

## GERMANY'S DUAL EDUCATION SYSTEM: THE ASSESSMENT BY ITS SUBJECTS

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**Abstract.** *Introduction.* The dual system of VET, widely practiced and popular in Germany, serves as a model for the European Union. The effectiveness of such training, successfully combining the development of theoretical knowledge with the practical activities of students, has been tested by life and time. The indisputable advantages of this system include its ability to respond quickly to the challenges of globalisation and transformation in the world of professions. In this regard, it is very important to address the socio-cultural and historical backgrounds of the dual system formation and to find out the reasons for its successful contemporary functioning.

The *aim* of the present publication was to comprehend the implementation experience of the Germany's dual system based on the opinions analysis of experts and participants of the dual education system and the feedback from the direct participants of the educational process about this method of acquiring a profession and building a career path.

*Methodology and research methods.* The leading research methods were questionnaire survey, comparative analysis and content analysis of empirical materials. Processing and generalisation of the detailed answers of respondents were based on the inductive method.

*Results.* Historical, mental, socio-economic prerequisites for the appearance and formation of the Germany's dual education system were identified and described. The methodology and methodological tools for the comparative analysis of attitudes of educational process members (students, practitioners, experts) and their points of view concerning degree of rationality, expediency and efficiency of support and development of dual forms of vocational education. The obtained data and synthesis of evaluative judgments of informants allow us to present an objective picture of the considered option for providing the country's economy with the necessary labour resources.

*Practical significance.* The materials of the article, confirming the prospects of the introduction and dissemination of the experience accumulated in Germany on the reproduction of skilled workers of enterprises, can be useful for understand-

ding the directions of VET in other countries. Moreover, the research materials can be practically applied for the selection and creation of effective, similar to the German, mechanisms of rapid response to globalisation changes in the manufacturing sector.

**Keywords:** dual education system of Germany, background, globalisation, conditions of VET effectiveness.

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## ДУАЛЬНАЯ СИСТЕМА ОБРАЗОВАНИЯ ГЕРМАНИИ В ОЦЕНКАХ ЕЕ СУБЪЕКТОВ

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**Аннотация.** Введение. Широко практикуемая и популярная в ФРГ дуальная модель профессионального образования служит образцом для всего Европейского Союза. Эффективность подготовки рабочих кадров, удачно сочетающей освоение теоретических знаний с производственной деятельностью обучающихся, проверена жизнью и временем. К бесспорным достоинствам данной модели относится ее способность оперативно реагировать на вызовы глобализации и трансформации в мире профессий. В связи с этим весьма актуальны обращение к социально-культурным и историческим основам формирования дуальной системы образования и выяснение причин ее успешного современного функционирования.

*Цель* статьи заключается в осмыслении немецкого опыта реализации программ дуальной подготовки специалистов через изучение мнений экспертов и отзывов непосредственных участников образовательного процесса о подобном способе приобретения профессии и построения карьерной траектории.

*Методология и методы.* Ведущими методами исследования являлись анкетирование, сравнительный анализ и контент-анализ эмпирических материалов. Обработка и обобщение развернутых ответов респондентов производились с опорой на индуктивный метод.

*Результаты.* Определены и описаны исторические, ментальные и социально-экономические предпосылки возникновения и условия становления дуальной системы обучения в Германии. Разработаны методология и методический инструментарий для сопоставления установок субъектов образовательного процесса (студентов, практиков, экспертов) и их точек зрения по поводу целесообразности поддержки и продуктивности развития дуальных форм профподготовки. Полученные сведения и синтез оценочных суждений информантов позволяют представить объективную картину обеспечения экономики страны необходимыми трудовыми ресурсами.

*Практическая значимость.* Проведенное исследование подтверждает перспективность распространения накопленного в ФРГ опыта по воспроизводству квалифицированного рабочего персонала предприятий. Результаты изыскания помогают более четко понять направления реформирования систем профессионального образования других стран, выбрать наиболее действенные механизмы модернизации этих систем и создать с учетом национальной специфики гибкие рациональные структуры профподготовки, адекватно отвечающие на глобализационные перемены в производственном секторе.

**Ключевые слова:** дуальная система образования ФРГ, глобализация, условия эффективности подготовки рабочих кадров.

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## Introduction

The beginning of the new millennium and the Fourth Industrial Revolution brought a kind of crisis in the comprehension of accumulated experience and the determining of development vectors for educational systems in many countries of the world (Padur, Zinke, 2015) [1]. The system of Germany's vocational education and training encountered so many global challenges simultaneously. Digitalisation of economy and labour, changes, which have occurred due to technological improvements in production, trends in demographic indicators and migration flows over the past ten years have stimulated the need for the development and change of the country's vocational education and training system (BIBB, 2018) [2]. On the other hand, the active policy of

spreading Germany's successful experience of dual education and a desire to borrow an efficient educational model by other countries in Europe and Asia (Thomann, Mouillour, 2012) [3] have actualised the need to analyse and assess the prerequisites for the creation, main implementation mechanisms and conditions for the efficiency of the dual education system. In order to solve the first and second tasks, it is necessary to identify, analyse in detail and re-consider the conditions for the formation and functioning of the Germany's dual education system. It is important to carry out a retrospective study of the origins and historical development of the dual system, which will allow achieving a holistic study of its theoretical and organisational pedagogical foundations. It is also essential to pay attention to the experience gained in the current globalisation and entailed changes in the dual education system.

The main goal of the study was to comprehend the modern implementation experience of the dual education system in Germany. A comparative analysis of the attitudes and opinions of participants of the Germany's dual system (employees and students of vocational schools, representatives of chambers of commerce and enterprises), as well as experts, who determine the conceptual development of the system, made it possible to form objective assessment of this system and determine current conditions for its implementation and possibilities of borrowing by other countries.

