10% in 2004 to 39.7% in 2018. On average, its attendance in the European Union (EU) was 54.6%, with special emphasis on Finland and the Czech Republic, whose indicators were, 71.6% and 71.3%. With the emergence of the COVID-19 pandemic came the unplanned closure of schools in the spring of 2020, imposed to protect the well-being of society, but which caused discontinuities. This research concludes by taking into account professional education in Portugal and the EU in the context of the COVID-19 pandemic, also considering the opinion of educational actors (course directors, teachers, and students) on the functioning of VET in Portugal.

Keywords: *Comparative education, labour market, management, training assessment, vocational education & training.*

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Introduction

COVID-19 has affected more than 1.5 billion students worldwide, representing more than 90% of all enrolled students, an unprecedented situation in the history of education that has led to the loss of some of the gains already achieved towards the goals of the Educational Agenda 2030 by United Nations Educational, Scientific and Cultural Organization (UNESCO, 2022). It also affected around 63 million primary and secondary school teachers who had to adjust their teaching-learning practice to online use of Information Communication Technologies (TICs), or other means such as television, radio, etc. (UNESCO, 2020).

The teaching-learning and training process was negatively affected by COVID-19 as it had to undergo very rapid adjustments. It had to be adapted to deal with school closures, limitations on sustained limited opportunities at work, delays in exams, and disruptions to students' pathways.

Many countries have created arrangements for distance learning, including organized online classes, but familiarity and success have varied between countries. In Iceland teaching was moved online overnight. In Germany, students who did internships in companies were able to access school training resources in the workplace. In Bulgaria, similar to what was done in a school context, the study of online theory began for two or three days, European Center for the Development of Vocational Training (Cedefop, 2020).

Worldwide, there are sudden changes in the various educational systems of education in the face of the epidemic outbreak caused by the COVID-19 virus, with ruptures in traditional pedagogical models and the emergence of new teaching-learning configurations. That's why Cedefop´s community of apprenticeship experts launched an internal consultation on how European countries are managing apprenticeships in the current health emergency due to the coronavirus pandemic.

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Vocational education in Portugal was no exception, both in terms of the way it developed in the context of social restrictions of distancing and displacement, and of how it was forced to adapt to a new operating framework in the labour market. Educational institutions had to resort to alternative pedagogical approaches, namely distance learning, particularly affecting learning carried out in a work context (practice carried out in the company) and the Professional Aptitude Test (a practical project with presentation and defense before a jury at the end training to obtain a professional diploma). These are curricular devices directly related to the following professional concepts: Vocational Education and Training (VET), Apprenticeship, and Dual System, which despite the analogy between them, present important differences in the way they work.

VET is an education modality focused on vocational guidance and professional preparation that can be separated into two dimensions (school-based and dual), and may not necessarily incorporate the work practice involved. VET is a training modality that provides trainees with the practice-oriented knowledge and skills required in specific occupations. It usually follows a curriculum that combines general knowledge with profession-related knowledge. When associated with the classroom and with more traditional education systems, VET is understood as school-based. However, when school-based vocational/technical education is combined with professional practice and practice in companies, it is called a dual training system.

On the other hand, apprenticeship takes the form of more specific training and presupposes the work practice involved. Part of a structured learning plan divided between the workplace and the training center/school. It assumes practice in a work context. Unlike full-time VET school-based vocational training, students develop specific occupational skills through direct employer liaison with part-time workplace practices. Learning systems can be analyzed under both modalities as they have both professional training and a work context component. They can change in terms of the total duration of the programs and the separation between general theory and practice of learning, but valuing the work context.

Dual System, combines classroom learning, focused on the acquisition of knowledge and general skills with training acquired through work experience in the training company. As examples of Dual systems, those from Germany, Switzerland, and Austria stand out, whose courses last from two to three and a half years, at the upper secondary level, with the main objective of qualifying students for the performance of a profession.

Vocational courses for upper secondary education in Portugal are characterized by having a VET training course in a school environment with double certification, through a curricular structure organized by modules to allow greater flexibility and respect for different learning rhythms. The curriculum of the courses includes three training components: sociocultural, scientific, and technical (theoretical and practical) for the development of social, scientific, and professional competencies in the classroom, as well as Training in a Work/Internship Context that aims to acquire and development of relational and organizational skills for professional qualification. They last for three years after the ninth grade. Professional courses in Portugal, in addition to qualifying students for immediate insertion in the job market as technicians of level IV of the NQF, allow the continuation of studies at a post-secondary level and higher education, which distinguishes them from the vast majority of courses VET from different European countries. In addition to a wide range of courses and apprenticeships, VET in Portugal is completely free, which includes food and transport allowances, although the great motivation of students to attend vocational education is directly related to the fact that they make it easier to finish upper secondary education. Students are not subject to school retention due to the accumulation of modules and may request at the beginning of each academic year the assessment of modules not completed in the previous academic year (Ministry of Education, 2004).

However, the offer of professional education in Portugal, which went through different phases of curricular implementation, with structural and conjunctural reforms over time, led to ruptures in the Portuguese educational system. To better understand the changes that have occurred, a comparative analysis was carried out about some models of professional education in other countries, namely the European Union, during the period of COVID-19. In the same way, reference was made to the implications resulting from the curriculum development process, namely in the component of teaching practice in a work context.

Methodology

This article follows on from the topic of the functioning of Vocational Secondary Education in Portugal. This has deserved particular attention from the signatories of this article, through other articles already published in peer-reviewed journals, whose object, due to the impact of COVID-19, has undergone a unique development (Pinto & Delgado, 2014; Pinto et al., 2015, 2019).

