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Risk Assessment of Dual Vocational Educational Training: The Case of Andalusia

Evaluación de los riesgos de la Formación Profesional Dual: el caso de Andalucía

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Abstract

The progressive implementation of Dual Vocational Training in Spain since 2012 and in Andalusia since the 2013-2014 academic year, has been accompanied by interesting debates that question its revulsive character for the VET system in this country and that slow down its progress towards a key type of studies to generate young talent in the Spanish context. In the Andalusian context, this evaluative study aims to find out, from the perspective of the teaching staff involved in the dual model, what risks certain internal and external factors linked to Dual VET in Andalusia pose for the sustainability and effectiveness of the model. The extent to which the degree of urbanisation, experience in dual training and participation in management may be conditioning this opinion is explored. A total of 1445 teachers participated and their opinions were collected through a questionnaire designed and validated for this research. The analyses carried out highlight as risks to the sustainability of Dual Vocational Training the decrease in teacher participation in this model, the loss of interest of the centres in it and the continuity of dual projects; with the interest of companies in the competence profile of graduates being the greatest risk to the effectiveness of the model. For teachers in rural schools, for those who have participated in company prospecting tasks and for those with little experience in dual education, these are the greatest threats to the dual system.

Keywords: Dual vocational training; Evaluative research; Risks; Good practices; Teachers; Dual vocational training.

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Resumen

La progresiva implantación de la Formación Profesional Dual en España desde el año 2012 y en Andalucía a partir del curso académico 2013-2014, ha estado acompañada de interesantes debates que cuestionan su carácter revulsivo para el sistema de FP en este país y que ralentizan su avance hacia una tipología de estudios clave para generar talento joven en el contexto español. En el marco del contexto andaluz, se presenta este estudio evaluativo que tiene como objetivo conocer, desde la perspectiva del colectivo docente implicado en el modelo dual, cuáles son los riesgos que para la sostenibilidad y eficacia del modelo, suponen ciertos factores internos y externos vinculados a la FP Dual en Andalucía. Se explora en qué medida el grado de urbanización, la experiencia en formación dual y la participación en gestión pueden estar condicionando esta opinión. Han sido un total de 1445 docentes participantes cuyas opiniones se han recogido a través de un cuestionario diseñado y validado para esta investigación. Los análisis realizados destacan como riesgos para la sostenibilidad de la FP Dual la disminución de la participación del profesorado en este modelo, la pérdida del interés de los centros en el mismo y la continuidad de los proyectos duales; siendo el interés de las empresas en el perfil competencial de los egresados el mayor riesgo para la eficacia del modelo. Para el profesorado de centros rurales, el que ha participado en tareas de prospección de empresas y para el que tiene poca experiencia en dual, estas son las grandes amenazas del sistema dual.

Palabras clave: Formación Profesional Dual; Investigación evaluativa; Riesgos; Buenas prácticas; Profesorado

Introduction and objectives

The incorporation in 2012 of the dual model into the Spanish educational scenario, within the framework of RD 1529/2012, was a great boost for the VET system in this country; not only because of its international recognition as one of the driving forces in economic and social growth, given its capacity for innovation and generating competitiveness (Chankseliani and Anuar, 2019; Gessler and Siemer, 2020) or for its valuation as a functional transition model for the majority of youth leaving school (Deissinger, 2019), but also for its consideration as a fundamental study typology to "generate talent and technology, which are the key elements for the competitiveness of companies in the context of Industry 4.0" (Moso, 2018, p.11).

What was initially proposed as a firm response to the high rates of youth unemployment (around 50%) and educational dropout (over 25%) in 2012, soon became a cliché subject to criticism from the business, political, trade union, educational and scientific spheres. Criticism was initially based on the lack of detailed regulations, the lack of resources due to the economic crisis and the lack of definition of the role of the public administration (Barrientos et al., 2019), which led to the view that it was a good idea, but possibly poorly implemented (Marhuenda et al., 2017).

The low level of political and administrative consensus reached, the absence of a prior diagnosis related to the viability of its implementation, the lack of negotiation of training content and conditions, the mismatch with the business fabric, the legal diversity of the regulations, the lack of training proposals aimed at teachers and company tutors, and the exportation of the German model (a country with a long tradition of work-linked training) without a viability study, among others, have been some of the reasons for this, the lack

of training proposals aimed at teachers and company tutors or the exportation of the German model (a country with a long tradition in work-linked training) without a viability study, among others, have been some of the criticisms present in the debates that have accompanied this type of VET in Spain since its origin (Bentolila and Jansen, 2019; Echeverría, 2016a and 2016b; Echeverría and Martínez-Clares, 2018; Igartua, 2017; Martín-Artiles et al., 2020; Martínez-Morales and Marhuenda, 2020; Pineda-Herrero et al., 2019; Rauner, 2013; Šćepanović and Martín-Artiles, 2020; Vila and Chisvert, 2018; Virgós et al., 2022; among others).

Despite these controversies and the limitations of its implementation (size of companies, collaborative culture, gender bias, absence of some professional families, etc.), this type of VET has carved out a niche in the national education system and although its presence is still a minority (around 4% of students enrolled in VET and 30% of VET centres participate in dual education), its continued growth since its implementation in the 2012 academic year augurs a challenging future scenario (Gamboa and Moso, 2022).