The tasks specifying the purpose of the study were:

1. Analysis of scientific works that reveal the historical, pedagogical and socio-economic prerequisites for the appearance and development of the Germany's dual education system.

2. Defining the theoretical and methodological foundations for studying the problems of the development of the dual education system and working out methodology for an empirical research.

3. Conducting an empirical research in certain target groups (experts, practitioners and students of vocational schools in Germany).

4. Analysis, systematisation and interpretation of data on the formation and development of the Germany's dual education system.

The concept of duality in Germany's vocational education and training incorporates the semantics of ambiguity and a single organisational whole. The dual system appeared as a product of social partnership, which is a close interaction of the state, employers, and public organisations in training of highly qualified personnel in accordance with the needs of the labour market (Wossmann, 2005) [4]. They successfully implemented this system in the vocational education and training of Germany. Its essence is in the synthesis of production activities and the theoretical foundations of future professions, as well as in the mechanism of

the student's entry into the educational environment. When German students choose a profession and a vocational school, it is essential to find an enterprise that concludes a contract with them and directs them to learn a profession necessary for the enterprise. In most other countries, future students come to a vocational school, initially focusing on their preferences in the profession, and they try to find work independently after graduating from vocational schools.

For hundreds of years, apprenticeship in the craft and trade business throughout Europe had two main functions (Mulder, 2017) [5]. Firstly, it was necessary to teach a person with some basic professional skills that would provide some income to support the family. Secondly, it was important to stimulate the entry of a person into professional communities, where they learnt skills as well as a certain kind of behavior, which formed the worldview of an artisan. Both aspects – the creation of an economic framework and certain norms of behaviour – served as the basic ensuring a smooth and successful integration of an individual into the professional community.

In the late 19th – early 20th centuries, there were several notable events in the European society, which served as the basis for the formation of the dual education system in Germany. The industrialisation brought a number of innovative philosophical and pedagogical ideas (Friedman, 1994) [6]. In particular, the pedagogical ideas of Georg Kerschensteiner had a significant impact on the vocational education and training in Germany. He proposed to teach students not only professional skills, but also some theoretical fundamentals of professional knowledge (Kerschensteiner, 2017) [7]. Traditions of teaching students a profession alone came from the Middle Ages, when certain professions formed their workshops, organisations, unions and communities, and students learnt only professional skills. Theoretical knowledge gradually began to lose its relevance to society. G. Kerschensteiner became a teacher-reformer who proposed to create vocational schools for the training of artisans. Thus, it was the way to solve some actual public and state problems simultaneously. On the one hand, they brought out the importance of vocational education and training in the eyes of citizens and future students of vocational schools. On the other hand, they solved the problem of stable labour flow and efficiency.

During this period of state development, German Chancellor Otto von Bismarck actively developed the idea of national security (Obolenskaya, 1992) [8]. Bismarck considered his reforms as a means to turn the working class into a community of loyal and conservative German citizens. This concerned the least protected segment of the labour society, which the students belonged to.

The Kaiser's declaration, dedicated to the workers' right to social protection, was implemented along with three laws on social insurance, carried

out by Bismarck through the Reichstag (Obolenskaya, 1992) [8]. In order to support legislative initiatives, it was necessary to create an operating mechanism for the insurance of the working class against unemployment and for the period of disability. The ideas of the social state have become advanced and far exceeded ones adopted in other industrialised countries.

The Germany's dual education system has a range of educational institutions, their legitimacy is determined by the German Federal Law on Vocational Education, the Law on the Protection of Youth Labour, the Trade and Commerce Regulations governing its operation at the federal level (BIBB, 2018) [2]. Legislative acts of the lands regulate the sphere of education and initiatives of recent years; their aim is to improve the training system, personnel and young specialists.

The most effective socio-economic mechanisms, which support the efficiency of dual education, are legislation regulating the participation of enterprises in dual education, state or regional funding, scholarship payments, involvement of trade unions and chambers of commerce to participate in the dual education, guaranteed employment of future graduates of vocational schools.

Along with the legislative and economic mechanisms for maintaining the functioning of the dual education system, the human factor remains a fundamental tool. Pedantry and rationality, which are the main qualities of the German mentality, became synonymous of the word "German". There is a belief that these qualities are the source of many advantages of German life and services.

Currently, the titular nation of Germany is in crisis, because demographic indicators show a decline in the birth rate, and every fifth German citizen is of foreign origin (BIBB, 2018) [2]. For a younger generation, the cultural differences that they encounter at schools and enterprises become common. Globalisation and migration processes have changed the traditional image of a native German and created conditions for the integration of cultures.

Globalisation processes and educational internationalisation around the world are a fait accompli (Brown, Kirpal, Rauner, 2007) [9] and have consequences for the dual system. In the 1980s, the German dual education system had cross-border cooperation within the framework of the first pan-European educational programmes (Stenstrom, Lasonen, 2000) [10].

Thus, it is now impossible to discuss the issues, related to the future of vocational education and training, only within the national context. The internationalisation of education means the penetration of the elements of other educational systems into the German education system. In this context, it is necessary to mention the influence of the world interfacing of the markets for goods, services and labour markets on the structuring of the national vocational education and training system.

## Literature review

The main discussions of the end of the 20th century about dual education were aimed at clarifying the balance of interests of the state and employers; economic profitability of vocational training at enterprises; increasing the effectiveness of interaction between vocational schools and enterprises. A lot of German researchers (Greinert, 2000; Kuebert, 1999; Lipsmeier, 1988; Shelten, 1996) [11–14] initiated these discussions. Our research enriches and complements the notion of the efficiency of legislative norms and initiatives, regulating the system of dual education in Germany at the present time. It also notes that respondents consider federal laws, defining the scope of processes, to be the most essential; they distinguish the importance of initiatives of recent years, which update and modernise the norms of federal laws in the context of globalisation.

