

# REVIEW OF DUAL HIGHER EDUCATION IN THE EU

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## Abstract

This paper aims to explore the terminological and conceptual differences among the member countries and the legal framework related to the implementation of the Dual Higher Education (DHE) in the European Union. The term DHE refers to education systems that combine academic studies with practical work experience. DHE in the EU is a diverse and continually developing concept. While Germany and Austria serve as benchmarks for well-structured systems, other countries are actively tailoring the model to align with their unique educational frameworks and economic priorities.

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## 1 Introduction

Dual Higher Education (DHE) blends academic learning with practical work experience. It integrates studies at a university or college with on-the-job training at a company, creating a symbiotic relationship between education and industry. This model is often structured as a partnership between educational institutions and businesses ensuring that students gain both theoretical knowledge and practical skills. Students enrolled in dual programs alternate between periods of classroom instruction and work placements in a professional setting. This alternation can vary, ranging from weekly shifts to longer blocks of months spent in each setting. Graduates often earn a formal academic degree, such as a bachelor's or master's, while simultaneously acquiring substantial work experience.

EU4Dual aims to establish the European University for Dual Education. The scientific base for reaching this goal is supported by research conducted on this topic. The first step in this complex research project was to write mapping studies on the current state of dual education in different EU countries. Mapping DHE in member states of the EU got a little research interest; therefore, this research fills a research gap.

## 2 Method

The present research implemented qualitative methods, desktop research. Scientific studies, research articles, CEDEFOP reports, public databases were analyzed. The keywords we used were Dual Higher Education (DHE), Dual Education, vocational education, vocational degrees, VET training, Work-Based Learning, apprenticeship, internship.

Furthermore, the EU4Dual's WP2 research group collected data on the current state of the DHE in the member states of the EU. The members of EU4Dual WP2 research group constructed questionnaires for the institutional representatives and the decision makers; these questionnaires were exploited in the interviews conducted with the different stakeholders in the EU member countries, the research group also made a structured guideline for implementing DHE Quality Criteria in Dual Higher Education (DHE).

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Our main research aim is to explore the terminological and conceptual differences among the member countries and the legal framework related to the implementation of the DHE in the European Union.

### 3 Results

#### 3.1 Definition and Framework

Dual Higher Education (DHE) was started in 1971 with the application of Daimler-Benz AG to the Ministry of Education of the state of Baden-Württemberg which led to the establishment of the model of DHE, which has since operated at several locations in Germany [7].

The German work philosophy, emphasizing critical and analytical thinking, productivity, leadership, proactivity, and organizational vision, is incorporated into the training programs in collaboration with DHBW. Germany's renowned Duales Studium is globally acclaimed for its innovative approach, combining rigorous academic coursework with hands-on industry experience. This system, deeply rooted in the country's dual vocational training framework, ensures a comprehensive education that integrates theoretical knowledge with practical, industry-specific skills [3] [7] [15].

Since the system and the concept of dual education originate from Germany we base our research on the definition of Dual Study Programs in Germany. A nationwide definition of dual study programs was introduced for the first time in 2017. There are three distinct categories determined by the Center for Higher Education Development. 1. Integrated dual study program, 2. Practice-integrated dual study program, 3. Career-integrated dual study program. The common elements of the definitions are the following: Vocational training is seamlessly incorporated into the full-time and part-time degree programs, designing a structured and institutionalized connection between academic studies and practical training. This integration is supported by organizational collaboration between universities or vocational academies and practice partners, as well as, where applicable, vocational, or technical schools. Additionally, certain training components, mandatory internships, are recognized and credited as part of the academic coursework [7] [15]. In the following we endeavor to analyze the similarities and differences among the different educational systems according to the key concepts of dual studies defined above.

##### ***3.1.1 Structured Alternation Between Study and Work in DHE systems***

According to the German system, students alternate between academic semesters at the university and on-the-job training periods at a company. The schedule is predefined, with equal weight given to theoretical and practical components [7]. Austria accepted the German definition according to which degree programs may only be designated as dual if the learning locations (at least the university and the company) are systematically interlinked in terms of content, organization, and contract. Dual education in Austria is regulated by national policies but is less standardized than in Germany, offering institutions and companies more flexibility in program design [4]. Programs often align with the European Qualifications Framework (EQF) and the Bologna Process for comparability across Europe. DHEs may implement flexible alternation models (e.g., blocked periods, periodic alternation) that best fit the study field while maintaining at least one transition between academic and practical phases per semester [4].

In Hungary, Dual Higher Education (DHE) programs include full-time and part-time degree courses in which the curriculum contains unique provisions for the training period, methods, completing theoretical courses at university, and the evaluation of the acquired knowledge. At least half of the training time must be spent in dual training for the dual note to be included in the degree [13] [14].

Dual Higher Education (DHE) in France refers to an education system that combines theoretical learning at an academic institution with practical training in a professional environment, structured through a legally binding contract with an employer, aimed at enhancing students' employability and aligning education with labor market needs. In Higher Education Institutions (HEI), dual training or apprenticeship (as it is called in France) is work-study training: it combines training

with an employer and lectures given in a HEI. The apprentices spend at least 50% of the program period in the company they have contracted with [10].