Currently, Dual Vocational Training in the education system is presented as a particularly effective training option to prevent school dropout due to its motivating and facilitating nature for graduates' insertion in the labour market (Chisvert et al., 2021); for companies it represents a possibility for renewal and intergenerational learning and a commitment to environmental sustainability as it allows for the introduction of new skills and values related to issues such as the circular economy and skills for environmental sustainability, among others (Cedefop and OECD, 2022; European Commission, 2022; Hemkes and Melzig, 2021, cited in Gamboa and Moso, 2022).

The study carried out by the Berstelmann Foundation (2021), which analyses the level of achievement reached by Dual VET in our country, of the 14 quality criteria included in the European Framework for Quality and Effectiveness in Learning (Council Recommendation 2018/C 153/01), describes good practices and paints a rosy picture of a national dual system, but not without barriers that, if not addressed, could jeopardise the success of this VET system. Therefore, and without losing sight of the fact that the degree of implementation of Dual VET is different in each Autonomous Community (C.A.), it is striking that, despite the government's commitment to this type of VET, in no C.A. is there an official body responsible for monitoring its quality, nor is there a formal procedure for accrediting companies or assessing their training capacity.

Andalusia joins the Dual VET in the 2013-14 academic year also as a measure to try to remedy youth unemployment. As pointed out by the European Commission (2020), 55.5% of Spanish youth aged 15-24 and 66% in the Andalusian region were unemployed in 2013.

Dual VET in the Andalusian education system is structured in training projects that the educational centres design together with the collaborating companies and submit for approval or renewal to the call for applications launched annually by the Andalusian government on the basis of the provisions of RD1529/2012 (BOE, 2012). These projects are developed within the Basic, Intermediate and Higher Vocational Training Cycles, offering dual places in them or the whole cycle.

As can be seen in Table 1, in Andalusia there has been a considerable increase in the presence of this training modality. Currently, this offer covers 24 of the 26 professional families included in the National Catalogue of Professional Qualifications, with Glass and Ceramics and Arts and Crafts being the only two families not represented in the dual offer.

Table 1

Dual VET offer in Andalusia.

Course	Projects	Students	Centres	Companies
2013-2014	12	207	10	87
2014-2015	41	536	26	273
2015-2016	110	1512	76	1053
2016-2017	194	2293	120	1543
2017-2018	321	4451	168	2832
2018-2019	408	6475	203	3282
2019-2020	528	8349	259	5988
2020-2021	580	11952	267	6433
2021-2022	664	12623	298	7217
2022-2023	772	14359	332	11806

Source: Junta de Andalucía (2023).

Since its inception, this type of VET in Andalusia has generated the same debates as at national level. However, the demographic and educational conditions and the characteristics of the Andalusian productive and business fabric have turned these controversies into obstacles that question the sustainability of the dual system and which revolve around aspects such as the governance model, financing, public-private collaboration, the involvement of companies, regulatory standards, the supply-production sector relationship, the capacity of the model to respond to the requirements of the Andalusian labour market and the relevance of the graduate profile (Pozo-Llorente and Poza-Vilches, 2020a; Pozo-Llorente and Poza Vilches, 2020b).

From the conviction that sustainability (understood from a social perspective, as the capacity of the Andalusian Dual VET model to be maintained in the long term without suffering an alteration that endangers its own principles) and effectiveness (understood as the capacity of the dual system to achieve its objectives) are key criteria for the quality of any educational system, the aim of this study is to find out, from the perspective of the teaching staff involved in the Andalusian dual model, what are the risks to the sustainability and effectiveness of this model posed by certain threats (external factors) and weaknesses (internal factors) that have accompanied it since its implementation in Andalusia. On the other hand, with this study we aim to provide arguments that will enable progress to be made towards the successful implementation of Dual Vocational Training in this Community and to contribute to educational renewal through research practice in the terms proposed by Aguado (2023), making the teaching staff the main actors in this process.

Method

This article reports the descriptive diagnostic study carried out within the framework of a broader evaluative research carried out in the Andalusian Autonomous Community². As Pérez-Campanero (2018) points out, the diagnostic approach is key to "start from real data and know where to direct efforts" (p.3) and, therefore, in this case, it is the most suitable approach to gather the opinions of the teaching staff on the risks of Dual VET and to move towards proposals for improvement to counteract these risks.

This is a population-based study; access to the population was carried out in collaboration with the General Secretariat for Education and Vocational Training of the Department of Education and Sport of the Andalusian Regional Government (currently the Department of Educational Development and Vocational Training) which, following the guidelines of the research team, informed the management teams of the educational centres in which Dual VET courses are taught in the Autonomous Community of Andalusia of the study, who, after informing their teaching staff involved in this type of VET, sent them the questionnaire.

Population and Sample

Almost 70% of the teaching staff (1,445) who taught Dual VET during the 2019-20 academic year (2,164) took part in this study.

56.5% of the teachers participating in the questionnaire were men (815) and 43% (620) were women, with a distribution by province that exceeds the minimum size necessary to have a representative sample (confidence level of 95% and an error of 5%). 0.5% of respondents did not give their sex. The majority are in the age range 36-55 years and their contractual status is indefinite.

