

Distance Vocational Training in Portugal

A review of academic studies between 2000 and 2015

Fernanda Nogueira, Teresa Pessoa

University of Coimbra, Portugal

fnogueira@fpce.uc.pt, tpessoa@fpce.uc.pt

Maria-Jesus Gallego

University of Granada, Spain

mgallego@ugr.es

Abstract— A changing society needs multiple mechanisms of action and intervention that encourages the development of skills and the subsequent process of prosperity of nations and social justice. Vocational distance training plays an important role in promoting skills and solving problems as the lack of specialized professionals or the need for retraining or upgrading assets. We advocate that educational research has an important contribution in the analysis of continuing vocational distance training and its strategic design. In this sense, within this article we developed a study review published in RCAAP (Scientific Open Access Repository of Portugal) between 2000 and 2015, seeking to understand the number, type and other characteristics of the studies focused on continuing vocational distance training. The analysis focused on a total of 60 studies leading to an academic degree seeking to highlight the main conclusions and investigative trends in this area and also main recommendations shared by researchers.

Keywords— *continuing vocational training; distance learning; skills mismatch; training of employees; literature review; RCAAP.*

I. INTRODUCTION

In a global and digital society, in which information, knowledge, high levels of expertise and the ability to identify, mediate and resolve problems are the basis for individuals and companies build their superiority over the other, it is essential to look at vocational training and the strategic role it plays and should play. Continuing vocational training, in particular focusing in active and not active adults, it is a deployment, innovation and competitiveness issue that can not be ignored. Moreover, ICTs represent a huge potential and allows in the field of adult education and training to proceed strategically and decisively, on the one hand by producing more attractive, appropriate and interactive materials and resources, on the other through distance learning allowing the expansion of areas of expertise and activity and opens doors to the construction of shared knowledge, self-learning, self-regulation, among other things that we highlight throughout this work.

The analysis and discussion of scientific work produced in this area is an important contribution to the education and training institutions (both public and private), as well as for educational research by enabling improvements in the training processes, supply management and networking, as well as contributing to the significant and needed critical analysis concerning quality and training certification.

This article is part of a broader study on the importance of strategic design of vocational distance learning and begins with a theoretical context for a better conceptual framework of our field of study. Then we describe the research methodology used for the literature review, followed by the presentation and discussion of the results and, in conclusion, the final remarks.

II. THEORETICAL FRAMEWORK

A. *The post-professionalism, the skills mismatch and the challenges of continuing vocational training*

Professional phenomenon is in accelerated transformation. According to Kritzer [1,p.18] post-professionalism is characterized by the presence of three elements: *"the loss of exclusivity of formal jobs, the increasing segmentation and specialization of application of abstract knowledge and widespread access to information through new technologies."* It is thus an ongoing process of change in which new professions emerge and in which the existing professions is reshaping, adapting to the needs and the volatility of the labor market. We even come to an era where the trend is for the accumulation of various professions in one individual.

In this changing scenario where crisscross society, economic system, information / technology and knowledge, the development of multiple skills, specialized training and the ability to adapt to new realities, as well as the motivation and intelligence to *"learning to learn"* are fundamental aspects which are foreseen as employment guarantee. On the other hand, the economic crisis that has been observed in recent years, a little throughout Europe, represented and continues to represent a challenge, forcing individuals and institutions to look for alternatives, new strategies, new paths. Given the immutability of knowledge it is crucial, carry out training processes that promote and produce skills, among which: relational, technological, scientific (research and create), informational, cognitive, metacognitive and behavioral skills [2]. Those sort of skills are set as the most suitable tools to the professional development of each individual and for sustained growth of organizations.

Lifelong Learning (LLL) is, for all these reasons, a priority in the strategic guidelines and governance both national and European level, for which it has been driven relevant human, technological and financial resources in the last decade, particularly after the Copenhagen Declaration (EF2010; EF2020). Recent studies provide evidence that a bit

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throughout Europe the level of qualification and skills of the working class has been increasing, however there is a skills mismatch [3]. According to CEDEFOP [3] we can consider that there is a skills mismatch problem when: employers are unable to find the right talent (despite offering competitive wages) either by skills shortages or skills gaps (the skills required are unavailable in the workforce due, for example, to technological advances); individuals take jobs that do not match their qualifications (over or under-qualification problem) or whatever their qualification level, their skills do not match their jobs (over or underskilled problem).

