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FEATURES OF TRAINING OF VOCATIONAL EDUCATION TEACHERS IN GERMANY

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Influenced by the processes of European integration, globalization and, in particular, in order to build a single European higher education area, an important task of Ukrainian educators is to study the practical experience of our foreign colleagues in training teachers for vocational schools at all levels. Among the European countries where close attention is paid to the quality of teacher training, in particular in the field of vocational education, Germany stands out. The purpose of the study is to analyze the features of modern training of teachers of vocational education in Germany with the prospect of using progressive German experience in the Ukrainian system of training/retraining of teachers for institutions of professional and higher technical education. A detailed analysis of the German teacher training system, carried out in the course of this study, allowed us to make some important generalizations. First, it is worth noting the high expediency and effectiveness of Germany's extensive system of institutions, which, thanks to a clear division of functions, contribute to the effective organization of three-stage training of qualified teachers for vocational education. Secondly, the analysis of the content of the curriculum for future teachers of vocational education in Germany shows an attempt to train competitive professionals not only in the vocational education system, but also in the labor market in general. Third, the developed Standards for teachers in the field of educational sciences effectively influence the implementation of training programs for teachers of vocational education, requiring the formation and further improvement of their competencies in the field of teaching, education, evaluation and implementation of innovations. Finally, it is worth noting the urgent need to use the achievements of the German experience of practical training of VET teachers in the Ukrainian system of training and retraining of teachers for institutions of professional and higher technical education

Keywords: vocational education in Germany, teacher training, standards, competencies, teaching, education, assessment, innovation, curriculum, internship

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1. Introduction

Influenced by the processes of European integration, globalization and, in particular, in order to build a single European higher education area, an important task of Ukrainian educators is to study the practical experience of foreign colleagues in training teachers for vocational schools at all levels. Among the European countries where close attention is paid to the quality of teacher training, in particular in the field of vocational education, Germany stands out. Traditionally, the German education system has been characterized by careful observance of freedom of research and teaching in order to ensure the comprehensive development of the individual, so special attention was paid to improving the quality of training of highly qualified personnel, including in vocational education. Given the high standards, set by German society for teachers responsible for training young professionals, we consider it necessary to analyze in detail the features of modern training of teachers in vocational education in Germany to improve the Ukrainian sys-

tem of training/retraining of teachers for higher education and vocational education.

2. Literary review

The system of vocational education in Germany, in particular, its formation and development, is the subject of study of many Ukrainian researchers – Nellie Abashkina, Andriy Turchyn, Vasyl Lyulka, Nina Batechko and many others, whose scientific achievements were analyzed in detail during our study. In particular, an important basis for our study was the work of Nellie Abashkina, who analyzed in detail the historical origins and evolutionary development of vocational education and described the features of professional pedagogy in Germany in the late nineteenth and twentieth centuries [1]. In turn, in the research on the theoretical and methodological principles of training higher education teachers in the master's program, Nina Batechko identified the characteristics of professional training of higher education teachers in Germany [2]. The study of Tatiana Kozak identified the essence of vocational train-

ing of young people in the secondary education system of Germany and outlined the possibilities of introducing German progressive ideas for vocational training of young people in the educational space of Ukraine [3]. The object of recent research by Andriy Turchyn, co-authored with Oleksandra Kashuba and Tetyana Kravchuk, is the dual model of professional education in higher pedagogical education in Germany, in particular the authors propose to use the experience of practical vocational training of German vocational school teachers in a similar practice of pedagogical education in Ukraine [4].

Researcher Maria Nakonechna in her historical and pedagogical research correctly identified the factors that contributed to the formation of quality and effective vocational education in Germany in general, and higher vocational education in particular [5]. Among the foreign studies on teacher training in Germany are Bonnie Watt-Malcolm and Antje Barabasch, who studied the development of Canadian teacher training programs and suggested some borrowings from the German model of teacher training [6]. Thomas Deissinger and Philipp Gonon compared the roles of stakeholders in Germany and Switzerland in promoting innovation in the implementation of educational programs in the dual learning system [7]. Thomas Deissinger, in collaboration with Vera Braun and Oksana Melnyk, traced the specifics of the training of vocational education teachers in Germany and noted the importance of the practice-oriented part of the training of German vocational education teachers [8]. In our opinion, in order to improve the Ukrainian system of teacher training for vocational and higher technical education institutions, it is necessary to consider in detail the progressive system of teacher training in modern Germany, based in particular on the analysis of Standards for Teacher Education [9].