The methodology adopted, of a descriptive nature, includes, in addition to the analysis of quantitative data, access to information from institutional legislation (Directorate-General for Education and Science Statistics, Ministry of Education, Presidency of the Council of Ministers) and database from national/international organisations/institutions (Pordata, Human Capital Occupational Program, Economic Co-operation and Development, United Nations Educational, Scientific and Cultural Organization) whose contributions reveal characteristics of the functioning of professional education particularly in Portugal. Obtaining the resources used for this article was carried out through preferential

direct access to the internet as well as articles inserted in books or magazines. To interpret the differences in student attendance rates in vocational education in Portugal and in some European Union countries, content and document analysis (Bardin, 2013) and comparative education methodology (Bray et al., 2014; Teodoro, 2001). But also a qualitative approach, with theoretical, bibliographical, and statistical contributions, to provide critical-reflective analysis regarding the didactic, pedagogical, and methodological impacts resulting from the Coronavirus COVID-19 pandemic.

The research recorded the evolution of vocational education and training (VET) in Portugal, specifically that of secondary-level professional courses, using national statistical data provided by various accredited official entities. The collection of information dates back to 2004, the year of its implementation in public secondary schools. The year 2018, which preceded COVID-19, served preferably as a comparative basis between the existing VET universe in Portugal and that of other countries, namely the EU.

Pathways in the History of Secondary Vocational Education in Portugal

Vocational education in Portugal had great growth during the Estado Novo (dictatorial, authoritarian, autocratic, and corporatist political regime, which was in force uninterruptedly in Portugal from 1933 to 1974). Vocational education was established as one of the branches of secondary education, alongside secondary education, which preferably allowed for further studies. Around eighty professional training courses were planned in the industrial, commercial, female training, and decorative arts areas.

These courses, in addition to an overly rigid structure and dense programs (some exceed 40 hours per week), were unsuitable for the age level of the students, causing many of them to drop out before completion or contributing to poor school performance, especially for the reduced number of conclusions registered over the years (Alpiarça, 1980). However, at the end of the 1960s, professional education began a pedagogical experience, with the creation of nine new three-year technical general professional courses, after the preparatory cycle (Ministry of National Education, 1967), to replace the thirty-four professional courses of the education reform initiated in 1948.

In 1975, all general courses (technical and secondary education) gave way to unified secondary education with the consequent extinction of technical-professional education. In 1978, the fusion of technical-professional and secondary education took place, with technical and secondary schools being called "secondary schools" (Ministry of Education and Culture, 1978).

Technical-professional education was reintroduced into the education system (Ministry of Education, 1983), and the possibility of accessing higher education under the same conditions as other secondary education courses. Over the duration of this vocational education, the number of courses progressively increased to thirty-three in the most diverse areas of training, to narrow-band technological specialization.

In 1989, a new secondary education and training organization was established in Portugal (Ministry of Education, 1989a), with the creation of two types of courses: secondary courses predominantly oriented towards the continuation of studies, also known as general courses, and eleven secondary courses predominantly oriented towards an active life, commonly known as technological courses, focused on large technological areas in a broadband perspective. They replaced the 1983 technical-professional courses, although many of them never worked, because the majority of students opted for general education courses, as was the case in the 1960s with the high school route, the most suitable way to achieve social ascension. The general courses and the technological courses consisted of three curricular training components: general training, with subjects common to both types of courses, specific training, and technical training, and also a curricular area of an interdisciplinary nature, organized and managed by the schools, called the school area.

In 1989, another secondary vocational education subsystem was developed in Portugal (Ministry of Education, 1989b), with the creation of public and private professional schools (Ministry of Employment and Social Security, 1989), through professional courses, under the coordination of the Artistic and Professional Technological Education Office. In 2004, vocational courses were also introduced in public secondary schools Ministry of Education (2004), leading to the discontinuation of technological courses (in total they represented 14% of students) (Table 1)

Table 1. Educational offer in Secondary Education in Portugal (Source: Pordata, 2004)

Teaching Modalities	**2004**	**%**
Technical-professional/courses/technological courses	53 831	14
Teaching path/General courses	212 927	55,7
Professional courses	34 399	9
Appellant and others	78 178	20,5
Education and Training Courses	2 877	0,8
Total	382 212	100

The introduction of professional courses in the Portuguese education system, with a duration of three years, began to include a variable workload between 3100 and 3440 hours, being organized into four training components:

Sociocultural Training - comprising subjects common to all courses, aimed at contributing to the construction of students' personal, social, and cultural identity;

Scientific Training - structured in two or three disciplines, it aimed to provide scientific training consistent with the qualification to be acquired;

Technological Training - organized in Short-Term Training Units (STTU), aimed at acquiring and developing a set of technical skills necessary for professional practice;

Training in a Work Context - carried out in companies or other organizations, in periods of variable duration throughout or at the end of the training, and aimed at the acquisition and development of technical, relational, and organizational skills relevant to professional qualification.

Table 2. Curriculum Matrix of Professional Courses (PC) (Source: Presidency of the Council of Ministers, 2018)

Training Components	**PC Curriculum Matrix**	**Load Time (3 years training cycle) – hours**
Sociocultural	Portuguese	320
	Foreign Language	220
	Integration Area	220
	Information and Communication Technologies	100
	Physical Education	140
Scientific	Two to three subjects	500
Technique: STTU (Short Term Training Unit))	Three to four subjects	1000 a 1300
Training in the Work Context (internship)		600 a 840
Moral and Religious Education (mandatory offer and optional attendance)		54
Total amount (hours)		3100 a 3440

The professional courses culminate with a presentation and defense, before a jury, of a transdisciplinary project, integrating all the knowledge and skills developed during the training, called the Professional Aptitude Test, whose "the final product is presented to the educational community in a session public" (Pinto et al., 2015, p. 9).