In this scenario of uncertainty we argue that these employability challenges are related to the need and importance of continuing vocational training which, in turn, depends on different elements, namely the:

- **individuals** – which should seek training and attend it in a perspective of self-learning, self-training and development of metacognitive skills on the principle of "learning to learn", so as not to become obsolete, keeping updated, motivated, ensuring more efficient working methods, achieving greater efficiency and higher productivity;
- **employers** – who should be aware of the importance and need of LifeLong Learning and provide internal training opportunities and courses suited to the workers so that they can fit the company's needs avoiding skills shortages and the downgrading of human resources; Offering stimulating and challenging jobs (in terms of career development and economic progress) is also essential, as well as opportunities to break geographical barriers with new working methods and tools, usually sustained in technologies – to which the training it is fundamental;
- **training entities** (public and private) – together with its human resources (particularly trainers), training entities need to change the educational paradigm, enhancing their skills in critical areas of the training cycle, such as training needs, planning and assessment [4;5]; adapting its action to the output profiles of learners as well as ensuring the mobilization capacity and adequacy of the entire system to a new "learner" profile – the active professional;
- **associations and unions** – through studies and analyzes; promoting awareness campaigns on the importance and need for vocational training; disseminating good practices; providing guidance on rights and duties [4];
- **state** – as a system regulator, taking responsibility for ensuring effective training systems, governed by standards of quality and efficiency, working with vision and strategic methods in order to create a sustainable network of institutions with an appropriate skills offer. Also important is the state's role in the application process of funding for training [4, 6] by creating mechanisms that simplify and facilitate the administrative procedures.

The continuing vocational training has, in this responsibility framework, a key role from the national strategic point of view, involving individuals, organizations and the state itself in achieving levels of quality, efficiency and productivity to ensure competitiveness and social well-being.

B. Distance education potential for workers training

Distance education conceptualization has evolved over the times influenced and been influenced by theories of learning and the availability of technological tools that made possible new and dynamic educational experiences [7]. Distance learning is based on the availability and accessibility of learning materials (media coverage and content distribution dimension) but also in the learner's interaction processes with the tutor, between learners interaction and, between the learner and the content [8] (communicational dimension), in order to facilitate and promote learning.

Training at distance processes are described as a powerful educational tool capable of performing, among other functions, a key role in training, updating and conversion of assets. In this study we are particularly focused on training aimed at active professionals (ie adults who play a professional activity) excluding initial vocational training, usually aimed at young or young adults.

Among the key advantages of distance learning listed from the research or studies focused in vocational training we include [6;5;9]: a) **ease of access and flexibility** – distance learning allows the elimination or reduction of barriers to access based on physical distance and workers' available time; the chance to choose the best time for training and not needing to travel reduces the negative impact on the company's productivity; b) **adequacy of the learning rhythms** – the content built around properly structured and interlinked teaching sequences can be revisited and analyzed as often as necessary; allows an understanding of how each learner is progressing. According to Paiva [5] each individual has their own preferred strategies and pace of learning, according to their learning style and the time of life which they have reached; if you have the ability to appeal to a diverse range of learning strategies, the greater your likelihood of success, which is particularly important when we are considering active professionals; c) **reduction in training time** – distance learning delivery method benefits by reducing the time it takes to train people because learners can go at their own pace, less time is spent on social interaction, and they can also skip elements of a program they don't need; d) **faster delivery** – distance learning has faster delivery cycle times than traditional classroom-based instruction: the same training course may be performed simultaneously in different locations, with no need of extra human resources; e) **content revision and update** – allows regular revision and updating of distance learning content, as well as avoiding additional printing costs, is more suited to the mutability of knowledge and the current changes in the job market; f) **cost reductions** – travel and infrastructure costs are minor when compared with face to face learning, reinforced by the opportunity to grow on a large scale.

From the point of view of corporate and institutional productivity, the “delivery” of learning through the network enables the upgrade, conversion or recycling of workers at a greater speed which results in time savings and profitability of costs related to the training of employees. At the same time we must indicate the skills acquisition opportunities in the context of LifeLong Learning policy and the strengthening of self-learning and of individual autonomy.

Among the negative aspects to note are: digital illiteracy or lack of digital skills from both trainees and trainers; the lack of social interaction among students; the need for self-regulation by the trainees and self-study skills; heavy initial investment for organizations (especially for small and medium enterprises); and the quality of materials and resources.