The people surveyed teach in training cycles belonging to the 23 professional families present in Andalusia in the 2019-20 academic year.

Several socio-demographic variables have allowed us to characterise the sample under study; in this article we focus on the degree of urbanisation, professional development and professional profile.

In order to characterise the surveyed teachers according to the population density of the municipality in which the educational centre is located, the definition and values of the variable "degree of urbanisation" provided by the Andalusian Institute of Statistics and Cartography (IECA) for each municipality have been taken into account, referring to the intensity of settlement in the areas where the population resides. Thus, this study has considered the three degrees of urbanisation identified by the IECA in 2018:

- 1) "Cities" or "densely populated areas" means municipalities where at least 50% of the population resides in cells classified as urban centres.
- 2) "Intermediate density areas" means those municipalities where less than 50% of the population resides in rural grid cells and less than 50% of the population in

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cells classified as urban centres.

- 3) "Rural areas" or "sparsely populated areas" means municipalities where at least 50% of the population resides in rural grid cells.

The Andalusian population is distributed in such a way that 49.4% of the population resides in cities, 39.1% in intermediate density areas and the remaining (11.4%) in municipalities classified as rural areas. This proportion is maintained by the surveyed teachers; thus, the majority are teachers in schools located in the city (60.57%), 36.38% are teachers in schools located in intermediate density areas and very few are from rural areas (3.05%). This distribution is broadly the same in the different Andalusian provinces (Table 2).

Table 2

Distribution of the sample by degree of urbanisation and province.

Province	Degree of urbanisation						Total
	Rural area		Intermediate density zone		City		
Almeria	5	4,00%	63	50,40%	57	45,60%	125
Cadiz	0	0,00%	42	19,44%	174	80,56%	216
Cordoba	4	2,34%	108	63,16%	59	34,50%	171
Grenada	5	2,69%	62	33,33%	119	63,98%	186
Huelva	16	15,24%	44	41,90%	45	42,86%	105
Jaén	10	5,78%	95	54,91%	68	39,31%	173
Malaga	1	0,55%	29	16,02%	151	83,43%	181
Seville	3	1,05%	82	28,67%	201	70,28%	286
Total	44	3,05%	525	36,38%	874	60,57%	1443

The professional development index refers to the training and experience in Dual VET of the teachers surveyed. As shown in Table 3, this index has been calculated on a scale from 0 to 10 and based on six variables specifically related to the teaching quality and dual career of the teachers surveyed (placements in companies, involvement in lifelong learning, participation in dual projects, etc.). The value assigned to the different levels of these variables and the intervals identified were determined by the research team based on a first approximation of the characteristics of the Andalusian teachers surveyed, establishing the standard on the basis of the answers given by these teachers to the items relating to these variables.

Table 3

Definition of the professional development index of the surveyed teachers.

Variables	Observation	Value
Years of teaching experience in dual education	1-2	0
	3-4	1
	5-6	2
Participation in company searches	No	0
	Yes	1

	0	0
Number of projects	1	1
	More than 1	2
Training stays	No	0
	Yes	1
Participation in lifelong learning	No	0
	Yes	1
	1 - very poor	0
	2	0
Knowledge on Dual VET	3	0
	4	1
	5 - very good	3

This index was only calculated for teachers who answered all the items relating to these variables (806 respondents). Thus, according to the value obtained in the previous index, the teachers surveyed are classified into three professional development groups: low index (value between 0 and 3) 32.1%, medium index (values from 4 to 7) 57.9% and high index (values from 8 to 10) 9.9%. This distribution is broadly the same in the different provinces.

All respondents are teachers and because of their relation to Dual VET they have been divided into three professional profiles (as excluding groups):

- 1) Managers (39.93%). Teachers, whether or not they teach Dual VET, who carry out tasks as members of the management teams of the centres, as coordinators of dual projects or as managers in company search centres.
- 2) Teachers (39.79%). Teachers whose relationship with Dual VET is limited to teaching; they have never coordinated a dual project.
- 3) Prospectors (20.27%). Teachers who, regardless of whether they teach in dual education, coordinate dual projects or form part of management teams, have carried out, at the time of the application of the questionnaire, prospecting tasks according to the Instructions of 10 October 2019 of the Regional Ministry of Education and Sport.

Of the 1,445 people who took part in this questionnaire, 603 made contributions to the open question of the questionnaire.

Instrument

The online questionnaire was designed by the research team taking into account the arguments underpinning current debates on Dual VET, the review of strategies used in other studies and the suggestions made by a group of experts consulted (administrative, technical and educational).

This questionnaire is structured in two main sections; the first one collects information necessary to characterise the surveyed teachers (gender, age, academic qualifications, contractual profile, years of professional teaching experience, province, town, centre, ...) and the second one, made up of five blocks, collects, through five Likert-type scales, the opinion of the teaching staff on different aspects of Dual VET in Andalusia.

Specifically, Block III of this questionnaire, the subject of this article, gathers information on the risks that certain aspects pose for the sustainability and effectiveness

of the Andalusian dual model by means of a Likert scale of 9 items (1 being "Very low risk" and 5 "Very high risk"). This block closes with an open question from which respondents have made contributions that have allowed us to justify the assessments made. This article deals with the analysis of the quantitative and qualitative information collected in this section of the questionnaire.