Portugal

Vocational education in Portugal, thanks to the diversification of offers in the education system, registered strong growth in professional courses, both in private secondary schools and in public secondary schools. This type of education became the main reason for the increase in secondary education, which also included general courses, particularly from 2006 onwards, with the discontinuation of technological courses. In 2018/19, professional's courses were attended by 115,981 students and technological courses by 3,570 students, while in 2004/05, 36,765 and 59,474 students attended, respectively (Figure 1). On the other hand, completion rates for professional courses stabilized above 74%, reaching 77.8% in the 2018/19 academic year (Figure 2), higher than that observed in general courses (76.8%), although much lower than that obtained by technological courses (93.9%) with the same level of professional training as professional courses.

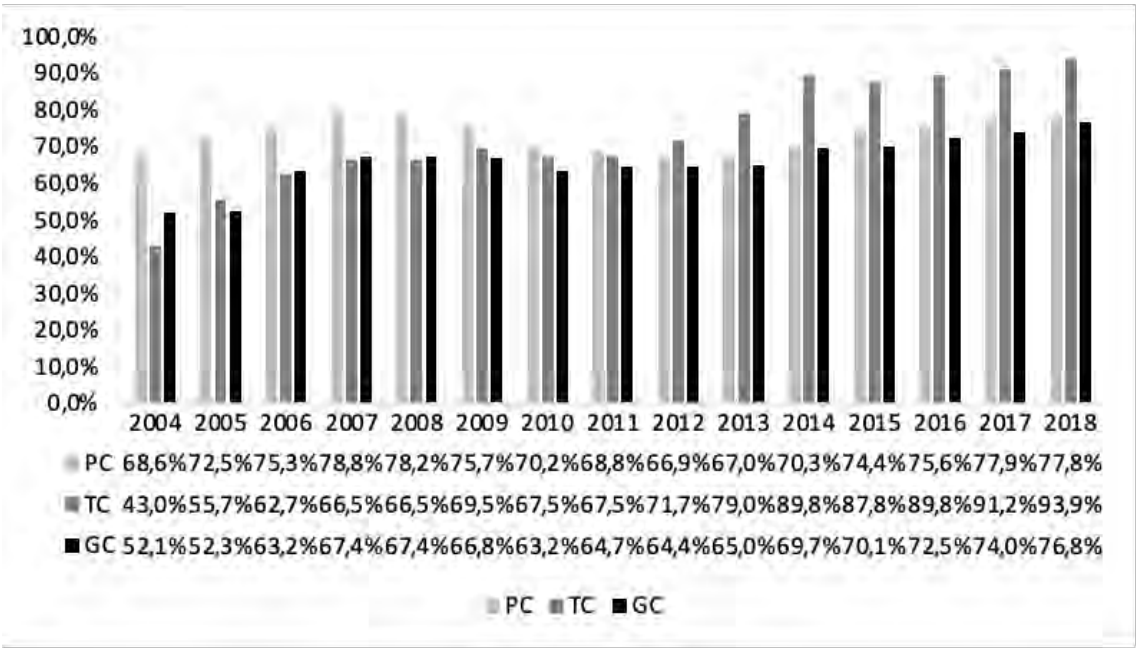

Figure 2. Professional Courses (PC), Technical Courses (TC), and General Courses (GC) - completion rates (Source: Directorate-General for Education and Science Statistics, n.d.a)

Student attendance in General Courses in 2018/19 weighted 52%, corresponding to the total number of students (399,386) (Table 3), while the number of students enrolled in Professional Courses stabilized at 29%. These two education pathways represented 81% of the total number of students *enrolled in secondary education. (Table 3).*

Table 3. Students Enrolled in Secondary Education in Portugal by Education and Training (Source: Directorate-General for Education and Science Statistics, n.d.b)

Education and Training Offer	**2004/05**	**%**	**2008/09**	**%**	**2012/13**	**%**	**2017/18**	**%**	**2018/19**	**%**
General Courses	205 671	54	195 330	39	201 118	50	204 713	51	207 684	52
Technological Courses	59 474	16	20 212	4	5 976	2	3 612	1	3 570	1
Professional Courses	36 765	10	93 438	19	115 885	29	116 722	29	115 981	29
Recurrent	69 970	19	18 208	4	6 970	2	7 589	2	7 078	2
Others	5 016	1	171 139	34	68 498	17	68 414	17	65 073	16
TOTAL	376 896	100	498 327	100	398 447	100	401 050	100	399 386	100

The data in Table 3 shows that the general courses always maintained over the period considered (2004-2019), except for 2008/09, a weight greater than 50%. The expansion of vocational courses in secondary schools, replacing technological courses, caused their weight in the offer of education and training to rise from 10% to a stabilized figure of 29%.

European Union

Portugal has been a full member of the EU since January 1, 1986. With its accession, its entire political, economic, and social organization began to be structured to be able to fit into a more general framework, which was already in force in the EU. Educational policy in Portugal, which prevailed until 1986, underwent, from that date on, a particular dynamism to be able to follow the framework already in force in the EU's educational policy.