III. METHODOLOGY

Within this study we used a systematic review of the literature in order to locate, identify and analyze studies in Portugal focused on vocational training at a distance. To the extent that a significant part of research in the field of educational technology is included in studies leading to an academic degree (Masters or PhD). for this analysis we conducted a research on a national repository (Scientific Open Access Repository of Portugal), focusing on this type of work. The research questions that guided this study were: a) what kind of studies have been conducted specifically dealing distance vocational training (number of studies and its distribution over the last 15 years, educational institutions that conferred the degree and type of graduation)? b) what are the main approaches / variables studied (privileged methodology, target audience, business sector)? c) what are the main conclusions to be drawn from this studies that allow a strategic review of the training offer and the main needs in this policy area?

The research was conducted between March and April 2016, crossing the results according to combinations of the following keywords (in portuguese): “distance vocational training” (formação profissional a distância); “vocational training” and “distance education” (formação profissional e educação a distância); “vocational training” and “distance learning” (formação profissional e ensino a distância); “vocational training” and “e-learning” (formação profissional e e-learning). In this work, the researchers pinpointed initially (excluding repeated entries), a total of 151 master degree dissertations and 13 doctoral theses. After analyzing this studies abstracts were eliminated entries that did not focus on the investigative purpose, such as; untargeted studies for vocational training at a distance; studies developed with students and not with adults in professional positions; studies carried out in a Portuguese higher education institution but focused on another country reality (Cape Verde, Brazil, Angola); studies focusing on evaluation or certification of face-to-face vocational training; studies focusing on SEN; etc.).

Refined search results can be found in detail in subsection results. The final analysis focus on four doctoral theses and 56 master's dissertations (45 monographs and 11 sustained in traineeship reports, and therefore with less or restricted

investigative bias). In order to highlight the main investigative trends in this field at national level, we selected the most relevant and significant studies, presenting and discussing critically the results and key findings.

IV. RESULTS

A. Distance Vocational Training - typology of academic studies in Portugal between 2000-2015

In Figure 1 we highlight a graphic display of the number of publications with a specific focus on distance vocational training, according to our literature review of academic studies published in RCAAP.

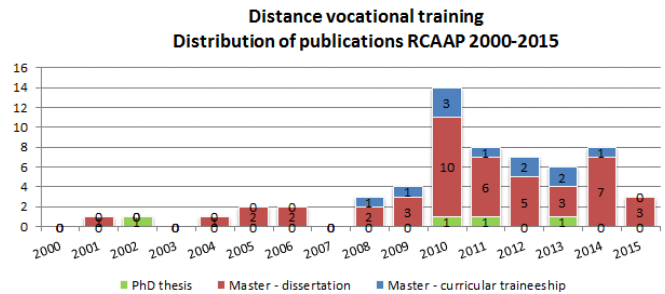


Fig. 1. Distribution of publications in RCAAP between 2000 and 2015.

We have identified a large number of studies in the framework of dissertations, mainly from 2010, that we clearly associate with the implementation of the Bologna process. Studies leading to master's degree with a less investigative character (curricular traineeship report) are normally associated with task descriptions in the companies but it was also considered for analysis by the input that these studies bring, not so much from the research point of view but from the point of view of the description of existing practices and representations within the institutions or companies of the traineeship (IEFP, CEGOC, Hospital, Firefighters) and, in particular, in training departments of large companies (SONAE, EDP, AXA, etc.).

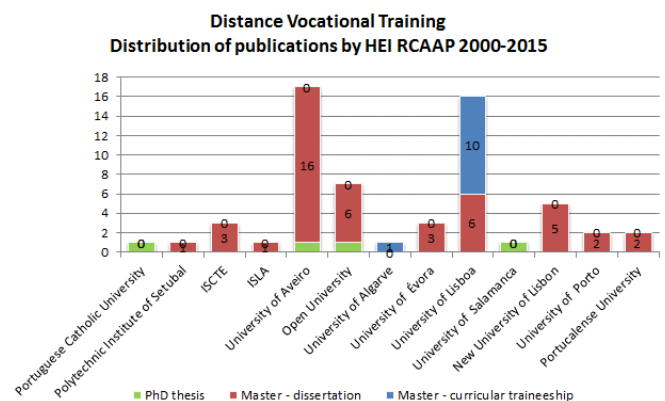


Fig. 2. Distribution of publications by Higher Education Institution in RCAAP between 2000 and 2015.