The quality of the instrument has been assured through its reliability and validity (content and construct). In relation to the internal consistency reliability of the questionnaire, and after calculating Cronbach's Alpha Coefficient for the battery of items in this Block III (9 items), it can be affirmed that it is high in all cases ($\alpha=0.769$).

The content validity of the questionnaire has been ensured by reviewing the regulations and literature on Dual VET, by reviewing the instruments used in different studies and by consulting a group of experts as indicated above.

In order to guarantee the construct validity of Block III, a Factor Analysis based on the Principal Components method and Varimax rotation was carried out to extract the factors within this block; with a KMO value of 0.791; with a value in the Barlett's test of sphericity of <0.001; 50.835% of the variance explained and 2 factors extracted as shown below (Table 4).

Table 4

Exploratory Factor Analysis.

Variable	Factor	Score
III_Risks02	1	0,8154842331
III_Risks01	1	0,8025066711
III_Risks08	1	0,5857320107
III_Risks05	1	0,3992548769
III_Risks04	2	0,7748284383
III_Risks03	2	0,6929048406
III_Risks07	2	0,6765886969
III_Risks06	2	0,6645460612
III_Risks09	2	0,6287289453

Following the interpretation of the factors identified and based on the items that make up this block, the theoretical dimensions into which the items were initially grouped were redefined. Thus, the final structure of this block is shown in Table 5.

Table 5

Risks for Dual VET in Andalusia: Dimensions and associated items.

Block III. Risks for Dual VET in Andalusia	
	[F1-SOS-1]Decrease in the number of teaching staff in schools
F1. Sustainability-related risks	[F1-SOS-2]Continuity of dual projects

[F1-SOS-3]Level of teachers' participation in Dual VET

[F1-SOS-4]Loss of interest of the centres in this type of VET

[F2-EF-1]Decrease in the employability of dual students

[F2-EF-2]School drop-out rate of dual students

F2. Risks related to Effectiveness [F2-EF-3]Adjustment of the graduate profile to the jobs offered by companies.

[F2-EF-4]Degree of interest of companies in the competency profile of Dual VET graduates.

[F2-EF-5]Degree of stability in the relationship between the centre and the company.

Data collection and analysis procedure

Descriptive and inferential statistical analyses were performed on the quantitative information using SPSS 27.0 software. The mean and standard deviation were calculated and the appropriate statistical contrasts were carried out according to the fulfilment of their requirements (ANOVA, DMS-LSD and Kruskal Wallis). The statistical analyses carried out have allowed us to explore to what extent the degree of urbanisation of the municipality in which the centre is located (rural area, intermediate density and city), the professional development (low, medium and high) and the professional profile (teaching, management and prospecting) of the teachers surveyed are variables that condition their assessment of the aspects indicated as risk generators.

The analysis of the answers given to the open question of the questionnaire has made it possible to identify the arguments that justify the most reiterated opinions. Interpretative analysis procedures were applied to this qualitative information. Without losing sight of the contributions of Bernard and Ryan (2010); Miles et al. (2014) and Wood and Smith (2018), regarding the strategies with which to ensure the confirmability and reliability of the analysis process followed (detailed explanation of the procedure, reading and coding by more than one researcher and triangulation of the interpretations made) and taking into account the significance of these qualitative contributions in this study, a deductive category system has been designed (Figure 1). The coding and analysis process was supported by MAXQDA software version 2020.



Figure 1. Map of categories.

Results

As detailed in Table 6, for more than 50% of respondents, the decrease of teachers' participation in Dual VET ($X:3.82 \sigma:1.12$), the loss of schools' interest in this model ($X:3.75 \sigma:1.22$) and the continuity of dual projects ($X:3.58 \sigma:1.33$) are risks for the sustainability of Dual VET.

Of the different aspects related to the effectiveness of this training modality, only one is valued as a risk in the Andalusian educational scenario by more than 40% of those surveyed, namely the interest of companies in the competence profile of graduates ($X:3.13 \sigma:1.26$). The drop-out rate of dual students ($X:2.61 \sigma:1.34$) or the adjustment of the graduate profile to the professional requirements of the sector ($X:2.75 \sigma:1.21$) do not constitute high risks for the effectiveness of the Andalusian dual model in the opinion of the teaching staff.

Table 6

Risks for Dual VET in Andalusia: Regional perspective, being 1 "Very low risk" and 5 "Very high risk".