Students obtain credits in each semester for completing the practical component. In the German system, a minimum of 20% of the ECTS credits should derive from workplace-based learning. In France, the number of ECTS credits varies from eight (first) to thirty (the last semester). In Hungary, students earn 30 ECTS credits for the work practice [13] [14].

### **3.1.2 Formalized Employer-Student Relationship**

Elements of the Dual VET were introduced in all EU countries; however, the implementation and the structure vary widely. According to the German system, in DHE programs, students typically sign a training or employment contract with the partnering company. They receive a salary or stipend during their training period.

The regulations are similar in the French system, according to which the 'apprentice' benefits from an employment contract in the company and must respect the rules applied to all employees (holidays, professional objectives, financial charges, etc.). The 'apprentice' is considered as an employee both on the HEI campus and in the company. In Hungary, the situation is similar to the German model, where a contract is set up and signed among the student, the HE, and the company stakeholders [15].

In vocational education in the EU, both the term apprenticeships and internships are widely used. Apprenticeships are defined as long-term work-oriented trainings that are part of vocational education and training and that may be solely school-based programs or combined school and work-based programs, both conducted in the formal education system obtaining credit points. Apprenticeship can be applied to dual VET; however, apprenticeships also appear in DHE, i.e., French system. In Austria, students have contractual relationships with both the training company and the university; as a rule, there is an employment relationship with the company from the third semester of the bachelor's degree. The term apprenticeship (German: Lehre) is mostly used on ISCED 3, 4, 5 levels of Dual VET [1] [2].

An internship is a short-term position to help you learn more about a specific industry, role, or the company itself. Internships do not lead to a qualification but can be part of a broader (VET) qualification, and companies can provide certificates on completion of the internship. Interns/trainees obtain work-experience which enhances their CV when applying for jobs. The learning is often less pronounced and structured compared with apprenticeships [11].

The term internship is a widely used term in EU countries. The term internship included in the vocational education in EU countries regardless of the fact whether these internships are part of a DHE program or not [18]. In the German system, internship (German: Praktikum) covers a period in which students/pupils spend some time in a company to get experiences about the economy, learn, and acquire practical knowledge in the branch they study. In Slovakia, in HE institutions students are required to complete one-semester long professional practice at an internship place obtaining thirty credits during the practice semester. The companies put out "their internship advertisements" on an online platform to find the perfect candidate. Students apply for internships, and if the company accepts their application, a contract is concluded between the student and the company. Students are allowed to find an internship place on their own; and fulfil the professional practice at the chosen company provided that the firm meets the requirements set by the university. The internship can be paid or unpaid according to the contract concluded between the student and the company [18].

### **3.1.3 Tight Collaboration Between Stakeholders**

In all DHE models, it is essential to establish formal agreements outlining the responsibilities and commitments of HEIs, corporate partners, and students. The coordination should cover both content and organizational aspects of the program. Dual programs are developed in close cooperation between academic institutions and industries to ensure alignment with labor market needs. Companies play an active role in shaping curricula and providing training opportunities. In Germany and Austria, companies in the professional field are involved as equal partners in all phases of organizational development, and the practical training includes both the application and testing of what has been learned at the university and in the training company. Furthermore, the company

experience is embedded into the curricula at university. Companies take part in the selection of students and in designing of the curricula (Hungary, Germany, Austria); however, similar system works in countries which formally do not recognize the DHE model [3] [4] [9] [11][13] [14].

### **3.1.4 Dual Objectives**

There are two main aims: to provide students with academic qualifications (e.g., bachelor's degree). The other aim is to equip them with hands-on experience and skills needed for specific professions. Although not all countries integrated DHE in their educational system, vocationally oriented degrees are offered in all the EU countries. The aims are similar in all the Higher Education (HE) systems: to support the students in acquiring hands-on experiences [16]. In the German DHE system accepted by Austria and Hungary, the main focus is on combining academic knowledge with practical skills to address specific labor market needs. However, in France, the trainings are often aimed at increasing employability for students by adding a professional dimension to academic studies [2] [17].

## **3.2 Level of Work-Based Learning (WBL) Integration in EU countries**

Dual Education and Work-Based Learning are terms usually used interchangeably, however, the structure and quality of WBL differ significantly across member states. In DHE model, Work-Based learning is deeply integrated into the educational system. The establishment of formal contracts among the educational institution, the industry partner and the student outline the responsibilities of the HEIs, the corporate partners and the students. However, the Work-Based Learning model may be less structured, it is often limited to internships rather than formal dual systems where the alternation is embedded into the training. In the European Union, WBL plays a critical role in vocational education and training (VET), aligning education systems with the evolving needs of the economy [9] [12] [13] [14] [18] [19] [20] [21] [22].

