

SECTION 11. THEORY AND METHODOLOGY OF PROFESSIONAL EDUCATION

DOI: 10.46299/ISG.2024.MONO.PED.4.11.1

11.1 Multi-level system of training and formation of professional education teachers of a new type: global experience

The leading trend of social development at the current stage – the integration of education systems into a united European and global educational space – means, on the one hand, the unification of national educational standards, the diversification of educational models, and on the other hand, the desire of each country to preserve its historical educational traditions, since the education system of each country is a unique, unrepeatable and complex phenomenon, inextricably linked with the spiritual and material aspects of the past and present. An impartial study and rethinking of the experience of other countries, taking into account the peculiarities of the development of the national educational system, is one of the effective ways of reforming education. The study of foreign experience can provide useful tools for improving the system of technology teacher training in Ukraine, adapting effective practices to the national characteristics of education.

In scientific and pedagogical sources, significant attention is paid to the development of education abroad by domestic (N. Abashkina, T. Desiatov, K. Korsak, T. Koshmanova, N. Mukan, N. Mykytenko, B. Omelyanenko, O. Ozerska, O. Ponomareva, L. Pukhovska, R. Roman, K. Rubachuk, A. Sbruyeva, etc.) and foreign researchers (O. Anweiler, A. Calderon, D. L. Clark, L. Darling-Hammond, M. Dorner, L. Fischer, H.-J. Fuchs, M. Hunter, W. Jeynes, J. Kelly, L. A. Kremin, M. S. Lewis, R. Lynn, T. McGreal, J. Millman, M. A. Rebell, E. Petermann, D. Schimmel, M. Scriven, L. A. Shepard, L. S. Shulman, H. W. Stevenson, etc.) In particular, the works of Ch. Bennett, W. Jeynes, L. A. Kremin, C. J. Lucas, L. Pivneva, O. Romanovskyi, and J. L. Rury are devoted to the problems of the emergence and development of the education system in the USA. The study of university pedagogical education, in particular in the USA, its history, current state, and development trends

was carried out by O. Hluzman; G. A. Baker, F. B. Brawer, A. M. Cohen, J. S. Levin, T. O'Banion devoted their researches to the history of the emergence and prospects of further development of community colleges in America; problems of humanization and humanization of education in classical universities of the USA are highlighted in the works of R. Belanova; the processes of development of the theory and practice of moral and ethical education in the American school (1830-1990) are considered in the studies of V. Zhukovsky; L. Grozner, V. Parail, S. Romanova, T. Tartarashvili, V. Shubin investigated the importance of humanitarian education in the training of engineering and technical specialists at US universities. M. Leshchenko considered the modern technologies of teacher training for the aesthetic education of students in the USA, Canada, and Great Britain; methodological problems of higher pedagogical education abroad are raised in the works of T. Koshmanova and L. Pukhovska; peculiarities of the content of professional training of specialists in various foreign countries are highlighted in the works of N. Abashkina, O. Hluzman, T. Desiatov, N. Zhuravska, A. Parinov, S. Romanova, etc. Ya. Kolibabyuk, N. Lyzunova, R. Roman studied the features and components of the American teacher's pedagogical skills; the system of professional education in the USA became the subject of V. Kudin's research; formation and development of the basic stage in the higher education systems of the USA and Ukraine was compared by O. Leshchynskyi; T. Kozak considered the organizational and pedagogical principles of the implementation of the credit-module system of specialist training in higher pedagogical educational institutions of certain countries in Europe and the USA; the transformation of the professional functions of the American teacher in the conditions of the information society is highlighted in the works of I. Hushlevska; theoretical and practical aspects of specialized training of high school students in the USA were considered by Yu. Hrehorashchuk, O. Fedotova, etc.

In the documents of leading international organizations (International Labor Organization, Organization for Economic Cooperation and Development (OECD), Council of Europe, World Bank, UNESCO), the driving force of economic development in the new millennium is recognized as human capital, which creates and uses knowledge and improves the quality of public life. Today, the state's

competitiveness is determined not by natural resources, but by the presence of highly qualified personnel capable of creating and disseminating the latest knowledge and technologies, carrying out innovative research, and acting ahead of schedule. That is why education turns into one of the powerful factors of socioeconomic development of society and a means of solving various global problems, the leading one of which is ensuring peace, freedom, social justice, order, and, in general, the further existence of humanity.