3. Purpose and objectives of the study

The purpose of the study is to analyze the features of the training of teachers of vocational education in Germany with the prospect of using progressive German experience in the Ukrainian system of training/retraining of teachers for institutions of professional and higher technical education.

To achieve this goal, the following tasks were set:

- 1) to detail the main stages of systematic training of teachers for vocational education in Germany;
- 2) to analyze the components of the curriculum for future teachers of vocational education in Germany;
- 3) to describe the Standards for teachers in the field of educational sciences (Standards für die Lehrerbildung: Bildungswissenschaften) and determine their impact on the improvement of the modern German system of teacher training;
- 4) to determine the prospects for the use of progressive German experience in the Ukrainian system of teacher training/retraining for institutions of professional and higher technical education.

4. Materials and methods

The research was organized on such methodological principles as the principle of systematization, comprehensiveness and objectivity. Regarding the materials, the study was organized: first, on the basis of infor-

mation, collected in the report on "Managing the training of teachers of vocational education in the EU: an overview", prepared by a group of authors under the Erasmus + program, funded by the European Commission [10]. Secondly, by analyzing the normative documents that determine the content of training of vocational education teachers in Germany [9, 11]. The following methods of scientific research were used to solve the set tasks and achieve the goal: general scientific – analysis and synthesis, induction and deduction, which allowed interpreting Ukrainian and foreign sources, related to our research scientifically. A method of comparative analysis was also used, which made it possible to determine the characteristics of teacher training for vocational education in Germany, in particular, a three-stage system of training. The system method (or the method of system analysis, borrowed from mathematical methods) allowed to carry out step-by-step analytical work on each of the tasks and to formulate general logical conclusions. The use of forecasting method (which is often associated with analogies) suggested that the organization of the Ukrainian teacher training system for professional and higher technical education by analogy with a clearly structured and practice-oriented teacher training system for the German VET system will significantly improve professional development and pedagogical competencies of the teaching staff of Ukraine.

5. Research results and their discussion

Vocational education in modern Germany has a long historical tradition, which has allowed to achieve a high level of efficiency both in terms of training highly qualified professionals for various sectors of the economy, and in terms of building a strong education system in Germany as a whole. It should be noted the important role of such German secondary schools as technical colleges and technical schools (Fachhochschule and Fachschule), which in addition to professional training also prepare their graduates for admission to higher technical education institutions (Fachhochschulreife) [5]. Of course, an important role in the quality training of German youth belongs to their teachers, who are for their students a model of high education, with both pedagogical and professional competencies, and aimed at continuous improvement of their skills.

Traditionally, teacher training in Germany is carried out in classical and technical universities and pedagogical higher educational institutions. According to scientists, the master's degree in Germany is focused on preparation for teaching. At the same time, researcher Nina Batechko calls doctoral degree and scientific title important conditions of the German teacher's university career, while for professors of technical institutions of higher education – doctoral degree and five years of experience in professional work [2]. Based on data from the Federal Ministry of Education and Research of Germany, the researcher claims that the vast majority of accredited master's programs with the possibility of teaching in higher education are aimed at two-year training of masters in in-class education. The result of successful completion of the master's degree is the diploma of "Master of Arts" (MA – Master of Arts) and / or "Master of Science" (MS – Master of Science) [2].