Active researches in the field of vocational education and training seek to identify problematic and controversial issues, possible development vectors and efficient mechanisms for the formation of modern educational models (Padur, Zinke, 2015) [1]. The Federal Institute of Vocational Education (BIBB, 2018) [2] of Germany conducts these researches. The problems of professional competences (Thomann, Mouillour 2012) [3] and optimal working conditions, the formation of the attractiveness of vocational education and training for young people Hemkes, Wiesner, 2015 [15] and the assessment of the prospects and aspirations of the younger generation (Krewerth, Eberhard 2012) [16], the adaptation of refugees and migrants (Gei, Matthes, 2016) [17] are some of the topics to monitor the system of vocational education in Germany, carried out by the scientists of the institute. Our research contributes to the study of the issue of motivating young people when choosing the form and level of education (the importance of guaranteed employment and the provision of scholarships during the education for students, according to our research, were essential). This position is supported by the opinion of other research target groups of practitioners and experts in the field of vocational education and training. In addition, an analysis of the personal qualities of students contributing to the efficiency of the dual education system made it possible to form professional-graphic materials that can serve as a basis for understanding the personal qualities of the students of vocational schools, which are necessary for the formation and upbringing of highly professional personnel in Germany.

The dual system is of great scientific interest not only for German researchers. Western researchers carry out comparative studies of vocational education and training systems, identifying mechanisms for responding to the challenges of new global economic and social realities (Kinti, Hayward, 2012; Allen, 2015) [18, 19]. The conclusions of our study on the possibilities

and benefits of borrowing dual system suggest that Germany's dual system of education, being an integral and efficient educational product for its country, does not need any borrowing and does need to influence on educational systems of other countries. Having a high level of identity, Germany's dual education system seems unique, and therefore, its implementation in other countries requires the same conditions as they are in Germany.

Scientists from Eastern Europe and Russia devoted their works to the analysis of the dual education system in Germany and, at different periods, they gave diametrically opposite assessments of its efficiency. In the Soviet period, they published a number of works on various aspects of the dual form of education in Germany. In these works, they stated the inadmissibility of the dual education system in the conditions of the socialist economy and its inadequate efficiency in comparison with the domestic, Soviet system of vocational education and training (Piskunov, 1963; Yarkina, 1976)<sup>1</sup>. Over the past 20 years, in the context of the new economic and political reality, there have been some works in Russia, devoted to the analysis of the theoretical and methodological foundations of the German pedagogy, training of young students in Germany (Romantzev, 2012; Fedotova O., 1998; Fedotova G., 2002; Korneeva, 1994; Klarin, 1995) [20–24]. There are also works revealing the features of masters' preparation of industrial training for the dual system (Esenina, 2014; Solov'eva, 2013) [25, 26]. In these studies, they recognised the experience of the dual education system as promising for the development of Russian vocational education and training. At present, the introduction of the dual form in vocational education and training is widely initiated in Russia. Unfortunately, the inadequacy of legislative acts and initiatives, which regulate this process, the lack of socio-economic mechanisms in respect of tax preferences for enterprises and scholarships for students, the uncoordinated policies of enterprises and vocational educational organisations, the non-guaranteed employment for graduates, the problems of pedagogical and methodological support of educational and production activities of students cause problems in the process of borrowing the German's dual educational system. In the context of these problems, our research can provide substantial support for the organisation of the implementation of the dual system of education.

In the works, devoted to the internationalisation of education and the issues of borrowing foreign educational experience (Altbach, 2012; De Witt,

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<sup>1</sup> Piskunov A. I. *Teorija i praktika trudovoj shkoly v Germanii: do Vejmarskoj respubliki* = The theory and the practice of German labour school: Before Veimar Republic. Moscow: USSR Academy of Pedagogical Sciences; 1963. 286 p. (In Russ.); Yarkina T. F. *Kritika idejnyh pozicij burzhuaznoj pedagogiki i shkoly* = The critics of idea positions of bourgeois pedagogy and school. Moscow: Publishing House Znanie; 1976. 45 p. (In Russ.)

1993; Harari, 1989; Knight, 2004; Soderqvist, 2007) [27–31], new forms of education, including dual education system, are characterised as high-tech, providing the required result of education. Our study ensures that Germany's dual education system is a high-tech educational product, its manufacturability is in the stability and integration of its elements: successive federal and land regulatory legal support; consistent policy of its subjects; the state, enterprises and vocational schools; a high degree of identity and integrity, reinforced by the mentality; a clearly constructed system of educational and production process.

### **Materials and methods**

The purpose of the empirical study carried out in Germany was to determine the current conditions and factors for implementing the in Germany on the basis of their assessment by participants and experts.

The empirical study consisted of three stages, which are the development of the research methodology, carrying out the research, analysis and interpretation of the study results. The period of the study was from February to July in 2018.

The basis of the study was the vocational schools of Germany, in lands of Bavaria, Hesse, Berlin.

The study involved 177 respondents, representing three target groups.

1. 23 employees of educational and research institutions in Germany, involved in the study of dual education, having a higher education or academic degree. We refer to them as experts.

2. 34 teachers and administrative staff of vocational schools, representatives of the Chambers of Commerce and Industry, representatives of enterprises with a higher or vocational education and training. We refer to them as practitioners.

3. 120 students of four vocational schools of various specialties who do not have completed vocational education and training. We refer to them as students.

The study did not take into account differences in age and gender. It is important to mention here that the age of studied students of vocational schools ranged from 16 to 21 years, which indicates their formed opinions.