Regarding the distribution of academic studies available on RCAAP by IES - Figure 2, we conclude that the HEI that have more studies in this area is University of Aveiro and University of Lisbon (with a higher number of master dissertations linked with traineeship) and Open University. As to type of graduation we concluded that 31.63% are studies under the name of Education or Educational Sciences, 11.60% are Masters in Multimedia and Education 10% in Multimedia Communication, therefore the key scientific areas of these studies (according to Portuguese Foundation for Science and Technology categorization) are Educational Sciences and Communication Sciences. However, we also found studies focused on issues in other scientific areas more related to Management, Human Resources and Psychology.

B. Distance Vocational Training - focus of academic studies in Portugal between 2000-2015

Concerning the methodological approach of the studies analyzed (Figure 3) we highlight a large number of qualitative studies (43%) immediately followed by mixed studies (30%). The entries for the caption "unspecified" are studies with restricted access of which the available summary did not allow us to identify the type of underlying methodology. In a more specific analysis the methodology that prevails is the Case Study and Multiple Case Study. Some studies apply a methodology of research and development (in the development and testing of tools, platforms, courses, training models, etc.), and, in studies more related to teachers' continuous training emphasize the use of action-research, and finally, we still find some exploratory studies with a theoretical rehearsal nature.

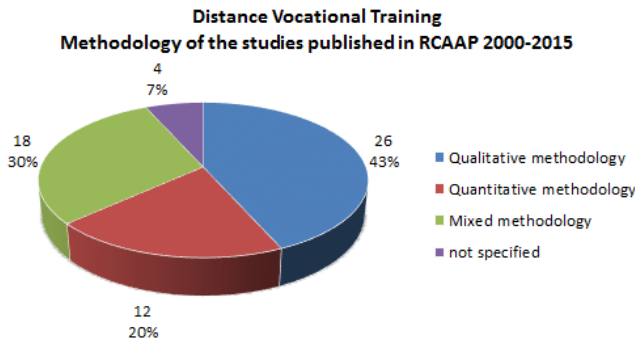


Fig. 3. Methodology of the studies published in RCAAP between 2000 and 2015.

In Figure 4 we find the distribution of the studies analyzed taking into account the areas of activity or business sectors. We found that most studies were conducted with the focus on training providers such as CEGOC, the IEFP, the CFAE's, on the analysis of training providers certified by DGERT or integrated actions in Aveiro Norte Program, others studies focus on distance education organizations such as CNED, CEDES, or distance education centres in HEI like ISCTE; etc. We also highlight the work in the telecommunications sector within the PT-Innovation training department that was the target of 6 studies, one PhD and 5 Master dissertation. Government institutions also represent an area of analysis and with potential for the application of distance vocational training both on more administrative areas (finance, social

security sectors) and operational sectors (Police, Firefighters and Military).

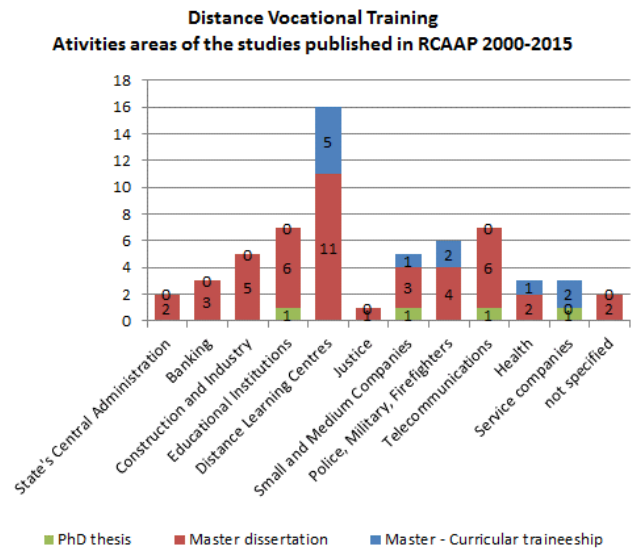


Fig. 4. Activity areas unveil on studies published between 2000 and 2015.

C. Distance Vocational Training - main contributions of academic studies in Portugal between 2000-2015

Richter [10] categorizes the research areas in the field of distance education into three levels: macro (systems and theories of teaching distance), meso (management, organization and technology), and micro (teaching and learning). Based on this categorization we proceed to the analysis of the conclusions of the studies identified in this work in order to highlight some of the research inputs from academic studies focus on vocational distance training.