To be able to compare and evaluate educational policy worldwide, as early as 1970. The United Nations Educational, Scientific and Cultural Organization (UNESCO) created the International Standard Classification of Education (ISCED). The current version (ISCED 2011) includes 8 levels for the various fields of education (from pre-primary to higher education), with ISCED 3 corresponding to secondary education with two categories: general secondary education and technical secondary education, which prepares students for a direct entry into the job market with a professional qualification.

Thus, using the ISCED 3 it is possible to compare and evaluate various fields of education, namely technical secondary education in several countries. The vocational education offer in Portugal, which 2004/05 (the year in which professional courses were created in public secondary schools) had 36,765 students, increased to 115,981 students in 2018/19 (table 3), in a progression of appreciation and acceptance of this type of teaching in the Portuguese educational system. However, in 2018, only four countries (Germany, Spain, France, and the United Kingdom) already

represented 49.2% (11.4%+8.1%+12.9%+16.8%) (Table 4), almost half of all students enrolled in secondary education. In general, in secondary education, the weight was 54.1% (11.7%+9.9%+14.9%+17.6%), while in professional education only 43.3% (11.2%+ 6.1%+10.6%+15.4%) (Table 4).

Germany is considered, according to (Deissinger, 2015), a "country of learning", namely because it has a strong dual vocational education system, as well as Switzerland and, to a lesser extent, Austria, as they overvalue training skills, where initially professional training is the fundamental basis for building a career oriented towards filling secondary-level jobs. Although professional education in Portugal has been growing gradually, it represents, however, only a weight 1.6% of the EU28. Compared to countries with more tradition in this type of training (excluding Germany), Switzerland and Austria have higher values, respectively 2.2% and 2.3% (Table 4).

Table 4. Students Enrolled in Secondary Education - General(G) - Vocational (V) (2018). (Eurostat, n.d.a)

Groups/Countries (2018)	**Isced11 (Upper Secondary Education) (G)**		**Isced 11 (Upper Secondary Education) (V)**		**Isced 11 (Upper Secondary Education) Total**	
	(unities)	**(%)**	**(unities)**	**(%)**	**(unities)**	**(%)**
EU (28 Countries)	11.108.693	100	10.096.493	100	21.205.186	100
Germany	1.297.442	11.7	1.126.502	11.2	2.423.944	11,4
Spain	1.097.011	9.9	611.772	6.1	1.708.783	8,1
Switzerland	128.206	1.2	224.541	2.2	352.747	1.7
Austria	109.278	1.0	236.857	2.3	346.135	1.6
France	1.658.242	14.9	1..072.405	10,6	2.730.647	12,9
Netherlands	269.650	2.4	560.509	5,6	830.159	3,9
Portugal	241.796	2.2	159.254	1.6	401.050	1.9
United Kingdom	1.955.416	17.6	1.558.556	15,4	3.553.972	16,8

The United Kingdom, and France have quite significant figures compared to the other EU28 countries, respectively 15.4% and 10.6% (Table 4). Their VET education systems were developed based on competency-based approaches, taking into account their existing institutional structures and work processes. They differ from the dual model adopted especially by Germany, Switzerland, and Austria, but also among themselves. While in France the model is based on competencies linked to knowledge, in the United Kingdom it is based on competencies linked to the performance of fragmented tasks. The sense of competence in France is multidimensional, identified on the one hand by the integration of practical and theoretical knowledge and, on the other hand, by personal and social qualities. While in the United Kingdom, competence strictly refers to well-defined fragmented tasks, resulting in functional employability oriented towards a low-skilled job, in France it is identified by the multidimensional individual development both as a citizen and as a worker (Brockmann et al., 2008).

Portugal, in 2018, had approximately 400 thousand students studying in secondary education, of which 39.7% were in secondary vocational education (Figure 3). Compared to the average of EU27 countries, Portugal ranks lower than the average in terms of the proportion of students in vocational courses in secondary education. Finland has the number of students who continue their studies the most after completing the 9th year of secondary vocational education (71.6%), with Cyprus being the country with the lowest (16.7%), (Figure 3).