To fulfill the tasks of the empirical study, we used the following methods: the participant observation, involving direct participation of the author in working with the respondents, group and individual full-time interviews using open and closed questions, including an expert survey. The choice of respondents was random. The interviews were anonymous. The names of the respondents were encrypted.

We developed a questionnaire for all target groups that included questions with options for answers to choose or rank. The answers should reveal the problems of formation, ensuring efficiency and prospects for the development of dual education in the context of globalisation.

In addition to the groups of experts and practitioners, we developed a questionnaire, consisting of open questions and implicating detailed responses of respondents on the history of the dual education system, the mechanisms for its development, the possibilities for its advancement in the world and the socio-cultural characteristics of the implementation process.

### **Results**

The efficiency of the dual education system in Germany is greatly determined by comprehensive legislative support at all levels of government from federal to regional (land). In this regard, it was important to find out the respondents' opinion on the significance and impact of legislative acts on the efficiency of the dual education system. Therefore, we asked all respondents to use a five-point scale (1 is the smallest indicator, and 5 is highest) to evaluate the influence of federal laws, the regional (land) laws and the legislative initiatives over the last 5–10 years on the education system.

The respondents of all three groups were unanimous in assessing the legislation. They assessed the impact of federal laws on dual education as strong, most positive and effective (Fig. 1). They rated it as 3,75 out of 5,00; legislative initiatives over the last 5–10 years got 3,05 out of 5,00; regional (land) laws had the least influence, according to all three groups, their impact was estimated at 2,05 out of 5,00.

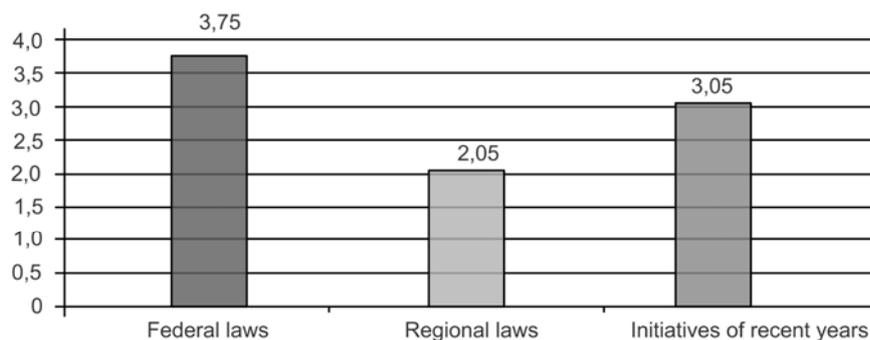


Fig. 1. The degree of influence of the German laws on the effectiveness of the dual education system

The content analysis of the detailed answers in the groups of experts and practitioners showed the importance of laws, equal requirements for public and private schools, the unambiguity and structured norms of activity for vocational schools and enterprises.

Here are the most characteristic views on the main legislative acts (here and further, there are statements of the respondents given in the author's edition):

S. Respondent: "... Even if a vocational school is private, it has to draw up an education plan in accordance with federal law for accreditation..."

H. Respondent: "...The Chamber of Commerce and Industry is responsible for exams, according to the law..."

A. Respondent: "... The education process is clearly structured and transparent; there are various regulations and rules for all participants, which state their basic rights and responsibilities."

Thus, the analysis allows drawing a conclusion about the positive influence and efficiency of the legislative system on the functioning of the dual education system, the unambiguousness of its understanding and evaluation by the subjects of the educational process. Respondents pointed out the special importance of federal law.

One of the effective factors influencing the efficiency of the dual education system in Germany is socio-economic mechanisms. We proposed the respondents to assess some major socio-economic mechanisms for maintaining functioning and ensuring the efficiency of dual education. Among them, there are tools that stimulate the participation of enterprises in dual education; state, regional, local funding of the vocational school; the payment of scholarships to students, the involvement of trade unions, chambers of commerce and industry and other public organisations to participate in dual education; guaranteed employment for students after graduation from schools. They used a five-point scale (1-smallest indicator, and 5-largest indicator) for the assessment. In analysing the data obtained, we found some differences in the assessment of mechanisms by all three groups.

As follows from Fig. 2, a group of respondents, represented by students of vocational schools, considered the possibility of guaranteed employment (4.25 out of 5.00) and a scholarship (3.5 out of 5.00) being the most efficient mechanisms for the functioning of dual education and training. The respondents of the practitioners group defined that the most important mechanism for the functioning of dual system, which are the payment of scholarships to students (5.00 out of 5.00) and guaranteed employment of students (4.50 out of 5.00). In addition, the least important mechanism for them was funding of a vocational school by a federal or land budget (2.00 of 5.00).

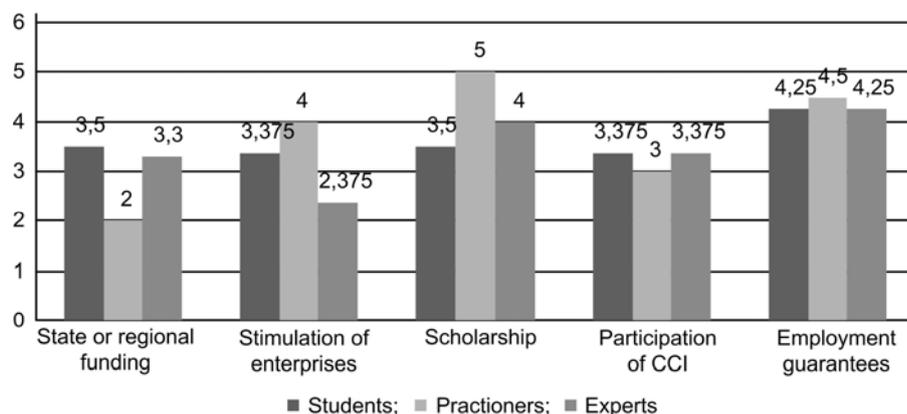


Fig. 2. The impact assessment of socio-economic mechanisms on the efficiency of the dual education system

According to the experts group, the most important socio-economic mechanism for the functioning of dual education and training is guaranteed employment (4.25 out of 5.00) and student scholarship (4.00 out of 5.00), the least important was the mechanism to stimulate the participation of enterprises in the dual education (2.40 out of 5.00).