In UNESCO documents («World Report on the Monitoring of UNESCO's Education for All Program by 2015: Will We Succeed?» (2007) [200], «The Concept of Sustainability and Its Contribution to Quality Transformative Education» (2022) [201], «Education for sustainable development: a road map» [202], etc.) the term «education for sustainable development» is widely used as a lifelong learning process and an integral part of quality education that encourages changes in knowledge, skills, values, and attitudes to create a more sustainable and fair society for all. It is a holistic approach to changing mindsets and worldviews that will empower learners of all ages to make informed decisions and take individual and collective action to improve society and care for the planet. This process affects the cognitive, social-emotional, and behavioral aspects of learning, and covers the content and outcomes of teaching and learning, pedagogical theory, and the learning environment itself.

On the agenda of sustainable development for the period up to 2030. [203] the task is to create a favorable environment for the full realization of inclinations and abilities of children, youth, and adults, to transfer them various skills necessary for functioning in a stable and peaceful society. The acquisition of these so-called «soft» skills is best achieved through experiences that develop the socio-emotional and behavioral aspects of learning and use innovative tools adapted to different contexts and cultures, the document emphasizes.

The determining factor in the implementation of these educational reforms is the readiness of teachers for them, therefore the problems of teacher training are becoming especially relevant today, which is emphasized in various international documents [200, c. 2, c. 3]. It is emphasized that teachers and students of education should act as

a community of seekers and creators of knowledge, able to understand what exists and what needs to be created and capable of generating new knowledge. The main task of teachers today is to allow their students to explore, create, and interact with the known and the unknown, fostering curiosity and interest, which is emphasized in international documents [204, p. 53-54].

Being a teacher is a challenge in which the public is interconnected with the personal, UNESCO documents note. It is emphasized that teachers work on a collective basis, summarizing existing knowledge in dialogue with the younger generation, who inherit and jointly create new knowledge, that is, the educational process involves group work and at the same time relies on and takes into account the unique needs and abilities of each student. Teaching, above all, requires empathy, competence, knowledge, and ethical determination. It is emphasized that in the cultures of the world, wise and educated persons are recognized, and the teacher stands out against the background of this tradition as a special actor in the context of the school, on which the possibility of social transformation depends. Teachers, in turn, must recognize their students' capacity for participation, cooperation, and learning in the course of their pedagogical interaction. To carry out this difficult work, teachers need pedagogical communities with rich educational and methodological resources which are characterized by a sufficient degree of freedom and support. Promoting the autonomy of teachers, their professional growth and development, and cooperation with them are all important forms of expression of social solidarity on issues of educational prospects. It is emphasized that if teachers are treated as gifted practitioners and drivers of knowledge, they contribute to the growing body of knowledge needed to transform the learning environment, educational policy, research, and practice within their profession and beyond. The document calls for solidarity with teachers, recognizing the importance of their work and creating conditions to ensure its successful character [204, p. 84].

Studies show that the increasing demands on teachers, and the difficulties associated with teaching have affected the recruitment of talented applicants for pedagogical specialties and led to a significant decrease in the number of students. At

the same time, the need for teachers continues to grow; it is predicted that by 2030, around 70 million new primary and secondary school teachers will need to be recruited worldwide to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all [204, p. 89]. UNESCO is calling for a rethinking of teacher education so that it meets the priorities of education and is more clearly oriented to future societal challenges and prospects. Supporting this profession requires changing the role of teachers so that their professional success is ensured through cooperation between teams, and is supported by the necessary knowledge, educational and methodological resources, and infrastructure. For example, according to international studies, in most countries of the world, the stress and professional burnout of teachers during the COVID-19 pandemic was due to the fact that their professional development and technological platforms were not up to the task of effectively supporting distance learning, which caused the outflow of qualified teachers from the profession. One of the possible directions for the creation of the newest system of training and professional development of teachers is considered by UNESCO experts to be the cooperation of various subjects related to pedagogical education (researchers, teachers' associations, public organizations, state bodies, etc.) [204, p. 90].

Particular attention is paid in UNESCO documents to newbie teachers. It is noted that the transition from training to practical work is actually a crucial stage in the professional formation of a teacher, but this stage is often ignored both in educational policy and in the profession itself, as a result of which the highest dropout rate of teachers is observed in the first years of work. Professional knowledge about teaching requires processes of integration and socialization with the participation of pedagogical educational institutions, schools and experienced teachers, help in planning lessons, mentoring from more experienced colleagues is necessary. These processes, according to UNESCO experts, should become the basis for the integration of novice teachers into the profession. In addition, teachers must have the necessary opportunities for ongoing professional development, training and support to work with ethnically, culturally and linguistically diverse populations and ensure inclusion and adequate support for students with special needs, along with individualized instruction, and as

well as students from historically alienated and marginalized groups. This becomes especially relevant for regions where the composition of students in the classroom can change radically due to increased migration and internal displacement caused by climate change, social and political violence, armed conflicts, etc. It is emphasized that professional development and self-development should be part of a continuous process, starting with initial teacher education and teaching practice under appropriate supervision, followed by induction, mentoring and regular in-service training. Effective promotion on the career ladder should be associated with continuous professional development, which is oriented towards the daily work of the teacher, consistent with it and easily integrated into professional practice [204, p. 91].