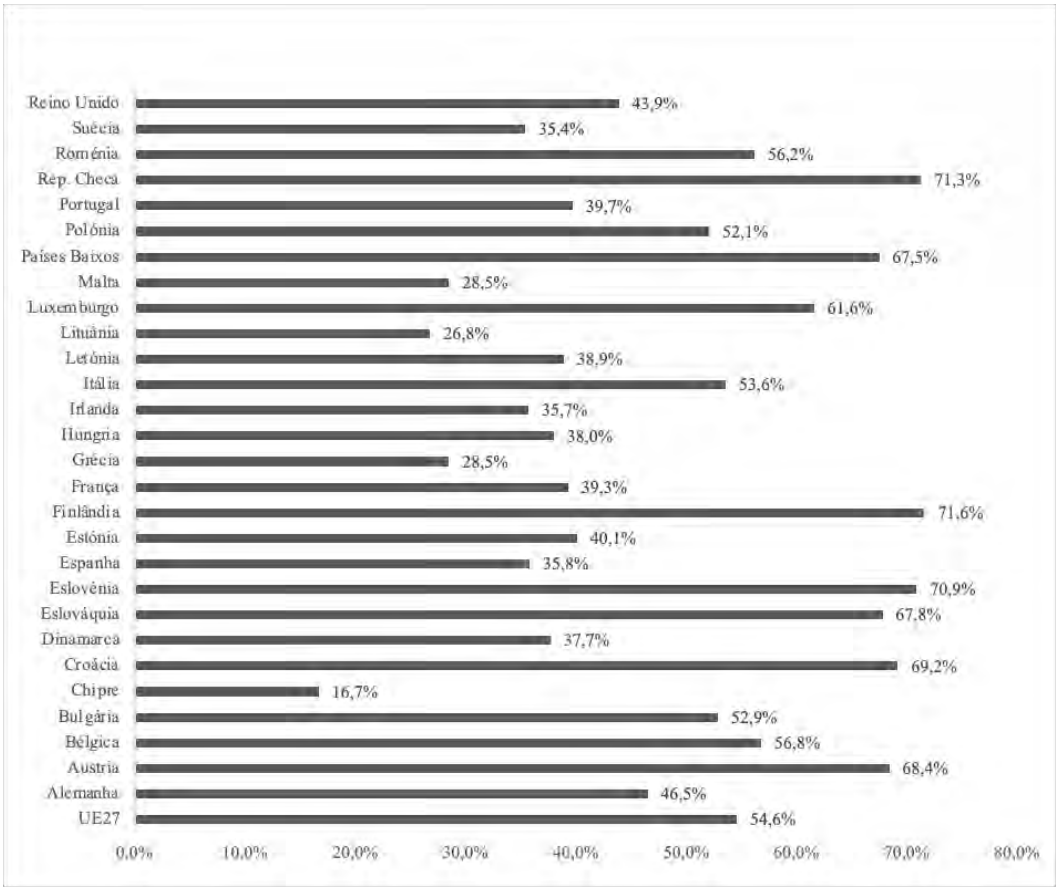

Figure 3. Students in Secondary-Level Vocational Courses in the EU in 2018 (%) (Eurostat, n.d.b)

Vocational programs for secondary education enshrine specific knowledge and skills relevant to the performance profile of students for future employment. They include school-based (theoretical and practical) curriculum programs with work experience (e.g., internships) or dual-system education programs through school- and work-based curricula, as shown by the percentage distribution of students in the type of professional program in the countries indicated in 2018 (Table 5).

Table 5 – Distribution of secondary vocational education students by type of professional program (2018). Organisation for Economic Co-operation and Development (2020).

Countries	**Weight of work component in total duration of school-based and work-based programs (%)**	**School-based programs (%)**	**School-based and work-based programs (%)**
EU (average of 23)	*	62	38
OCDE (average)	*	66	34
Denmark	*	0	100
Portugal	41 a 47	86	14
Sweden	60	94	6
Finland	80 a 90	86	14
Poland	46	86	14
France	62 a 75	75	25
Austria	80	55	45
United Kingdom	< 80	52	48
Norway	50	29	71
Turkey	50	22	78
Germany	60	11	89
Switzerland	80	10	90
Netherlands	70	0	100
Latvia	50	0	100

* No data available.

In school-based programs, instruction takes place (partially or exclusively) in school institutions, which include special vocational education development centers administered by public or private authorities and in specialized enterprise-based learning centers when qualified as educational institutions. Plans may include a practical on-the-job training component.

Programs are classified as school-based when at least 75% of the curriculum is developed in a school environment (covering the entire educational component) or through distance education. They are classified by combined plans (school- and work-based) when less than 75% of the curriculum is delivered in the classroom or through distance education. The cut-off value of 75% is a reference that can be operated differently in different countries.

In Organisation for Economic Co-operation and Development (OECD) countries, on average, about a third of secondary vocational students attend combined programs at school and work, although the composition and weight of these components differ widely between them. The proportion of students in these training plans exceeds 89% in Germany, Denmark, Latvia, the Netherlands, and Switzerland (Table 5). However, in most countries where school-based programs predominate, this does not mean that vocational education excludes the work-based component, as is the case, for example, in vocational education in France, where this component represents 17-23% of the total duration of the plan (OECD, 2020).

Some countries have school-based VET models that occupy a substantial part of secondary education, as is the case of some European countries, mainly the Scandinavian ones. These school-based models can also take a more technical and specific form, disconnected from upper secondary education, and aimed directly at technical courses from technical education institutions.

The Dual Systems, although very similar in their training objectives, nevertheless present different particularities, namely in the way and duration of the school training components and the work context, as can be seen, for example, in Germany and Switzerland, references in this type of education. In Germany, the Dual System justifies, among others, a low rate of unemployment among its young people and the training of qualified labour (Ministry of Foreign Affairs, 2016, p. 26), which shows the success of this modality in its education system. Also in Switzerland, around two-thirds of its young people use the Dual System to combine theoretical knowledge with experiences gained on the job (Ministry of Foreign Affairs, 2016, p. 410), thus facilitating access to future employment.

Teachers' Narratives and Testimonies of Portuguese Students About Professional Courses

The methodology adopted to obtain the narratives and testimonies of students and teachers about the professional courses was descriptive and not systematic, comprising the analysis of qualitative data accessible in other studies, namely scientific ones, whose contributions provide clues about the situation and characteristics of professional education in Portugal. In a study carried out in three public high schools of reference in the metropolitan area of Porto (Portugal), with professional education, testimonies from students and bibliographic narratives of directors of professional courses were collected about their functioning (Pinto & Delgado, 2014). Regarding students, it was found that their origin recorded a high rate of retention in the previous cycle of studies and that there is a close relationship between the frequency of this type of education and their social origin. The teachers pointed out the existence of a reductive vision of the development by competencies of the students, with direct implications in the practices of teaching and evaluation in a modular structure, since it is not in line with the traditional testing applied only with written and oral tests (Pacheco, 2011).