In the questionnaire, which required detailed answers, groups of practitioners and experts gave opinions that also indicated the significant role of the mechanism for ensuring the employment of a student for the stable functioning of dual education and training:

S. Respondent: "A contract with a company in most cases guarantees the subsequent employment in this company..."

R. Respondent: "... Sometimes students have to work for a company for a certain number of years according to a contract's terms and conditions. Sometimes students are free to choose. On the one hand, it is a kind of a competition between companies for qualified specialists. On the other hand, employment depends on the economic situation in the industry..."

K. Respondent: "...trade unions initiated legislative initiatives, according to which students must work for one year for the company that directed them to school. This is very important! Unfortunately, not all industries have such a security mechanism..."

We should also pay attention to the detailed answers of the respondents concerning the financing of the educational process. The groups of students and practitioners did not give a high assessment to the funding mecha-

nism of the vocational school. In the detailed answers, the practitioners described the features of financing and functioning of dual education in terms of the participation of all interested parties:

H. Respondent: "... the process is closed: without regional funding, the school will not be able to provide a proper level of training (teachers + infrastructure), without proper infrastructure, enterprises will not want to send students to a vocational school, and without a certain number of students there will not be any funding..."

I. Respondent: "... Infrastructure and equipment of schools are the most important condition for effective education, because an enterprise will not send students to school, where there is not enough proper equipment for training..."

Thus, the respondents' consolidated assessments of mechanisms, which influence on the effectiveness of the dual system, point to the importance of guaranteeing the employment for graduates of vocational schools and the payment of scholarships for them during training. We can consider these mechanisms as the most important motivating factors for students.

The education of any country is mediated by the cultural and historical origins of its development, so the question of historical milestones and events that influenced the formation and development of dual education in Germany turned out to be one of the most curious for assessment and analysis.

Due to philosophical nature of this question and its inclusion of personal position, it did not intend to assess events with a five-point scale, but it required marking answers. In the questionnaire, the main factors influencing the development of dual education were the following events or milestones: medieval traditions of handicraft and apprenticeship, industrialisation, World War I and its consequences, World War II and its consequences, globalisation that changed the labour market and manufacturability of production.

According to the respondents of the students group (Fig. 3), globalisation, changes in the labour market and the growth of high-tech production had the greatest impact on the development of the dual system. The overwhelming majority of students found it difficult to determine the significance of the medieval traditions of handicraft and apprenticeship. This feature of the assessment shows that students tend to assess only those historical moments, which they have witnessed or heard from their parents. The proof for this can be frequently asked questions by students during the survey such as: "... I do not know anything about the traditions of the Middle Ages...", "...and what were the consequences of the First World War for Germany?", "... and when did the First World War end?"

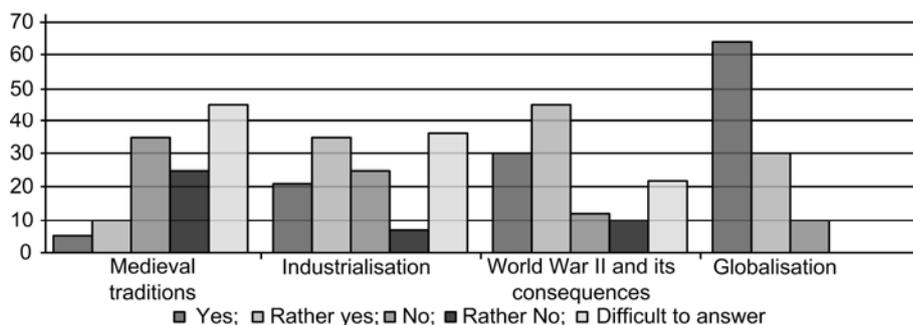


Fig. 3. The influence of historical events and processes on the development of the dual education system in the opinion of the students group

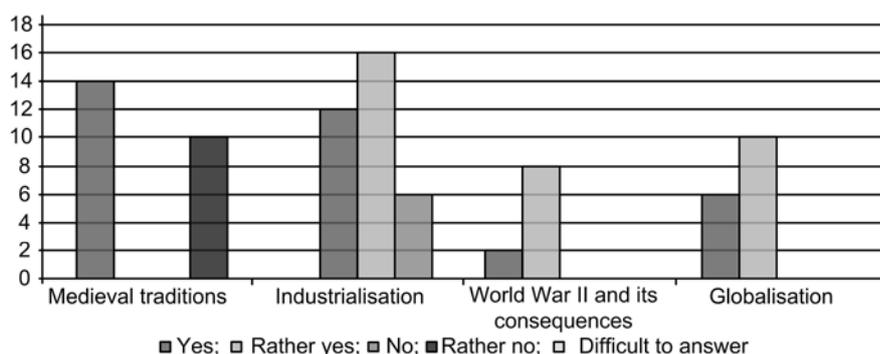


Fig. 4. The influence of historical events and processes on the development of the dual education system in the opinion of the practitioners group

The respondents of the practitioners group (Fig. 4) defined the main historical stages that influenced the formation of the dual education of Germany. They are medieval traditions of handicraft and apprenticeship and industrialisation, the First World War and its consequences. The respondents' answers of this group did not contain the labeling "difficult to answer", which indicates a sufficient confidence in the knowledge of the history of their country and the professional sphere.