In order to study the German practical experience of teacher training for vocational education institutions (including higher education), it was analyzed the report on "Management of teacher training in EU countries: an overview", prepared by a group of authors under the Erasmus + program, funded by support from the European Commission [10]. Thus, the authors of the report note that, unlike other countries, teacher training and professional requirements for future teachers in Germany are more institutionalized and more complex than in other European countries. Mandatory conditions for obtaining the position of teacher are a master's degree, at least one year of relevant practical experience in subject specialization, at least 18 months of practical training, respectively accredited teacher training for vocational education institutions lasts 7.5 years [10]. This period of training is due to the complexity of the German vocational education system, which includes institutions of full and part-time education. At the same time, the organization of systematic training of teachers for vocational education institutions is effectively carried out due to a clear division of functions between the various entities, which include the Ministry of Education (at the federal state level); KMK – Standing Conference of Ministers of Education and Culture; higher education institutions that offer bachelor's and/or master's degree training programs; vocational education institutions; public colleges of teacher training and development. As well as, for example, in Baden-Württemberg, the federal state center for quality assurance of teacher education and training.

All this extensive system of training teachers of vocational education confirms the valid opinion of Nellie Abashkina that the most developed area in Germany is industrial pedagogy, which explores the problems of vocational training. Traditionally, most graduates of German secondary schools first obtain a working qualification in primary vocational education, and only then go to study in higher education (in the early 90's 70 % of school leavers chose the above path of education) [1]. Future teachers of vocational schools in Germany receive higher professional education, which is purposefully transformed into pedagogical activities at vocational training institutions. This is confirmed both by Nellie Abashkina's dissertation research, conducted in the late 1990s, and by recently collected data, included in the report on teacher training for European vocational education institutions (2020) [10].

Thus, modern teachers of vocational education in Germany must be both specialists in the field of work and specialists in the field of education, ie teachers. In addition, they must have practical experience to teach students to solve real problems in further professional activities [10].

In general, the high level of training of vocational education teachers in Germany should be recognized, as evidenced by the length and complexity of their training system, which includes three stages. The first stage involves undergraduate and graduate studies in pedagogical specializations; at the second stage the preparatory internship is carried out (on the basis of the educational institution); the third stage is associated with further training [9, 10].

According to the Framework Agreement on Teacher Training and Examination for Vocational and Technical Educational Institutions (German – Rahmenvereinbarung über die Ausbildung und Prüfung für den Lehramt der Sekundarstufe II (berufliche Fächer) which describes the educational and qualification requirements for VET teachers [11], training of teachers of vocational education in Germany is carried out in higher education institutions (usually universities), where applicants receive scientific knowledge, professional practice, respectively, form professional and pedagogical competencies. At least six semesters of bachelor's degree, two semesters of master's degree and 10 semesters of practice in educational institutions correspond to the study load of 300 ECTS credits, to which must be added at least 12 months of experience in the professional field [10].

According to research, the content of teacher training in German vocational schools involves the study of disciplines of the psychological and pedagogical cycle, main specialty, additional specialty, and includes pedagogical practice and internship. In order to diversify the training of future teachers, individual curricula are actively used, built on a modular-block structure; in particular, the ability to choose subjects from the lists, proposed by the departments, allows to build an individual educational trajectory for the future teacher, taking into account his/her personal inclinations [4].

At the first stage of training future teachers in German higher education institutions, they master the curriculum, which consists of: first, educational disciplines, focused on vocational education, specialized didactics in the subject of specialization and the second subject of teaching, as well as practical classes (which corresponds to 90 ECTS credits); secondly, the disciplines of professional specialization (first subject), as well as the disciplines of the second subject of study are studied (which together corresponds to 180 ECTS credits); thirdly, 30 ECTS credits are allocated for bachelor's and master's theses. The total number of credits during the entire training in the higher education institutions should be 300 ECTS (Fig. 1). Higher education results in a master's degree or the First State Exam (in the federal state of Baden-Württemberg, students can obtain a master's degree in business education or technical education).

It is important to note, that graduates of university VET teachers training programs in Germany acquire such knowledge, skills, and competences that allow them to be competitive specialists not only in the vocational education system, but also at the labor market in general.

The preparatory internship (provided for in the second stage) as an integral part of the training of a teacher of vocational education in Germany can last from 12 to 24 months in vocational education institutions and ends with the Second State Exam. The main task of the preparatory internship (which formally completes the professional training of teachers) is to gain practical skills (directly while working with students) on the basis of the curriculum, mastered in higher education institutions [10]. Admission to the preparatory internship is granted to all graduates of higher education institutions who have passed the First State Exam for the position of vocational

school teacher (or equivalent exam). Since during the preparatory internship trainees not only teach but also educate students, the candidates for the position of

vocational school teacher are transferred to the civil service, which significantly increases their social status [4].