Another study highlighted that students of this type of education are unmotivated to learn and with insufficient professional guidance (Martins & Martins, 2015, pp. 64-66). As a rule, the psychology and vocational guidance services of schools advise students to apply for vocational education when they have a history of retention in basic education, show a lack of (academic) work habits, or do not plan to continue their studies.

Finally, in another study carried out in two public secondary schools in the Porto metropolitan area, testimonies were collected about the functioning of professional courses, from students (questionnaires) and directors (narratives) (Pinto et al., 2019, p. 50). Students expressed that their attendance in vocational education is a leitmotif that allows them not only to complete their study cycle with professional skills but also to have better access to the job market due to the technical and practical nature of the curriculum. The course directors considered that the disciplinary contents are too theoretical and extensive, but that these courses provide students with adequate knowledge and skills for the successful exercise of a profession. They also consider that the implementation of vocational education is part of a global strategy for education and training that has been progressively approaching the concept of dual education. Practical training in a work context is far from being achieved in terms of training time compared to teaching in a classroom context.

Most course directors stated that they do not evaluate the various professional courses in the same way, considering them very different from each other, namely in their nature and in the specificity of the training area, and also in the skills they provide. They mentioned, on the other hand, that the vast majority of students, despite their heterogeneity in their school career, in the number of retentions, age, interest, motivation, etc., have a favorable opinion of the

professional course they attend, because of the load hours in the theoretical and practical components of the technical areas that motivate them, including the model of evaluation by modules. Constraints related to the way professional education is organized in Portugal were also mentioned, namely, in the way companies/institutions responsible for training in the work context behave. They state that only a small number hire students after completing practical training in a work context, although many of these need professional technicians. Either because they don't want to hire or because they can't pay. There is no continuous accountability for vocational training.

Finally, some teachers mentioned that in public schools, many teachers sometimes view the work to be carried out in the professional education of students with some reservations. They do not understand the importance of this type of teaching or how it should be provided at school. Many of the surveyed course directors also mentioned that they do not evaluate the different professional courses in the same way, considering them very different from each other, namely, in their nature and specificity of the training area and in the skills they provide.

The Global Impact of the COVID-19 Pandemic on Vocational Secondary Education

The public health and economic crisis caused by COVID-19 abruptly and suddenly interrupted the "modus vivendi" of countries worldwide, exponentially amplifying social weaknesses and inequalities, particularly in the area of education. In mid-February 2020, the People's Republic of China closed its schools to try to prevent the spread of the disease, identified for the first time, but which became a reality throughout the world. It only took one month for all 46 member and partner countries of the Organization for Economic Co-operation and Development (OECD) to also opt for the same solution, closing all or a significant part of their education systems (Schleicher, 2020, p. 13). Most of these countries did so for three months, including Portugal, which was even the country that adopted the most severe measures, although it was not the one that closed the most during the pandemic.

According to the OECD's annual report, dedicated to analyzing education systems, 24 of these countries suspended face-to-face classes for 12 to 16 weeks, 13 kept students away from schools between 16 and 18 weeks, and the People's Republic of China for 5 months. Portugal is included in the second group, with schools closing on March 16. The vast majority of them maintained this situation until the end of the school year, except for students in the 11th and 12th years of general secondary education courses. Iceland and Sweden were the exceptions to the rule, as they maintained teaching, for the youngest, through face-to-face classes without interruption (Schleicher, 2020, p. 13).

OECD vocational education systems have been affected in their functioning in different ways. In particular, they developed training in the context of social restrictions of distance and displacement, how they were forced to anticipate and adapt to what could be a significantly different labor market shortly. In about two-thirds of countries, the closing days were the same between the general upper secondary and vocational education systems. In the remaining one-third of countries, enrollment in vocational secondary education was lower than in the general secondary education system. From Table 6, the case of the Netherlands stands out, where VET was never fully closed, while general upper secondary education was for approximately 40 days (OECD, 2021a, p. 5).

Table 6. Closing Days of Apprenticeships (Except School Holidays, Holidays, and Weekends) When High Schools Were Fully Closed in 2020, Vocational Programs vs. General Programs. Organisation for Economic Co-operation and Development (2021a).

Countries (2021)	**General upper secondary (Number of instruction days)**	**Vocational upper secondary (Number of instruction days)**
OECD (average)	60	60
Germany	20	20
Spain	40	40
Switzerland	60	60
Austria	80	80
France	40	40
Netherlands	40	0
Portugal	40	40
England	40	40

The digital learning environments used to mitigate the absence of face-to-face classes posed many limitations and difficulties in practice-oriented teaching, especially in VET. They are better suited for general education learning than professional practice-oriented curriculum components, which tend to be their main active value. In this perspective, the total or partial closure of classes in educational institutions where VET was taught in 2020/2021, signaled a lesser legitimacy for teaching VET, through distance learning. Also, the changes and alterations in the evaluations and exams of the different countries were felt differently. For example, in Norway, most exams were canceled in the academic years 2019/2020 and 2020/20. Only took a few exams in VET subjects (OECD, 2021a).

In a survey carried out by the OECD (2021b, p. 3), the extent of missed learning opportunities was found to be significant in many countries. On average, across the 30 countries observed with comparable data for all levels of education, upper secondary schools recorded an extension of missed opportunities for 101 days between 1 January 2020 and 20 May 2021. Germany implemented strict rules in 2021 for all schools to adopt blended learning protocols when incidence rates exceed 100 days in a region (OECD, 2021b, p. 4).