Respondents of the experts group (Fig. 5) definitely answered the question about the influence of historical stages on the formation of dual education, without using the answers "no", "rather no", "difficult to answer". The period of industrialisation, the First World War and its consequences had the greatest influence; the second important period in terms of the influence deg-

ree on the formation of dual education was the medieval traditions of handicraft and apprenticeship. This indicates the deep understanding of the role of history in the development of the state education system.

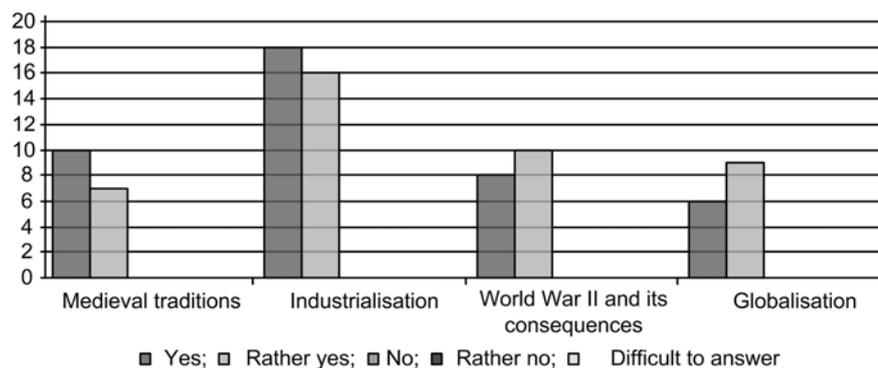


Fig. 5. The influence of historical events and processes on the development of the dual education system in the opinion of the experts group

We can confirm this conclusion by the detailed answers of the respondents:

A. Respondent: "... The success of the education system depends on the economy. The economy has been stable and successful in the past sixty years, and therefore vocational education and training developed consistently and effectively..."

I. Respondent: "... it all started back in the Middle Ages, when they formed workshops, organisations, unions and communities on professional basis..."

H. Respondent: "... Kershensteiner was a teacher-reformer, Bismarck played his role... at that time they discussed ideas of the social state and reforms..."

Thus, the respondents' answers of the groups of practitioners and experts reveal the understanding of the interconnection of social, economic, geopolitical processes in the development of Germany's educational system and dual education, in particular.

The problem of the development of personal and professional qualities is one of the most urgent in modern vocational pedagogy. Personal and professional qualities of people are the most important descriptor of their competences, they determine achievements and success in activities, including professional ones, affect the process of educational and production activities. In this regard, the question of students' personal qualities, contributing to the great academic achievement, was one of the key questions for determining the conditions and factors of the efficiency of the dual system.

Respondents of the students group needed to list their personal qualities, which, in their opinion, have a positive or negative impact on the learning process. Respondents of the practitioners group needed to describe the personal qualities of their students, which have a positive or negative impact on the learning process. Respondents of the experts group needed to describe those personal qualities, which are positive and negative for successful learning.

The content analysis of the results of the survey of the students group showed that the most frequent (from 18% to 4% of the respondents) are qualities (here and further in the author's edition of the respondents): ambitiousness (18% of respondents), interest and motivation (17% of respondents), technical mindset and structured thinking (13% of respondents). They also mentioned politeness, good skills and knowledge obtained earlier, focus on work, persistence, confidence, responsibility, team building and care for others. Less frequent qualities (from 3% to 1% of respondents) are friendliness, attentiveness, honesty, patience, physical endurance, diligence, ability to perform tasks, flexibility, independence, accuracy in details, punctuality, intelligence, reliability, neutrality, openness, organisation, courage and intelligence. Students assess these qualities as positive effects on the learning process.

The students of vocational schools named the following negative qualities that influence on the learning process: laziness (24% of respondents), impatience (8% of respondents).

We should note that there were more positive qualities (33 qualities) than negative qualities (18 qualities). The frequent references and variability in favor of positive personal qualities indicates a positive assessment of one's personality and a desire to improve oneself.

We should also note the character of the mentioned positive personal qualities. We can divide them into two groups: qualities that are important for professional growth and qualities that are important for personal growth. The first group of qualities is accuracy in detail, punctuality, responsibility, organisation, diligence, team building, focus and ability to perform tasks. The second group of features is openness, courage, intelligence, politeness, patience, flexibility, independence, honesty and reliability.

Respondents of the practitioners group distinguished some necessary positive qualities for successful learning, among them there is responsibility (70% of respondents), readiness and openness to knowledge (26% of respondents), reliability (21% of respondents). Among the negative qualities there is laziness (91% of respondents) and impatience (82% of respondents). The quantitative ratio of negative and positive qualities indicates a balanced and objective approach to assessing the qualities of their students. Respondents showed solidarity in the qualitative choice of positive and negative qualities.

Respondents of the experts group distinguished only the positive qualities, which are necessary for a successful learning process within the dual system. They are ambitiousness (78% of respondents), curiosity (52% of respondents) and persistence (39% of respondents).

The comparative analysis of the respondents' answers from all groups made it possible to determine a number of personal and professional qualities, which can be the basis for compiling a professional and demographic profile of a graduate of the dual education system in Germany. The value and objectivity of these answers are in the fact that they are based on the reflections of students (what personal qualities do I have as a student?), the reflections of teachers (what are the qualities of my students?), the reflections of experts (what qualities should a modern professional have?).