### **3.2.1 Types of Institutions Offering Work-Based learning**

In Germany, traditional universities participate in Dual Higher Education, rigorous accreditation standards are applied to dual programs, equivalent to those of traditional programs, to ensure a high level of academic and professional quality. Dual VET in all EU countries is strongly associated with vocational training institutions. However, involvement of Polytechnics or Universities of Applied Sciences in dual programs is also a strong tendency in EU countries, emphasizing applied research and industry links [3] [4] [5] [6] [7] [9] [10] [11] [13] [14].

Common features of the Higher Education systems which did not adopt the German Dual Higher Education system include Work-Based Learning (WBL) and Work-Integrated Learning (WIL) in the vocational trainings. Apprenticeship is connected to the VET system independently from universities. Higher vocational education courses (SeQF levels 4, 5, 6) focus on practical experience through WIL. A significant portion of learning takes place directly in workplaces, with at least 25% workplace learning. Students obtain vocational degrees after completing the programs designed to prepare them for specific careers, often in technical or trade fields. Unlike traditional academic degrees, vocational training focuses more on hands-on experience and practical skills [9] [20] [21]. At HE level, professionally/vocationally oriented bachelor's programs may be offered whose curriculum requires the students to complete internships/work placements (30 credits, one semester at the training place) [18] [12].

### **3.2.2 Social and Cultural Dimensions**

Dual Higher Education is seen as a pathway to high-skilled employment. In nations with strong vocational traditions (e.g., Germany, Austria, the Netherlands), vocational bachelor's degrees are highly appreciated. Employers, particularly in technical and applied fields, value vocational bachelor's degrees for their emphasis on practical skills. Graduates are often seen as job-ready, with fewer additional training needs [3] [7] [11] [14].

However, perception varies by country. In other regions, vocational degrees may still be viewed as secondary to academic degrees. The esteem of vocational degrees depends on the industry as well. Degrees in healthcare, IT, engineering, and logistics are often assessed based on skills and

competencies over the type of degree, leading to greater esteem for vocational qualifications in these fields [3] [5] [6] [7] [9] [11] [14] [20] [21].

## **4. Discussion**

### **4.1 Dual Higher Education systems**

We found that the integration of DHE system into HE systems shows a diverse picture. Several countries' legal systems recognize the DHE (i.e., Austria, Belgium, Hungary, France, Luxembourg, and Netherlands). We restricted our analysis to how the most essential elements of the definition of DHE are implemented in different models. The key elements we examined were 1. Structured Alternation Between Study and Work. 2. Formalized Employer-Student Relationship, 3. Tight Collaboration Between Stakeholders [3] [7].

We chose to analyze these concepts as they are included in the definition of the German DHE degree programs. We found that German, Austrian and Hungarian models have the most common features. The Integration of Work and Study is full and structured. There is a mandatory alternation between the university and practice place. There are employment contracts among the student, the HE institution and the industry stakeholder. The HEI and industrial partners collaborate with each other. Higher education institutions and companies closely collaborate to design the curriculum. Programs are tailored to meet industry needs, ensuring that academic content aligns with practical application. The French model shares certain amount of similarities with German model including the alternation, the apprenticeship contracts, the credit allocation, and the strong collaboration with the industry partners; however, its concentrates on the employability and aligning education with labor market needs [7] [10].

### **4.2 Dual Higher Education at an experimental stage**

In Romania, the German model has acclaimed popularity related to the industry needs. In 2023, the Ministry of Education launched the National Recovery and Resilience Plan, which includes the creation of at least ten regional consortia and the development of a minimum of ten integrated vocational campuses, aimed at providing advanced vocational pathways for vocational higher education. Although the laws regarding Dual Higher Education have been enacted, the detailed regulations should be designed as the winning consortia have started to build the new campuses. Similarly, in Poland and Bulgaria, DHE projects have been initiated [8] [19].

### **4.3 Work-Based Learning in the EU**

Vocational higher education in countries which have not established the DHE model, work practice is ensured by a different system. Work-Based Learning and Work-Integrated Learning are concepts which are used interchangeably with dual education model. The vocational higher education tends to be diverse in different countries due to their own traditions and specificities. In general, professional bachelor's degree programs consist of a mandatory internship (one semester, 30 ECT credits). Vocational degree courses must comply with the standards of the European Qualifications Framework (EQF). It is worth noting that the work-study integration is less structured than it is in the German system [9] [20] [21] [22].

## **5 Conclusions**

Our study shed light on the differences related to the terminological and conceptual differences in Dual Higher Education across EU countries. Despite the fact that the terms related to Dual Higher Education differ across EU countries, the content of vocational programs align with the European Qualifications Framework; Work-Based Learning, work placements, apprenticeships and internships have had a long tradition in all EU countries. Dual Higher Education in the EU is a diverse and evolving concept. While Germany and Austria serve as standards for well-structured systems, other countries are adapting the model to fit their educational and economic contexts. The differences in terminology and implementation underscore the need for a flexible approach to suit regional needs while benefiting from EU-wide standardization initiatives.

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