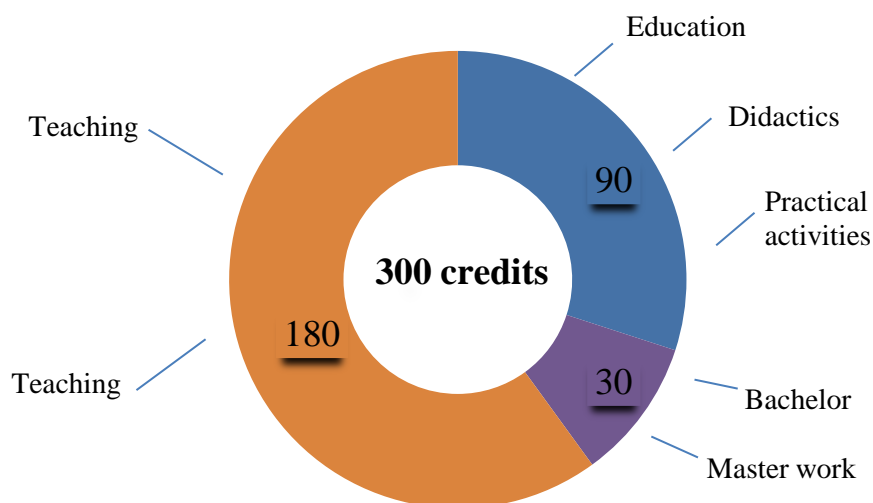


Fig. 1. Components of the curriculum for the training of future teachers of vocational education in Germany (based on "Management of the training of teachers of vocational education in the EU: an overview. 2020")

The third stage of training of vocational education teachers occupies a special place in the German educational system, as professional development is seen as an opportunity to ensure the continuous development of professional skills of teachers and improve their professional competencies. Professional development in the professional and pedagogical fields is in accordance with the current level of development of science and technology, as well as taking into account the requirements of German employers.

The Standing Conference of Ministers of Education and Culture of the Federal States of Germany (KMK) in 2004 prepared *Standards for Teachers in Education* (revised 16.05.2019), which defined and detailed the main competencies of teachers [9]. The Standards also define the main criteria for teaching and professional training of teachers and define the competencies that must be formed during the first two stages of their training (first – during training in higher education institutions, then – during the preparatory internship). Adherence to these Standards of Educational Sciences is the main condition for successful accreditation of teacher training programs [10].

It is important to note, that in order to fulfill the tasks, set by the Bologna Declaration, an inter-institutional quality assurance system was established in Germany, within which the Conference of Ministers of Education and Culture and the Conference of University Rectors approved an accreditation system, which united Central Accreditation Inter-Land Council and quality assessment agencies for new training courses) [5].

The introductory part of the above document states that the standards of pedagogical science should be focused on the development of society and the education system in general, on changes in educational institutions and the student staff and, accordingly, on changes in requirements for teachers. Careful, constructive and professional consideration of the diversity of all partici-

pants in the educational process, the ability and willingness to cooperate with other professions and institutions are becoming increasingly important, as well as the introduction of growing opportunities for digitalization. The standards enshrine the three-stage pedagogical training of teachers of vocational education, and although the stage of professional development (third) is not discussed in detail in the document, but it is noted, that these skills are also goals of continuing education in the teaching profession [9].

Standards of educational/pedagogical sciences, together with the requirements for subject courses and subject didactics, form the basis for accreditation and evaluation of teacher training programs. The competencies to be developed by future teachers are divided into four categories, which will be discussed in detail below.

The first category, related to **"teaching" (competencies 1–3)**, is aimed at the formation of the German teacher of modern scientific and relevant subject knowledge. In particular, with regard to theoretical training, graduates of the institutions of higher education are expected to have knowledge of theories of education and training, general and subject didactics, concepts of media didactics, methods of assessing the effectiveness of teaching; future teachers must also know theories of learning motivation and productivity, methods of encouraging independent, responsible and collaborative learning and student work. Regarding practical training – graduates are expected to be able to develop target perspectives on relevant educational theories; rationally choose the content, means, methods and forms of work; integrate analog and digital media in a didactically significant form; check the quality of their teaching and relate it to the needs of students; design educational and methodical processes, taking into account knowledge of the peculiarities of the organization of the educational process; use the theory of teaching and didactic possibilities of digital media for the organization of professional

education; give students the opportunity to consciously work with the media and their data in the digital space, aware of the consequences of their own actions [9].