Summary table of personal qualities ranking of students in the dual education system in Germany, %

Rank	Experts respondents	Practitioners respondents	Students respondents
1.	Ambitiousness – 78%	Responsibility – 70%	Ambitiousness – 18%
2.	Curiosity – 52%	Readiness and openness to knowledge – 26%	Interest and motivation – 17%
3.	Persistence – 39%	Reliability – 21%	Technical mindset and structured thinking – 13%

A comparative analysis of the responses of the three groups demonstrates the commonality of opinions in determining the most important positive qualities affecting the efficiency of education. These qualities are ambitiousness, responsibility, curiosity and interest, readiness and openness to knowledge, technical mindset and structured thinking, persistence and reliability. The obtained data indicates the similarity of views and attitudes of all three groups of respondents to the content of personal and professional qualities that affect the efficiency of dual education. It characterises them as an important condition for the efficiency of this system.

The detailed answers in the questionnaire about the features of the national character, which have a positive impact on the learning process, demonstrated a clear connection between the reproduction of traditional national German character features in the process of educating young people with the organisational and pedagogical component of the dual education process:

V. Respondent: "... our clear structure of education, understandable prospect of applying knowledge in the profession for all students, the specific

enterprise, which students signed the contract with, and the future workplace demonstrates certainty, transparency or clarity, stability, prospects...”

N. Respondent: “... for Germans the law and order is important!”

F. Respondent: “... there are rules stating basic rights and responsibilities, but it is not enough. It is necessary to be willing to follow these rules. Diligence and preciseness are in the nature of Germans...”

M. Respondent: “...Germans stop when the red traffic light is on. We follow the rules!”

Respondent K.: “...all participants in the learning process have their responsibilities and fulfilling them is essential!”

P. Respondent: “... students must follow the instructions of teachers...”

Thus, the analysis of the respondents' answers from all groups made it possible to determine a number of personal and professional qualities, which can be the basis for drawing up a profессиogram for a graduate of the dual education system in Germany.

The processes of globalisation and the internationalisation of education have a significant impact on regional education systems. On the one hand, they intensify integration processes and expand the educational space. On the other hand, they may have a negative influence on the identity and integrity of the regional educational system. Therefore, the question of the degree and nature of the impact of the vocational education and training systems of other countries on the development of Germany's dual system (which is possible in the process of implementing exchange programmes or adopting successful foreign educational initiatives) aroused a particular attention among respondents.

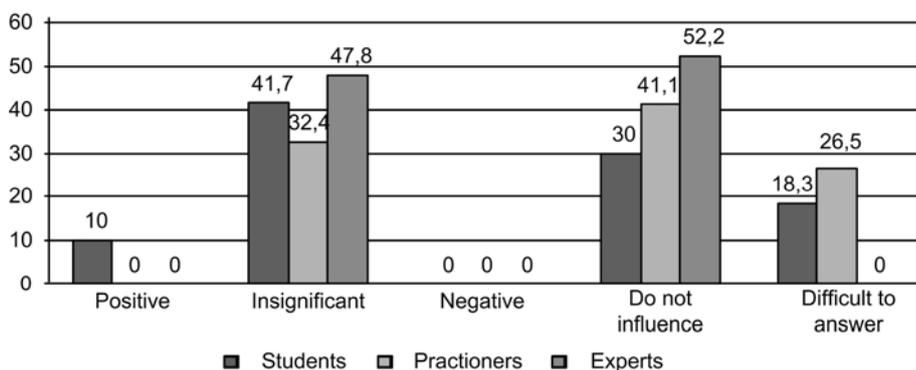


Fig. 6. The impact of the vocational education and training systems of other countries on the dual education system in Germany

Respondents of the students group (Fig. 6) answered that the vocational education and training systems of other countries insignificantly (41.7%) affect the development of the dual system of Germany or “do not influence” (30.0%) at all. A small part of the students found it difficult to answer.

According to the group of practitioners, vocational education and training systems of other countries do not influence (41.2%) and insignificantly (32.4%) affect the dual education system in Germany. 9 respondents found it difficult to answer. Respondents of the experts group noted the insignificant impact (47.8%) of the vocational education and training systems of other countries on the dual education system in Germany or they noted the absence of influence (52.2%).

Thus, in the answers of all three groups of respondents, there is a consistency that subjects of the educational process, who took part in the survey, do not feel any influence on the dual education system or it is so minimal that it does not create either positive or negative effects. This may indicate the integrity and firm identity of Germany’s dual education system and gives rise to the assumption that when the system is transferred to other conditions, it will lead to the loss of identity and it will malfunction.

The next question “Would you like the German dual education system to change in the conditions of globalisation and under the influence of the vocational education and training systems of other countries?” was aimed at better understanding of the identity of the dual education system. It also had to determine the level of satisfaction with the dual education system by subjects of the educational process (groups of respondents) (Fig. 7).

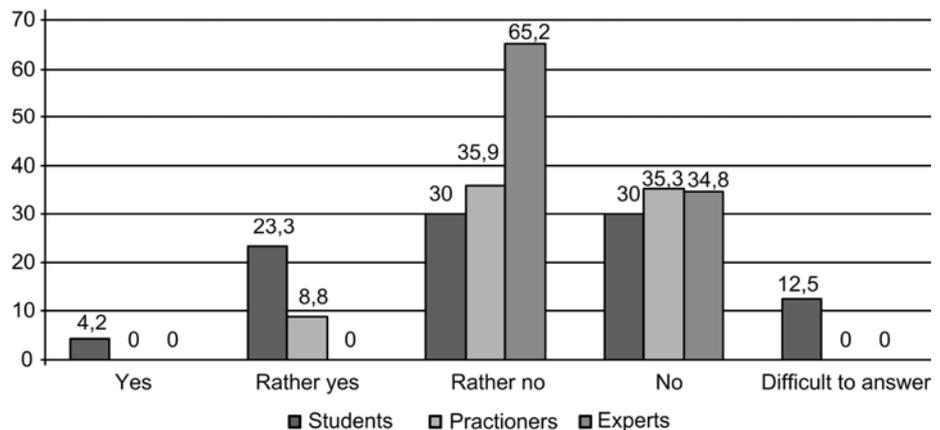


Fig. 7. The need for changes in Germany’s dual education system in the context of globalisation and internationalisation

According to the respondents of the students group, Germany's dual education system does not need to change in the conditions of globalisation and internationalisation. The answers "Rather, no" and "No" prevail and received 30% each. The number of answers "yes" and "rather, yes" is a half of negative answers. A group of practitioners respondents assessed the need for the dual education system in Germany to change quite conservatively, the overwhelming majority of answers was "rather, no" and "no".