The usual teaching practices developed in the classroom and the work context were thus replaced by distance learning modalities, through online platforms, encouraged and implemented by various communication practices (Zoom, Microsoft Planner, WhatsApp, Google Meet), although teachers and students already use some information and communication technologies regularly, in certain learning environments. However, its monitoring still represents a generational gap, as students emerge as "digital natives" and teachers emerge as learners in the use of these new technologies, causing some kind of symbolic reversal.

School institutions, teachers, and students have adapted and accommodated themselves in different ways to use these media, according to their organizational resources and scenarios (Derivry, 2020). Although significant for all educational agents, the disturbance mainly affected the most disadvantaged students, those who do not have access to digital resources.

In some OECD countries, the component based on work practices, in the year 2019/2020, accounted for more than 60% of total learning time, with this number rising to more than 70% in 2020/2021. Only Brazil and Portugal did so for two academic years (OECD, 2021a, p. 8). In these courses, although the theoretical component of the curriculum can be taught remotely, the practical and experimental contents cannot be due to the lack of contact with tools, materials, equipment, and machines. As an example, we refer to interns placed in catering or tourism companies, sectors that have stopped or reduced their activities (Schleicher, 2020, p. 23). Likewise, all vocational education courses, which combine classroom teaching with on-the-job practices, in which 25 to 90% of the curriculum is organized around work experience, were particularly affected by the closure of companies or the downsizing of activities.

In light of the COVID-19 pandemic, some countries have had to find alternatives to assessments that would normally take place in the workplace. Finland, for example, has amended its domestic legislation so that practical tasks other than the usual ones, as long as they are similar, could be identified as real work situations and processes. On the other hand, Switzerland kept the work-based assessment process almost unchanged, only changing the school-based components (OECD, 2021a, p. 13).

The crisis resulting from COVID-19 was particularly felt by VET teachers, who had to resort to participating in learning activities outside their working hours, increasing the conflict in their teacher development process (OECD, 2021a, p. 20). In this context, the educational model will have to be structured on new proposals and organizational principles, such as example duration of the school year; curriculum flexibility; reconfiguration and adequacy of the educational action; identification of the most appropriate technological infrastructures; definition of what can or cannot be taught in an online environment; adoption of new pedagogical and professional training (Kaden, 2020, p. 12). Teachers will be faced with a new educational scenario emerging from the COVID-19 pandemic, which will result in a post-pandemic school (Nóvoa & Alvim, 2020, p. 38).

The educational process will undergo a harmonization of its daily practices in face-to-face, synchronous and asynchronous classes, standardized and articulated to other scenarios, which correspond to new contexts and environments, with reformulated initial or advanced teacher training, through the construction of the "bildung teacher" (Derivry, 2020). The unpredictability and uncertainties established in school activities and teachers triggered an ambivalent reaction because they increased nervousness and decreased the questioning that would be possible in normal teaching time, with the increase in the level of insecurity (Oesselmann, 2020, p. 3).

In Portugal, the COVID-19 pandemic demanded an expeditious response from school institutions in the face of school closures, not least because a remarkable inequality of access to the essential electronic means of support for distance teaching and learning (internet and computer equipment) was quickly observed (Fernandes et al., 2021, p. 7). To this end, on March 27, 2020, the document "Roadmap - Guiding Principles for the Implementation of Distance Learning (E@D) in Schools" was published, which included a set of guidelines and recommendations to be adopted by schools to organize the teaching and learning system. At the same time, as of April 20, 2020, a set of educational content was made available on one of the public TV open signal channels (RTP Memória) with the official name of #EstudoEmCasa (Fernandes et al., 2021, p. 8).

As part of these measures, the educational institutions would define their "Distance Learning Plan'' (E@D Plan) to be in force during the 3rd period of the 2019/2020 school year, having as reference the Roadmap (E@D), complying with the following assumptions: "1 - Mobilize for change - involving the educational community, calling for the collaboration of partners and the constitution of a support team to respond to emerging issues; 2 - Communicate in a network - establishing a communication circuit aimed at those involved in the school community; 3 - Decide on the E@D model - organizing pedagogical teams, distance work modes and synchronous sessions; 4 - Collaborate and articulate - to promote mutual assistance between teachers; 5 - Teaching Methodologies - appealing to an active role of students in

the search for new learning; 6 - Select E@D technological means - most appropriate for distance learning, exploring technological means previously used by teachers and students and providing technical and pedagogical support to teachers; 7 - Caring for the school community - promoting the emotional well-being of students and preventing isolation situations through mutual assistance; 8 - Follow up and monitor ways of monitoring the E@D Plan" (Presidency of the Council of Ministers, 2020).

The Directorate-General for Education also made available a website10 to support schools, which provided various support materials (resources, tools, sharing of practices, FAQ, documents, etc.), and a partnership was also made with Universidade Aberta, a course called "Training for Digital and Network Teaching", to provide support in terms of the development of distance learning to all schools that expressed an interest.

Classes for the 3rd period of the 2019/20 academic year in Portugal, starting on April 14, without face-to-face activities, remained in the distance learning mode, similar to the last two weeks of the 2nd period. Students in the 11th and 12th years of general secondary courses did so with face-to-face classes, complying with the protection measures considered necessary, intending to prepare them for the national exams for access to higher education (Presidency of the Council of Ministers, 2020).

The pandemic situation, in addition to causing the total closure of Portuguese primary and secondary schools between 47 and 62 days in 2019/20 and between 25 and 45 days in 2020/21 (OECD, 2022), caused the closure of many companies, including those involved in training vocational education students.