Special knowledge of the subjects, which are taught (possession of which allows the teacher to be considered as an expert in their field), directly belong to the first category of competencies and relate to the curriculum of higher education institutions in related disciplines. At the same time, teachers of vocational education must have practical experience of professional activity in order to pass it on to their students and facilitate the adaptation period of their professional genesis. This requirement is especially true for those teachers who work in institutions with full-time education, where students do not have the opportunity to undergo such a long practice on the basis of the company, as provided in the dual system [8].

The second category concerns **"education" (competencies 4–6)** and provides teachers with the ability to deeply know students and promote their personal growth. In particular, in the theoretical aspect, graduates must know pedagogical, sociological and psychological theories of development and socialization of children and youth; intercultural aspects in the development of education and training processes; the importance of gender impact on education and training, as well as the importance of imparting democratic values and norms to students; be aware of the importance of diversity for the success of learning processes and the formation of the identity of the specialist; have knowledge of communication and interaction of the main participants of the pedagogical process; know the methods of constructive conflict resolution, as well as the fight against violence and discrimination.

In practical terms, future VET teachers should be able to provide pedagogical support and preventive measures, in particular, using opportunities for cooperation with other professions and institutions; develop and test concepts to help students critically understand the digital world (in particular, develop and propose solutions to work with the opportunities and risks of using the media); practice independent reasoning and actions with students, use forms of constructive conflict resolution; apply strategies and forms of action to prevent and resolve conflicts in specific cases [9].

The third category concerns **"assessment" (competencies 7–8)**, i.e. the ability and desire of teachers to objectively assess students' knowledge. Theoretically, the standards oblige future teachers of vocational education to know the basics and forms of diagnosis of the learning process, including technical implementations, their capabilities and limitations, as well as rules for information protection; know the various forms of certification and feedback, their functions, advantages and disadvantages; know the contradiction between the feedback that promotes learning and the social functions of certification; know the potential and limitations of technology-based assignments and exams. In practical terms, graduates of higher education institutions must be able to recognize levels of development, learning potential, barriers to learning and progress in learning; use digital diagnostics of the learning process in the knowledge of their capabilities and limitations, as well as to understand their own

teaching activities; be able to recognize the talents of students and identify opportunities for their advancement; use different forms of advice depending on the situation and distinguish between the advisory function and the evaluation function; agree on the principles of evaluation with colleagues; use reviews of success as a constructive response to their teaching activities [9].

The fourth category – **"innovation" (competencies 9–11)** – focuses on the continuous (throughout life) development of teaching competence in the direction of social, cultural and technological development and on the awareness of teachers of their profession as a public position with special responsibilities. That is why the standard obliges future teachers to constantly reflect on and draw conclusions from their professionalism, experience and skills, as well as their professional development; use the results of educational research in their work; document their work and their results for themselves and others; give feedback and use feedback from others to optimize their teaching; use the offers of individual and joint training and advanced training; use the opportunities of digital technologies for cooperation and professionalization [9].

Thus, the considered document allows to define the following main requirements to the modern German teacher of professional education:

- possession of deep knowledge of the theory of education, general and subject didactics;
- ability to motivate students to learn and progress;
- active use of digital learning tools, but with a critical approach;
- knowledge of theories of development and socialization of youth, the ability to use forms of constructive conflict resolution;
- knowledge of various forms of certification and feedback, the ability to use digital diagnostics of the learning process in the knowledge of their capabilities and limitations;
- continuous development of teaching competence in the direction of social, cultural and technological development and awareness of their profession as a public position with special responsibilities.

Thus, the considered standards describe in detail the professional competencies of a teacher, but the competencies of an expert are also important, that is why specialized (subject) courses account for up to 60 % of the total workload in the German teacher training program.