Dimensions/Items	Rating scale					X	σ
	1	2	3	4	5		
Sustainability							
1º [F1-SOS-1]	14,73%	14,88%	20,27%	17,43%	32,69%	3,38	1,44
2º [F1-SOS-2]	9,99%	13,03%	19,70%	23,90%	33,38%	3,58	1,33
3º [F1-SOS-4]	6,55%	10,33%	19,37%	29,06%	34,69%	3,75	1,22
4º [F1-SOS-3]	4,44%	8,74%	20,30%	33,90%	32,63%	3,82	1,12

Effectiveness	1	2	3	4	5	X	σ
1 ^o [F2-EF-1]	29,12%	28,18%	23,17%	13,00%	6,54%	2,40	1,21
2 ^o F2-EF-2] [F2-EF-2	25,89%	26,18%	21,89%	13,16%	12,87%	2,61	1,34
3 ^o [F2-EF-3]	17,96%	25,22%	30,79%	16,20%	9,82%	2,75	1,21
4 ^o [F2-EF-5]	11,88%	20,73%	32,33%	19,51%	15,55%	3,06	1,22
5 ^o [F2-EF-4]	12,11%	19,59%	28,17%	23,11%	17,02%	3,13	1,26

As the ANOVA analysis carried out (Table 7) shows, there are only significant differences in the two dimensions in the mean ratings analysed according to the profile of the teaching staff surveyed: management, teaching and prospecting (sig. < 0.05). However, the non-parametric contrast for the Kruskal Wallis analysis of variance indicates that at the item level there are significant differences between the opinions of the respondents according to the three variables being explored.

Table 7

ANOVA by dimensions.

ANOVA		DEGREE OF URBANISATION				
		Sum of squares	gl	Root mean square	F	Sig*.
Sustainability	Inter-groups	3,253	2,000	1,626	2,005	0,135
	Intra-groups	1161,903	1432,000	0,811		
	Total	1165,156	1434,000			
Effectiveness	Inter-groups	3,165	2,000	1,583	1,941	0,144
	Intra-group	1163,393	1427,000	0,815		
	Total	1166,558	1429,000			
ANOVA		PROFESSIONAL PROFILE				
		Sum of squares	gl	Root mean square	F	Sig*.
Sustainability	Inter-groups	39,103	2,000	19,552	24,889	0,000
	Intra-groups	1126,470	1434,000	0,786		
	Total	1165,574	1436,000			
Effectiveness	Inter-groups	10,989	2,000	5,495	6,794	0,001
	Intra-groups	1155,765	1429,000	0,809		
	Total	1166,754	1431,000			
ANOVA		PROFESSIONAL DEVELOPMENT				
		Sum of squares	gl	Root mean square	F	Sig*.
Sustainability	Inter-groups	0,278	2,000	0,139	0,164	0,849

	Intra-groups	681,370	801,000	0,851		
	Total	681,649	803,000			
Effectiveness	Inter-groups	19,718	2,000	9,859	12,669	0,000
	Intra-group	621,020	798,000	0,778		
	Total	640,738	800,000			

*The difference in means is significant at the 0.05 level.

Thus, as can be seen in Table 8, from a general perspective, the teachers surveyed belonging to schools located in rural areas are the ones who identify the greatest risks to the sustainability of the dual model (X:3.82 σ :0.89); the concern shown by this subgroup regarding the continuity of dual projects (X:4.30 σ :0.88) stands out due to the p-value (sig. <0.05). For teachers in schools located in the city and in areas of intermediate density, the greatest threat to the sustainability of this model is the decrease in teacher participation in these projects. In relation to the effectiveness of the model, and as in the general perspective mentioned above, the questioned factors that could jeopardise it are not highlighted as such by any of these sub-groups. In this sense, the teaching staff in rural areas are the only ones to highlight the degree of stability in the relationship between school and company (X:3.79 σ :1.10) and the drop-out rate (X:2.90 σ :1.36) as factors that pose a certain risk to the effectiveness of the model, with statistically significant differences in both cases.

Table 8

Mean ratings and significant differences by item according to Degree of urbanisation.

Dimension/Items	Degree of urbanisation						Significance
	Rural area		Intermediate density zone		City		
	X	σ	X	σ	X	σ	
Sustainability	3,82	0,89	3,67	0,91	3,60	0,89	0,135
[F1-SOS-1]	3,33	1,38	3,43	1,43	3,36	1,45	0,696
[F1-SOS-2]	4,30	0,88	3,73	1,29	3,44	1,36	0,000
[F1-SOS-3]	3,81	1,33	3,79	1,14	3,83	1,09	0,790
[F1-SOS-4]	3,67	1,29	3,76	1,19	3,75	1,23	0,942
Effectiveness	3,05	0,83	2,78	0,85	2,78	0,93	0,144
[F2-EF-1]	2,24	1,18	2,37	1,21	2,42	1,22	0,533
F2-EF-2] [F2-EF-2	2,90	1,36	2,48	1,26	2,67	1,38	0,029
[F2-EF-3]	2,81	1,29	2,76	1,18	2,74	1,22	0,868
[F2-EF-4]	3,45	1,24	3,16	1,25	3,10	1,26	0,169
[F2-EF-5]	3,79	1,10	3,10	1,25	3,00	1,20	0,000

With regard to the professional profile and as shown in the analyses in Table 9, for the surveyed teachers belonging to the profiles Managers and Prospectors, the loss of interest in this training modality both on the part of the teachers and the centres represents a high

risk for its sustainability. Of the different factors considered in the questionnaire as possible risk generators for the effectiveness of the dual model, the two factors conditioned by the professional profile of the teachers surveyed (especially for the Prospectors profile) are those related to the decrease in the possibilities of labour market insertion of dual students ($X:2.53 \sigma:1.26$) and the degree of stability in the relationship between centre and company ($X:3.27 \sigma:1.20$), with the differences being significant in both cases. The multiple comparisons (DMS) indicate that in all cases the teachers surveyed belonging to the profiles Managers and Prospectors are the ones who make the differences.

