



Training students for new jobs: The role of technical and vocational higher education and implications for science policy in Portugal



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ABSTRACT

This article contextualizes the role of technical and vocational higher education in training the labour force and derives significant implications for science policy in Portugal. A cross-national comparative case study in Southern (Portugal), and Western (Netherlands and Germany) Europe, suggested that technical and vocational higher education is building distinct learning profiles in terms of new intermediary institutions promoting problem-based learning together with the implementation of short-term project-oriented research. Learning and training practises are increasingly research-based and, above all, inclusive of social and economic partners via formal and, most of the time, informal collaborative mechanisms. These practises may be economy- or policy-driven but occur as an opportunity for strategic action at organizational and content levels. For the Portuguese case, our analysis suggests that emphasizing short-term project-oriented research in short-cycle education may strengthen the institutional credibility of Portuguese technical and vocational higher education by engaging local external actors in training the labour force. In addition, it may help to stimulate the necessary institutional and programmatic diversification of higher education.

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1. Introduction

The education and training of the labour force in Europe is facing new challenges (ILO, 2015; ETUI, 2015) as productivity growth and wealth creation needs to experience new boundaries (Schwab, 2014). Concurrently, higher education institutions (HEIs) are increasingly being asked to provide adequate training tools. Despite the efforts of national governments to increase participation in higher education (OECD, 2014a; Hoidn and Kärkkäinen, 2014), almost two-thirds of the adult population in Europe are still lacking skills that would make them successful in innovation-driven environments (OECD, 2013). These skills consist of a number of technical competencies and “soft” skills, including leadership, teamwork and efficient self-regulating competencies. The scarcity of this type of “skilled” labour force has been identified in many Southern European zones and other European peripheries (European Commission, 2012a), either in the service sector or in manufacturing (van Ark et al., 2008).

The scarcity of skilled workers has often been attributed to, among other things, the considerable gap between educational systems and companies’ needs, or to the fact that learning and training profiles are not suitable for current industry settings (Tijdens et al., 2012). The

relative mismatch between jobs and skills (Hart and Barratt, 2009) has also been recently addressed by Osterman and Weaver (2014) in the context of North America. The authors claimed that there is a need for “intermediaries”, that is, institutions that can help match employer needs and training, and, at the same time, argued for the increasing relevance of non-university higher education (see also Wagner, 2012). Shaping the educational curricula in accordance with industry is, however, problematic (and often not recommended) since skill requirements are not easily definable (European Commission, 2012b). Approaching this issue requires a clear identification of relevant skills, rather than simply quantifying the skills of jobholders in a given occupational field (Elias and McKnight, 2001). This calls for a common language between employers and training institutions (Tijdens et al., 2012) and the development of intermediary functions in training institutions to match the educational supply with the needs of industry (European Commission, 2012a).

This article aims to contextualize the potential role of technical and vocational higher education¹ as intermediaries in this process and

¹ By technical and vocational higher education we refer to “non-university” tertiary education, such as “Polytechnic” in Portugal, “Fachhochschulen” in Germany and Switzerland, “Hogeschole” in The Netherlands, or “Community Colleges” in US. The term “Universities of Applied Sciences”, as it is also referred to in Europe, is not intentionally used to highlight the rationale for fostering diversification of higher education and for strengthening non-university higher education (see Salmela-Mattila, 2014; Lepori et al., 2012).

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compares a Portuguese institution with other European institutions. This is established by focusing on the type of training provided in this type of higher education institutions through establishing comparative patterns in two considerably different situations: i) in two industrialized Western European cities, Amsterdam and Münster (in North Rhine-Westphalia, Germany); and ii) in a Portuguese polytechnic institution situated in the northeastern, most remote rural zone of the country (Bragança).

Our analysis suggests that strengthening problem-based learning and short-term project-oriented research through technical and vocational higher education can facilitate the process of training the workforce in skills of increasing relevance to local markets. This can be facilitated if training is built around collaboration, with external stakeholders engaged in the social and economic landscape of the regions under analysis. The article also argues that this process benefits from collaborative ties between the stakeholders and the practitioners of technical and vocational higher education. Our findings consider policy implications for Portugal in terms of new opportunities for curricula innovation in short-term higher education and new relationships between institutions and local economic and social actors.

2. Research framework

The growing worldwide participation in higher education - associated to appropriate systems assessing learning quality (Carless, 2015) - is currently being led by middle income countries (Fig. 1)². In Europe, many industrialized countries (e.g. Germany, Netherlands) have been fostering access to higher education since it is known to impact the future competitiveness and innovative capacity of countries and regions (Cardoso et al., 2014). Policy efforts to diversify higher education in the last decade have stimulated interest in participation in technical and vocational higher education (e.g. Ahola, 2006), but resulted in substantial differences in the relative relevance of this type of educational provision (Fig. 2). A comparison between Germany, The Netherlands and Portugal is illustrative of this point. The percentage of Dutch students in the technical and vocational higher education sector is twice that in Portugal or in Germany (Vereniging Hogescholen, 2014a), representing about 420,000 undergraduate students enrolled in technical and vocational higher education in 2012, in comparison with 259,000 in universities (Vossensteyn and de Weert, 2013).