The answers of the respondents of the experts group were unambiguous, all of them gave answers "rather, no" and "no".

We should note that such unanimity of respondents' groups in assessing the need for changes in the dual system demonstrates their firm confidence in the efficiency of the dual education system and the desire to preserve a high-quality national educational product without introducing changes borrowed from the vocational education and training systems of other countries (Fig. 7).

Responding to open questions, respondents from practitioners and experts groups gave answers that reveal their opinion about the transfer of experience in the implementation of the dual education system and its tracing. In the answers, there is a consistency; the respondents connect the functioning efficiency of the dual system with the national mentality and personal qualities of the Germans:

L. Respondent: "...the Chinese and Arabs are actively trying to borrow Germany's experience in implementing the dual system. In order to ensure the efficiency of the process, it is necessary not only the desire of companies, but also the legislative framework that ensures the legitimacy and transparency of the entire learning process..."

Y. Respondent: "...a few years ago I was in the UK... there teachers say: Sometimes we do not have students, and sometimes we do. Everything depends on the stability of a company's financial position. And this is not a dual system..."

G. Respondent: "...in fact, the dual system has been successfully implemented only in Austria and in the north of Italy so far. In France, vocational education is within the walls of a professional school, where there are only practical classes..."

T. Respondent: "...if we compare, how they work in Germany and how they work in other countries, then we must say that Germans always want to be precise and consistent in their work. We are perfectionists, and this is a part of mentality. And we are proud of our system..."

## Conclusions

Germany's dual education is a unique high-tech system with a high level of identity. The analysis of the experience of its implementation, presented by the opinions and assessments of the direct participants in the educational process, made it possible to determine the current state and prospects for its development and the opportunities for introducing them into vocational education of other countries. The study of scientific works, which reveal the historical, pedagogical and socioeconomic prerequisites for the appearance and development of the dual education system in Germany, determined the methodological approaches to empirical research, which supposes the use of inductive, logical and comparative-historical methods. We used the methods of individual and group interviews, included monitoring. For processing materials, we used the method of content analysis and the conceptual triangulation which is relating various systems of views to one another and is the basis of the comparative study.

The results of the empirical study made it possible to conclude that clarity, structuredness and consistency of the legislative framework influence on the efficiency of the dual system of education (in the opinion of its subjects). They also noted the special importance of federal laws and legislative initiatives of recent years, allowing taking into account the consequences of globalisation.

Consolidated respondents' assessments of mechanisms of influence on the efficiency of the dual system relate to two basic conditions: the guarantee of employment for vocational schools graduates and the payment of scholarships for them during training. They act as motivating conditions, which are important for students when choosing this form of training and in the course of all subsequent training.

The question of the influence of historical stages and processes on the formation of the dual education in Germany caused some difficulty for the respondents. The students found it complicated to evaluate the stages and they assessed only the recent events, the practitioners and experts answered unequivocally and definitely, pointing out to some periods. This indicates to the necessity of interconnection of the historical context of social, economic, geopolitical processes in the development of Germany's educational system and dual education, in particular.

The comparative analysis demonstrates the commonality of opinions in determining the most important positive qualities of students influencing the effectiveness of education: "ambitiousness", "curiosity and interest", "readiness and openness to knowledge", "persistence" and "reliability", "technical

mindset and structured thinking". Such a similarity of the attitudes of all groups of respondents to the content of the student's personal and professional characteristics reveals the existence of important conditions for the efficiency of this system, when qualities of the national character have a positive impact on the learning process.

There is a clear constituency in the respondents' assessment of the effect of other educational systems on the dual education system in Germany. Not all of them consider a significant influence and positive-negative effects. This indicates the stability of dual education as a system. The respondents do not see the need for changes in the dual system, which confirms its quality and efficiency. According to the respondents, the national mentality and personal qualities of Germans indicate a high level of identity of the dual system in Germany.

The results obtained are valuable for determining the prospects of borrowing certain elements of the dual education system by other countries. It is not possible to talk about the possibility of copying the entire system or transferring the model of the dual education system to the educational environment of another country. The educational environment of another country does not have legislative and economic mechanisms for the regulation of the German dual system. Moreover, the cultural code of each nation is individual. Therefore, the education system, as a product of national identity, should bear a stamp of uniqueness. The special and unique social and cultural conditions of each country dictate the need to comprehend the experience of the formation and functioning of the dual education system, to identify the basic and most efficient elements that characterise the dual system of education and their adaptation, taking into account the national socio-economic realities of each country.

*Prospects for the study.* The conducted research opens prospects for the further studying of problems of identity of regional education systems and conditions of globalisation, influencing their strengthening or destruction.

The study of the problem of borrowing the dual education system in Germany or the introduction of its elements into the education systems of other countries can be deeper considered in terms of the legislative framework, economic mechanisms for enterprises, professional educational organisations, the professional readiness of pedagogical personnel, educational and methodological documentation, the development of students' motivation training.

It seems promising to develop and detail the profессиograms of graduates of the dual education system, corresponding to high-tech production and the requirements of the modern labour market.

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