These methodological approaches, laid down in the documents and regulations of various international organizations, are actively implemented in the theory and practice of professional education in developed countries, which must be carefully studied and considered taking into account national characteristics in order to find optimal and effective models for the domestic system of training teachers, in particular teachers of specialized and professional training. In this context, professional education in the **United States of America** has valuable achievements and long-standing traditions, the main features of which are multi-functionality, multi-specialty, multi-level, decentralization and regionalization of professional training.

The fate of American education and pedagogical theory has always been closely related to the history and economy of the country. Characteristic features of the economic development of the United States were the absence of feudalism, slaveholding relations in the south, and lands free from settlements in the west. That is why, from the very beginning, the American educational system was subordinated to the needs of the economy and was closely related to the needs of production and agriculture, significantly distinguishing it from the European countries of that period with their religious nature of education and upbringing. In the schools of the USA, there was an increase in attention to the subjects of natural, mathematical and practical cycles, and the content of education included preparation for practical activities, and mastering skills necessary for life. Already at the end of the 17th century, as noted by

US pedagogic historians L. F. Anderson and Ch. Bennett, in the USA there are projects to create new educational institutions, the curricula of which combine general education with work training. One of the first such projects was the one for the colonies in Pennsylvania and New Jersey, proposed by Thomas Badd: the school day was evenly divided into classrooms and workshops (4 hours each). In addition to reading, writing, arithmetic, Latin, and accounting, the boys had to learn to conduct some trade operations, make mathematical instruments, and clocks, as well as to learn turning, weaving, shoemaking, and other useful crafts. Girls were taught to sew, embroider, crochet, knit, weave lace, and make straw hats and baskets [205, p. 65-66]. In general, the curricula of secondary schools of that period included such subjects as architectural drawing, accounting, topography, hygiene, and others, which testifies to the practical orientation of education.

In addition, since the time of its existence, American education has been distinguished by the flexibility of the educational system, the freedom of choice by those seeking education of directions, content, and pace of education, the differentiation of the content of professional education, aimed at increasing the activity of young people in educational activities, better preparation for the conscious choice of future professions, deeper study specialized disciplines [206].

The American system of professional education differs from the domestic system in a high degree of decentralization: according to the 10th amendment to the US Constitution, the federal government does not have the right to create a national education system, determine policies and curricula for secondary schools, colleges and universities. The role of the federal government is limited to the general administration of higher and post-secondary professional education, and the main goal of modern state administration of higher education in the United States is to ensure equal access to quality education for all citizens of the United States. Each state government is empowered to organize and administer its education system.

Today, on the one hand, there is a universalization of educational standards at the national level, and on the other, their regionalization at the state level, based on generally recommended leading educational standards [207].

In addition, various organizations and institutions have a significant influence on the federal educational policy of the United States, namely: the American Association of State Colleges and Universities, the American Councils for International Education, International Technology and Engineering Educators Association, National School Boards Association, National Scientific Foundation, National Council for Accreditation of Teacher Education, Council on Technology and Engineering Teacher Education, Teacher Education Accreditation Council, Technical Foundation of America, etc.

Thus, the National Council for Accreditation of Teacher Education (NCATE) is a public organization that works throughout the country and accredits not only teachers, but also pedagogical faculties of higher education institutions. Accreditation in this organization is voluntary and is based on standards that are reviewed every seven years. In most cases, the changes to the standards involve consolidation, clarification, removal of redundant words, or the addition of new ones, as in the 2020 Standards, specific standards were added for technology, taking into account the increase in online learning. In the process of accreditation, it is important to prove that graduates of pedagogical faculties of higher schools are competent and caring teachers, and the provider of educational services has the ability to create an evidence-based culture and use it to support and improve the quality of the professional programs they offer. In September 2014 The National Teacher Education Accreditation Council and the Teacher Education Accreditation Council (TEAC) have merged with the Council for the Accreditation of Educator Preparation to improve the accreditation process.