Also showing large variations across countries is the participation of technical and vocational higher education graduates in the labour market. The percentage of these graduates in the Dutch labour market is relatively high (22% of the total labour force; see ROA, 2013; Vereniging Hogescholen, 2014b), more than twice the participation of university graduates (e.g., SEO, 2009). In Germany, technical and vocational higher education graduates represented only 5% of the total labour force in, compared with university graduates, who made up 18% of labour force³. In Portugal, the participation of both types of tertiary education graduates in the labour market is still relatively low in terms of European figures, representing 26% of 25–34 year olds in 2010 (it was only 14% in 2001) and, therefore, still below the EU (31%) and OECD (35%) averages (Fig. 3).

More than just an issue of access and participation, social and economic stakeholders (e.g. European Communities, 2013) are advocating for technical and vocational training systems to be more flexible and adaptable to societal needs. They stress the need for some sort of educational partnerships (e.g. Schultz and Windelband, 2008). Taking this context into account, the research of this article contributes to the on-

going debate on the changing landscape for technical and vocational higher education (see Kettunen, 2011), including the debate on the role of social and economic stakeholders and their participation in new teaching and research modes of inquiry (e.g. Rip, 2004; Boersma et al., 2008). Developing new participatory modes of educational provision (Harvey, 2010) and stimulating their continuous evolution shapes individuals with the relevant skills for a rapidly changing labour market (Clancy and Goastellec, 2007) and contribute to sustainability of skilled and adaptable workforces (OECD, 2014a). This is associated to the concept of “problem-based learning” (PBL) which enhances skills and technical competencies that are of interest to new graduates and, above all, to those able to participate in the labour force (Lehmann et al., 2008; Yasin and Rahman, 2011; Hoidn and Kärkkäinen, 2014). Problems that students are required to “solve” as part of the learning process in PBL often relate to professional practise (Loyens et al., 2012) and may be conducted and organized in such a way as to allow the training of large groups of students. Table 1 outlines some basic features of such a pedagogical approach, which emphasizes the development of specific students’ technical skills and social skills (Bilán et al., 2005). Implementation processes are facilitated by short-term projects, engaging external actors (e.g. Sandelin et al., 2012).

Table 1

Features of problem-based learning and project-oriented research.

Characteristics of problem-based learning, PBL	Literature references
“Real life” problems and problem-based learning	Yasin and Rahman (2011); Savery (2006)
Project-oriented research and interdisciplinary work	Savery (2006); Lehmann et al. (2008)
Student-centred approach	Hoidn and Kärkkäinen (2014)
Teacher's role as facilitator of knowledge	Hmelo-Silver (2004)
Self-directed learning: students diagnose their learning needs, strategies, goals, and resources needed to fulfil the task	Hmelo-Silver (2004);
Promotes team work and collaboration	Duch et al. (2001)
Develops communication skills as students need to present their solutions (even if taking on different roles in projects/teams).	Bilán et al. (2005)

3. Case selection

This article uses qualitative research focusing on case studies of three technical and vocational higher education institutions: the “Hogeschool van Amsterdam” in the Netherlands (HvA, case study 1), “Münster University of Applied Sciences” in Germany (MUAS, case study 2) and the “Instituto Politécnico de Bragança” (IPB, case study 3), in the northeastern part of Portugal.

We used a relatively small number of cases (Yin, 2003), with each case analysed as an interpretative whole. A comparative method was used to enhance the scientific validity of our case study approach. The conditions and settings of each individual case were adequately specified following an “individualizing comparison” (Tilly, 1984:87–9), with the specific characteristics of each case being assessed to determine how much the cases differentiated from each other. As a result, an explicit profiling of each individual case was achieved, and all of them were purposefully sampled to achieve validity and richness of the information obtained (Yin, 2003).

The appropriate form of purposeful sampling for the analysis of training in technical and vocational higher education in Portugal is the criterion case sampling. Criterion sampling suggests case selection based on certain common criteria (i.e., “technical and vocational higher education”; see Patton, 2002), and the rationale for our choice of the case studies was based on recent implemented research practises in these institutions and how they foster specific skill development through engaging students in short-term projects of local scope (SEO, 2009; Plewa et al., 2015).

² Mainly from East and Southeast Asia. These countries not only understand the value of education in itself (ingrained in East Asian cultures) but also its importance of higher education participation in developing nationally competitive global economies (Postiglione, 2011).

³ Information can be found in German at the following website <https://www-genesis.destatis.de/>

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