Table 9

Mean scores and significant differences by item according to Professional Profile.

Dimensions/Items	Professional profile						Significance
	Manager		Teacher		Prospector		
	X	σ	X	σ	X	σ	
Sustainability	3,67	0,88	3,46	0,91	3,90	0,84	0,000
[F1-SOS-1]	3,29	1,50	3,28	1,40	3,76	1,32	0,000
[F1-SOS-2]	3,63	1,34	3,38	1,35	3,86	1,21	0,000
[F1-SOS-3]	3,95	1,02	3,55	1,19	4,06	1,05	0,000
[F1-SOS-4]	3,81	1,20	3,57	1,24	3,98	1,16	0,000
Effectiveness	2,69	0,91	2,83	0,87	2,91	0,94	0,001
[F2-EF-1]	2,21	1,12	2,51	1,26	2,53	1,26	0,000
F2-EF-2] [F2-EF-2	2,54	1,35	2,62	1,34	2,74	1,32	0,088
[F2-EF-3]	2,65	1,22	2,83	1,18	2,76	1,23	0,036
[F2-EF-4]	3,06	1,29	3,18	1,20	3,18	1,30	0,231
[F2-EF-5]	2,98	1,28	3,04	1,17	3,27	1,20	0,000

Teachers' knowledge and experience in dual VET also condition their perception of the threats that pose risks to it (Table 10), at a general level these differences are especially significant in the effectiveness dimension, where teachers without much experience in this training modality identify greater threats ($X:3.04 \sigma:0.81$). For teachers with a lot of experience in dual education, the greatest threat to its sustainability is the decrease in the participation of teachers in dual projects ($X:4.08 \sigma:1.11$), this opinion is significantly different from that of the rest of the members of this subgroup. Although without statistically significant differences, teachers with a high level of professional development are also concerned about the loss of interest of the schools ($X:3.87 \sigma:1.19$). With regard to the factors that could jeopardise the effectiveness of the model, only the degree of interest of companies in the competence profile of graduates ($X:3.36 \sigma:1.15$) stands out as such for teaching staff without a great deal of experience in the dual model. It is the expert teaching staff who see the least risk in the aspects questioned. However, it should be noted that there are statistically significant differences in all opinions regarding the aspects related to effectiveness. The multiple comparisons (DMS) indicate that in all cases teachers with a high level of professional development are the ones who make the differences.

Table 10

Mean scores and significant differences by item according to professional development.

Dimensions/Items	Professional development						Significance
	Low level		Medium level		High level		
	X	σ	X	σ	X	σ	
Sustainability	3,61	0,85	3,60	0,95	3,66	0,98	0,849
[F1-SOS-1]	3,43	1,31	3,42	1,44	3,13	1,52	0,283
[F1-SOS-2]	3,66	1,27	3,55	1,35	3,46	1,41	0,503
[F1-SOS-3]	3,60	1,14	3,80	1,13	4,08	1,11	0,001
[F1-SOS-4]	3,69	1,18	3,65	1,26	3,87	1,19	0,325
Effectiveness	3,04	0,81	2,74	0,91	2,60	0,90	0,000
[F2-EF-1]	2,83	1,26	2,34	1,19	1,91	0,98	0,000
F2-EF-2] [F2-EF-2	2,83	1,32	2,56	1,35	2,54	1,30	0,018
[F2-EF-3]	2,98	1,13	2,71	1,20	2,71	1,39	0,016
[F2-EF-4]	3,36	1,15	3,11	1,25	3,06	1,35	0,034
[F2-EF-5]	3,26	1,12	2,99	1,23	2,84	1,30	0,004

The analysis of the qualitative contributions has made it possible to identify the arguments that justify the statistical results presented. Thus, focusing on the aspects repeatedly pointed out as weaknesses and threats to the sustainability of the dual model, the teaching staff provide, among others, arguments related to the great effort involved for a teacher in participating in this training modality (which implies a decrease in their participation), the complexity that its management entails for a centre (which reduces its interest) and the lack of stability of the teaching staff participating in the projects (which does not ensure the continuity of these projects, thus questioning their success) (Figure 2).