About 40% of students in all secondary education attended vocational courses in Portugal, which was the most affected by the pandemic. Compared to general courses, they suffered a double disadvantage with social distancing and the closure of companies, as they could not attend practical classes and professional internships. In its genesis, the practical teaching of professional courses involves workshop experiences, in the laboratory or in the workplace, specific equipment, and the supervision of teachers to ensure that tasks are performed correctly.

The professional aptitude tests of the professional courses also started to be presented at a distance, through videoconference, in a global educational process that was affected by the conditions hitherto unknown and that exposed the poor adaptation that the educational system had to deal with Programa Ocupacional Capital Humano [Human Capital Occupational Program] (2020). More recently, a new framework has emerged in Portugal. The first period of the 2020/2021 academic year ran from September to December without interruption. However, at the beginning of the second period, as of 22 January, the closure of schools and educational establishments in Portugal was declared, and teaching activities were suspended, affecting their normal course (Presidency of the Council of Ministers, 2021a), which had a particular impact on VET.

A new school timetable was also approved (Presidency of the Council of Ministers, 2021b) with the 2nd and 3rd cycle classes reopened from April 5th and April 19th for secondary education. In the 2021/2022 school year, the Christmas break period has been extended by one week, until January 10th (Ministry of Education, 2021).

Discussion

Vocational Education in Portugal and the EU

Vocational education in Portugal, although approaching the global concept of dual education, through on-the-job training (internship), is far from training in the classroom, with an impact on students in their future integration into the labour market, which does not happen in other education and vocational training courses. As, for example, German vocational education is considered a country of learning (Deissinger, 2015), because it has a robust system of education in a work context. But also, as in professional education in Switzerland and Austria, both value the training of skills to fill jobs.

The research carried out suggests that professional development in Portugal can also provide students not only with the appropriate knowledge but also with the skills considered adequate for the exercise of a profession. Fundamentally, by exercising the technical training component of the curriculum and training in a work context. This is a motivation closely related to the orientation of this type of teaching towards the labour market, due to the technical and practical nature of the curriculum and the educational success. The number of students in vocational education in Portugal remains below the EU average. Total enrollments saw a slight decline in 2018, representing 39.4% of all secondary school students, compared to 54.6% for the EU27 average (Figure 3). However, Portugal intends to increase the attractiveness of internships by promoting greater involvement of companies in training.

Opinions from students of Vocational Education in Portugal and the EU

The main motivation of vocational education students in Portugal to attend this type of education is closely related to the fact that it allows them to more easily complete the 12th year (compulsory education) with the professional skills appropriate to the labor market. They also referred to their encouragement linked to the nature of the technical-scientific contents (theoretical and practical) of the curriculum, as enhancers of good learning and educational success (Pinto et al., 2019). They reiterate, even though professional courses provide them with the knowledge and skills

appropriate to a technician at level 4 of the NQF, which are fundamental for the successful exercise of a profession and the possibility of pursuing higher-level studies, why do they have a favorable opinion on this teaching modality.

Opinions from teachers of Vocational Education in Portugal

The directors of the professional courses pointed out that the internships carried out in different situations by the students distanced themselves from the professional nature of the respective courses. In this context, in his opinion, they run counter to the main objective related to the period of practices carried out in companies, in conjunction with schools, which promote professional education, aimed at the essential purpose of preparing for insertion in the world of work. On the other hand, the companies registered great satisfaction with the work carried out by the students during the internship. Interestingly, the teachers, from the scientific training component, highlighted the lack of motivation, capacity, and responsibility of the students, in the classroom context, but already in the training in the work context, they exhibited a professional profile that was often creative, committed, competent and autonomous (Pinto et al., 2019). Because of the divergence in the record of opinions expressed by teachers, students, and entrepreneurs, on the functioning of professional courses in Portugal, it will be imposed on those who are entitled to contemplate more adjusted rules that can somehow improve their functioning.

Conclusion

Vocational Education courses in Portugal emerged in 1989 to fill gaps in the training of qualified intermediate technical staff and to combat the high failure rates that were recorded in upper secondary education courses because there was a large gap between the offer of education and the expectations from the students. Because of the COVID-19 pandemic scenario, exceptional and temporary measures were applied in Portugal in the area of education to mitigate the effect of the closure of schools and readjust the teaching-learning process.

Vocational courses were particularly penalized by the emergence of the COVID-19 pandemic, as social distancing requirements, closures, and the economic difficulties of companies made learning in a school and work context difficult (Schleicher, 2020, p. 23). Vocational education resorted to simulated practice to replace on-the-job training to allow students to complete the educational process in good time.

The shift to distance learning was rapid, pre-existing social and digital differences deprived disadvantaged groups of learning, increasing their risk of exclusion. The global educational model was affected by the emergence of hitherto unknown conditions that exposed the poor adaptation that education and training systems had to deal with.

Recommendations

The realization of this study on Vocational Education in Portugal, which included several curricular designs, has recently undergone some forced readjustments with the COVID-19 pandemic, opening a window of opportunity for changes to the current development model, particularly how it organizes, transforms, and influences the entire curricular component directly related to the world of work.

Limitations

Although this study, whose focus was Secondary Vocational Education & Training in Portugal, also considered other European Union countries for comparative analysis. Not all countries were considered, only those that, in our opinion, have more identity, due to their proximity and influence, with the educational field of Portuguese professional education.

Authorship Contribution Statement

Silva: Conceptualization, data acquisition, writing, editing/ Data analysis. Pinto: Design, Material support, drafting manuscript, editing/interpretation.

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