The materials of the report on teacher training provide information on the formation of three models of teacher training in the modern German higher education system: consistent, complementary and mixed. The authors of the report claim that the "consistent model" is dominant, which integrates disciplines in the main subject of teaching, disciplines for the second subject of teaching and professional education (didactics) at the bachelor's and master's levels. According to foreign researchers, this model has retained the features of the previous curriculum for vocational education, which operated before the Bologna Process [6]. In the "complementary model" the disciplines of vocational education/didactics, as well as disciplines in the second subject

of teaching are provided only at the master's level. In the "mixed model" the disciplines in both subjects and the module of professional education and didactics are also available to students of other departments, at the bachelor's level. At the master's level, students deepen their knowledge of all three blocks of disciplines. According to experts, a significant advantage of two-cycle educational programs for future teachers is the ability for the student community to timely adjust their individual curriculum, in particular, if the intentions to build a pedagogical career have changed [6]. By the way, the Polish "consistent" model also provides for the study of general and special professional disciplines at the first stage of study, and the study of disciplines of the psychological and pedagogical cycle and training practice takes place at the second stage.

To provide future teachers of vocational education with comprehensive theoretical knowledge in a particular field and practical pedagogical competencies, the curriculum combines theoretical, scientific

and applied courses, which are intertwined both thematically and chronologically. As already mentioned, most of the credits are allocated for training courses that provide profiling of students in the subject area; but the study of disciplines of the psychological and pedagogical cycle (represented by pedagogy, didactics and teaching methods) is also allocated a sufficient number of credits (30 % of the total workload) to ensure the formation of pedagogical competence of future teachers. In order to form a strong connection of theoretical knowledge and practical skills of a specialist and, at the same time, a teacher, the structure of educational programs necessarily provides theoretical disciplines in combination with practical internships in vocational education institutions [8].

In different federal states of Germany (and even in different universities within one country) vocational training programs may differ (according to the authors of the report, the difference can reach up to 12 % of teaching hours) (Table 1).

Table 1

Distribution of courses within the standard program of training of teachers of vocational education (based on "Management of training of teachers of vocational education in EU countries: an overview. 2020")

No.	Block of training courses	Volume
1	Pedagogy / Education Theory	13–18 %
2	Didactics	6–13 %
3	Professional specialization (main and second subject of teaching)	54–66 %
4	Practical training on the basis of an educational institution	5–7 %
5	Graduate work	8–13 %
	A total of 300 credits	100 %

It is important to note, that after the Bologna Process, Germany's vocational education system began to introduce features of the Anglo-Saxon higher education system, focusing primarily on the training of the individual and not on his/her comprehensive development through freedom of research and learning (which was the central element of the historical German university idea).

The limitation of this study is the lack of attention to the organization of teacher training for higher professional education institutions in Germany, but in the further research it will be conducted a comparative analysis of curricula and regulations on professional training of teachers in higher education in Germany, UK and Ukraine.

6. Conclusions

Germany's highly effective legal framework allows for the reform of the German higher education system in the context of the requirements of the Bologna Process, ensuring the unity of the pedagogical process and preserving national achievements in the field of, in particular, vocational education. A detailed analysis of the German teacher training system, carried out in the course of this study, allows to make a number of important generalizations.

1. It is worth noting the high expediency and effectiveness of the extensive system of institutions, formed in Germany, which, thanks to a clear division of functions, contribute to the effective organization of

three-stage training of qualified teachers for vocational education.

2. The analysis of the content of the training program for future teachers of vocational education in Germany shows an attempt to train competitive professionals not only in the vocational education system, but also at the labor market in general.

3. The developed Standards for teachers in the field of educational sciences (Standards für die Lehrerbildung: Bildungswissenschaften) effectively influence the implementation of training programs for VET teachers, requiring the formation and further improvement of their competencies in teaching, education, evaluation and innovation.

4. It is worth noting the urgent need to use the achievements of German experience in practical training of VET teachers in the Ukrainian system of training and retraining of teachers and research and teaching staff in the field of professional and higher education (which will be the purpose of our further research).

Conflict of interest

The authors declare that they have no conflicts of interest.

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