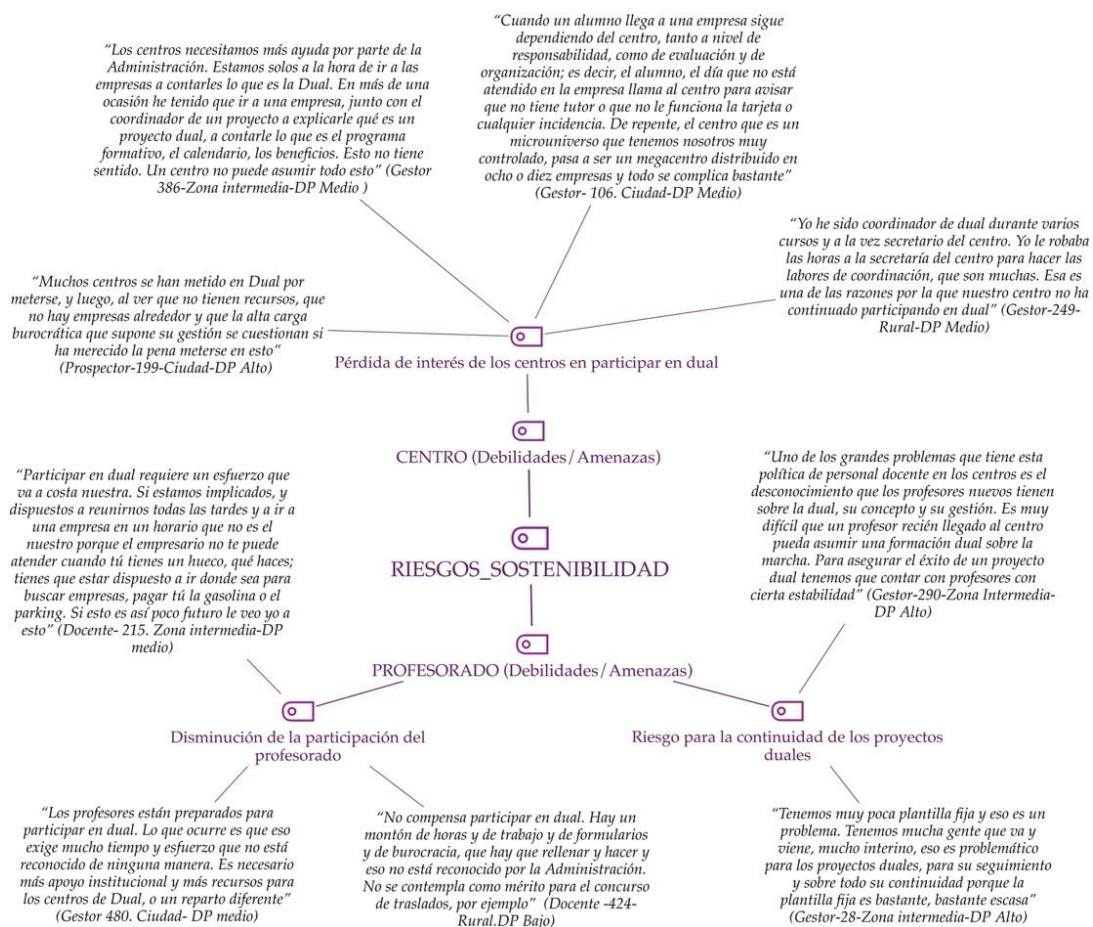


Figure 2. Risks linked to sustainability: Arguments of teacher respondents

The specialised nature of the training received by students in companies or the lack of participation of companies in the curricular design of dual projects are some of the arguments given by the teaching staff and which may justify their consideration as a weakness, in the first case, and a threat, in the second, to the effectiveness of the dual model. The mismatch between the graduate profile and the professional requirements of the sector, the lack of interest of companies in the competence profile of the graduates and the decrease in the possibilities of job placement for dual students also pose risks (Figure 3).