1) Distance education systems and theories

Of the reviewed studies, we identified a going concern analysis of the implementation of distance training models in various areas of professional activity, often analyzes focus on representations about the applicability of the model in addition to the supply of traditional face-to-face training, seen as positive and desirable for workers [11] and leaders [12]. Other studies highlight the importance and need to ensure the educational and technical quality of these systems [13, 14] or show that acceptance in within organizations reveal a significant statistically difference based on the age of the respondents [15].

2) Management, organization and technology

At a meso level we highlight a large number of studies that have looked in the search for a strategic model for a given educational institution or training organization [16, 17, 18] training department of an entity [19; 20] or with broader proposals of national interest [6, 4, 21, 22, 14]. Several studies are focused on educational technology, including the development and prototyping of m-learning platforms [23, 24], e-learning platforms and / or specific tools such as augmented reality [25] and virtual simulation [26]. However the biggest highlight in this area goes to the studies conducted

within the PT-Innovation, which includes the development of an own platform called *Formare* [19] and their constant improvement with the development of new features and tools [27; 28; 29; 30; 31; 32].

Regarding evaluation we concluded that there is a relevant number of studies directed to this analysis dimension that focus, for example, on the evaluation of specific programs, such as the Aveiro-North Program [33] or on evaluating the use of a specific e-learning platform [34]. Both of these studies point to an underuse of the capabilities and potential of the tools or platforms available. Sousa study [35], for example, allowed us to analyze the importance and effectiveness of a b-learning course (pilot project) as a tool for professional development of workers in a “*Citizen shop*” (an innovative concept of public service, bringing together in the same space several public and private entities, in order to facilitate the relationship between citizens and businesses with the Public Administration) supporting the creation of a training department in these organizations and respond more effectively to the training needs of workers.

On a broader scale, the studies [6; 4; 5] highlight the need and importance of a system of evaluation and certification of quality with regard to distance vocational training. The lack of quality standards, reference models or credible studies on the supply and demand of distance vocational training courses was questioned in 2002 by Lagarto, reinforced by Gouveia [4] and more recently questioned by Paiva [5] that put in evidence that the only assessment currently in practice is the one linked with satisfaction issues, and in many cases it is the only issue of assessment performed. Later was created and developed by TecMinho, University of Minho, in partnership with Quaternaire Portugal in the *Panorama Project e-Learning Portugal 2013*, the Charter of the e-Learning Quality in Portugal (2014), but no reference of this work was found in any of the studies analyzed in this work.

3) *Teaching and learning in distance education*

The largest number of studies analyzed in this study have focused on instructional design [36; 37; 38; 39; 40; 41; 42; 43; 44; 45; 46; 47; 48; 49]. Sustained in quantitative and / or qualitative methods the authors developed analyzes of formative experiences aiming to validate its effectiveness and relevance in the professional domain. In this area, the need to meet the training needs is perceived as a success factor [43, 20, 42] while the technological prowess of the participants is referred to as a key element to be taken into account in the decision to adopt distance training models, especially in audiences with fewer qualifications [37; 34; 23; 12]. The role of e-tutors and e-trainers is also highlighted as a necessary area of investment and qualification by individuals and institutions, recognizing the importance of interaction, moderation, feedback and trainer support in online environments [50; 51; 40; 52]. Other studies have unveil particular interest in the dimension of interaction and communication within learning communities [50; 51; 40].

V. FINAL REMARKS

We conclude this work by strengthening the professional distance training as an area of growing interest and

intervention of several scientific areas, proving to be very important the review and meta-analysis of published studies in this field.

The preliminary analysis presented in this work allows us to state that distance vocational training is still not dominant on the national scene, although the studies indicate and point to the importance to converge of efforts of different national, local, public and private institutions. This synergy is essential to strategically develop a distance vocational training network and its necessary regulation, with visible practical results within organizations and their productivity, as well as personal and professional development of citizens. We also strengthened the role of HEI in the development of research in distance vocational training, to the extent that we consider crucial to clarify and disseminate a more conceptual and adapted model to active adult learners, professionally integrated. Future research should also strategically contribute to a better understanding of the work done within educational institutions whether they are integrated in their own HEI, businesses or private entities and, in addition, be an instrument for the dissemination of good practice.

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