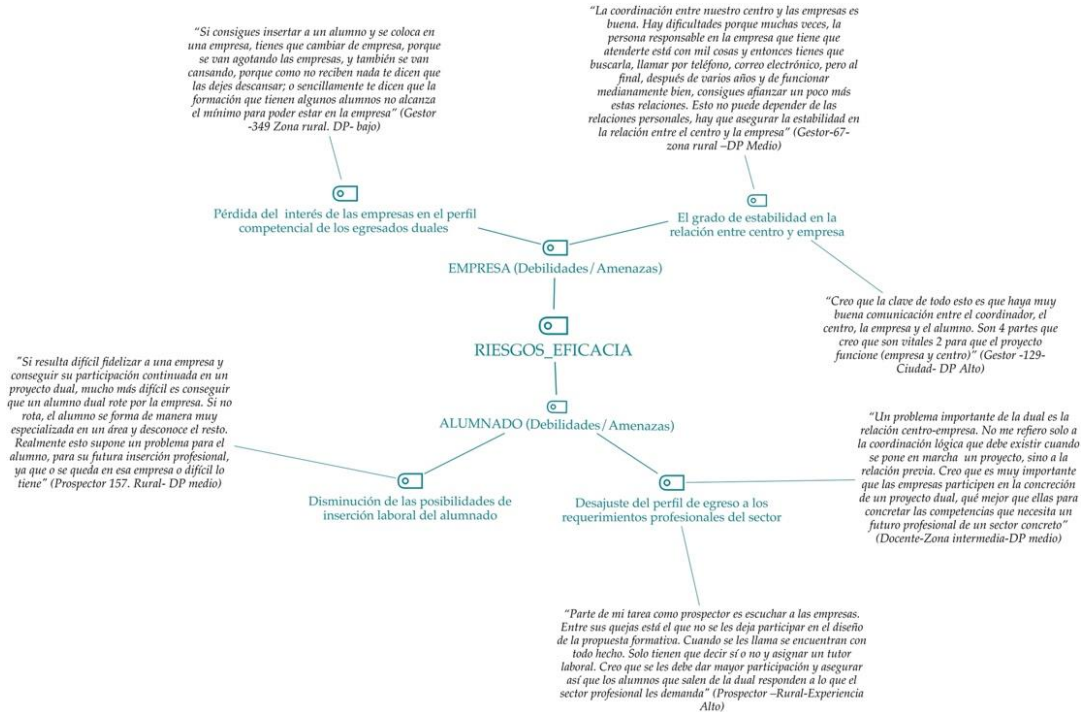


Figure 3. Risks linked to effectiveness: Arguments of teacher respondents

Discussion and Conclusions

For the teaching staff involved in Dual VET in Andalusia, the sustainability of the model is more at risk than its effectiveness; the great effort involved in its management for both the teaching staff and the centre (weakness of the system) and the instability of the teaching staff in the centres (threat) are risks that endanger the participation of the teaching staff and centres in this system and the continuity of the dual projects. The graduate competence profile is a weakness of the model that jeopardises the effectiveness of the dual system due to its repercussions on the interest of companies in it and its adjustment to the professional requirements of the sector.

This perception is conditioned by the territory (rural, intermediate or city) in which the teachers work, by their profile (manager, teacher or prospector) and by their knowledge and experience in the dual system. Thus, teachers belonging to rural schools are the ones who identify the most risks for the sustainability of the dual model, being the continuity of dual projects one of the most reiterated; the mobility and lack of stability of teachers in rural schools really constitutes a problem for the quality of these projects. For these teachers, the threat posed by external aspects such as the size of companies in Andalusian rural areas, their workforce, the absence of qualified staff for training, the absence of human resources departments and their immediate recruitment possibilities are also risks for the effectiveness of the system (Pozo-Llorente et al., 2021).

The surveyed teachers who carry out management tasks are the ones who identify the greatest risks to both the sustainability of the dual model and its effectiveness. Threats to the sustainability of the model include the excessive workload that the academic and administrative management of dual education implies for a school and the unrecognised effort of the teaching staff involved. The specialisation of the training received by dual students, which limits their employability, and the difficulty of ensuring stability in the centre-company relationship, constitute a high risk to the effectiveness of the model in the opinion of the management staff surveyed.

For teachers with extensive experience and knowledge of the dual system, none of the questioned factors pose great risks, while novice teachers identify the greatest risks. As pointed out in previous studies (Poza-Llorente and Poza-Vilches, 2020a; Poza-Llorente and Poza-Vilches, 2020b; Poza-Llorente et al., 2021; Pineda-Herrero et al., 2019) and confirmed in this study, for experienced teachers, the lack of involvement of schools and teachers is the main risk for the dual system. The professional motivation of the teaching staff, the characteristics of the students (their interests, motivation, maturity, preparation...) and the productive and business context of the territory condition both the decision of the educational centres to implement a dual project and its success.

As Sanz de Miguel (2017) argues, the governance model that has generated the regulatory framework for dual education at national and regional level continues to condition its development and generates practices and scenarios that may or may not favour this type of education. However, the Organic Law for the Organisation and Integration of Vocational Training of 2022 (MEFP, 2022) faces the challenge of responding to the problems that have accompanied this type of VET since its introduction in Spain in 2012. At regional level, in Andalusia, there have also been changes in the annual guidelines; these changes represent an advance in the specification of the regulation of dual education in this territory (remuneration, curriculum, learning assessment, monitoring, among others).

However, and after a decade since the implementation of the dual model, it seems that the debates, although they have not lost intensity, have shifted towards other aspects more related to the relevance of this model in a socio-economic and professional context characterised by uncertainty and readjustment, to the quality of training and apprenticeships, to its consideration as an integral part of Education for Sustainability and as a means for the digital and green transition (Carrasco et al., 2022; Gamboa and Moso, 2022). To these considerations must be added other proposals such as those of Gessler and Peters (2022) who insist on the need to rethink the role of companies (especially family businesses) in the dual model, on the importance of listening to the contributions of these organisations and the suitability of advancing towards the success of the dual model in Europe from approaches based on cooperation and a European mentality.

Knowing and understanding the threats to the sustainability and effectiveness of the dual model identified by the teachers involved in it is the first and necessary step towards defining guidelines for strategic planning which, in the context of Dual VET, would allow initiatives to be taken and decisions to be made in the medium and long term while responding to the immediacy of the day-to-day.

This work has involved an immersion in the dual system based on the opinion of the teachers involved; with it we have tried to make the dual system visible, provide credibility and prestige to it and insist that for the dual system to become a reference on the national educational map and consolidate itself as a training opportunity that favours

the labour insertion of students and generates a network between the centre and the business fabric, it is necessary not only social recognition and political support but also the participation and effective coordination of all the agents involved.

The limitations of this study are related to its qualitative dimension. While it is true that in the development of the project in which this research is framed, in-depth interviews were carried out with key informants belonging to the different agents involved in the dual system, the interest and complexity of these qualitative contributions lead us to consider presenting them in a specific work in which aspects highlighted throughout this article as conditioning factors for the success of Dual VET in the opinion of the teaching staff are explored in greater depth; Aspects such as the implementation of the dual system in rural and urban areas, the influence of the professional contractual situation of the teachers involved in the dual model on their opinion of it, among others.

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