Let us consider the standards by which teacher training programs are currently accredited at the bachelor's or master's level:

- *Standard 1: Content and Pedagogical Knowledge* – The educational service provider ensures that teaching candidates develop an understanding of the critical concepts and principles of their discipline, and promotes candidates' reflection of their personal beliefs and beliefs to enhance their understanding and practice of equity, diversity and inclusion. enhance candidates' ability to work effectively and interact with diverse students and their families;

- *Standard 2: partnership and practice* – the provider of educational services ensures that effective partnership and high-quality pedagogical practice are key in preparing future teachers to develop their knowledge, skills and professionally important qualities; teaching practice offers candidates experience working in a variety of settings with a variety of students, schools, families, and communities. Partners share responsibility for identifying and solving real problems that arise during the interaction of candidates with schoolchildren;

- *Standard 3: candidate quality and selectivity* – the educational service provider demonstrates that the development of candidate professionalism is the goal of future teacher training and provides support services (such as counseling, coaching, mentoring) at all stages of the educational program so that graduates are ready for effective professional activity and could be recommended for further certification and licensing;

- *Standard 4: satisfaction with training* – the provider of educational services demonstrates the effectiveness of the training of its graduates regarding the education and development of schoolchildren, as well as the satisfaction of graduates and employers with the relevance and effectiveness of training;

- *Standard 5: quality assurance system and continuous improvement* – the provider of educational services ensures constant monitoring of the quality of educational programs with the help of internal and external stakeholders. Provider uses survey results and data collection to set priorities, improve program elements, set goals for improvement and highlight innovation;

- *Standard 6: financial and administrative capacity* – the educational institution has financial and administrative capacity, teaching staff, infrastructure (premises, equipment and materials) and other resources necessary for training candidates to professional, state and institutional standards [208].

Thus, the key to successful accreditation is: a high level of curricula and programs in accordance with the standards developed by the council; high-quality teaching staff of the faculty; close cooperation with schools, in particular for pedagogical practice by future teachers; development of such educational plans and

programs that meet the educational needs of the entire population of the state; teachers' use of modern pedagogical methods and learning technologies; availability of classrooms equipped with everything necessary, modern educational and methodological support, etc.

Another American professional association – the International Technology and Engineering Educators Association (ITEEA) has considerable influence on the training of teaching staff. It is an association of more than 60,000 US and international technology, design and engineering educators, administrators and university staff whose mission is to advance technology and engineering opportunities for everyone. This non-profit organization was created back in 1939 to support the study of industrial arts in schools and was originally called the American Industrial Arts Association. With the rapid development of technologies and rapid industrial changes, the task of promoting technological and engineering literacy of the population, introducing innovations for all pupils and students, raising the professional level of technology and engineering teachers comes to the fore. This orientation positions the association as one of the main players in the STEM education movement, whose main interest is «T (Technology)» and «E (Engineering)» at all levels of education, starting from elementary school, with the aim of engaging students in future STEM careers. by Technological and engineering education includes: design, development and use of technological systems; project activity; individual and team work; effective learning strategies; application of technological knowledge and processes to real-world experience using modern resources; combining science, technology, design and engineering in advanced ways [209].

The association is a constant supporter of effective teaching and learning methods used to improve curricula and programs that keep pace with a rapidly advancing high-tech society. ITEEA has a rich history of projects that have been created to advance the field of technology and engineering education and technology literacy. Among them, the REACH Challenge is a design thinking project on adaptive and assistive technology for middle, high school and college STEM programs that demonstrates ITEEA's mission: «Technology and Engineering Bring STEM to Life!»

This project provides teachers with a toolkit with curriculum and resources to help students create a viable adaptive or assistive technology solution to help someone in their community. Projects can then be submitted to the association for a chance to receive awards and funding for their STEM program.

Exploring Computation Integrated into Technology and Engineering (ExCITE) is a three-year project to develop a professional development program to prepare technology and engineering teachers in national secondary schools to teach a one-year course in computer science fundamentals at an advanced level.

The «21st Century Leadership Academy (21CLA)» project was founded in 2006. as an initiative to promote leadership development in the association and the profession. The goal is to shape tomorrow's most successful and respected technology and engineering leader, consultant and strategic thinker.

In addition, the association's website hosts a variety of publicly available resources to help and support educators in teaching technology and engineering, and to promote their professional development. The resources contain articles, slides, videos, development of educational activities for both classroom and home lessons. This organization's STEM Center for Teaching and Learning™ offers professional learning programs, webinars, and online educational training for teachers preparing to become integrative STEM education professionals, such as: Collaborative Learning Community: for teachers, by teachers; summer studies in engineering; outreach workshops (in school/district/state) that advance STEM pedagogy and practice through facilitated learning opportunities; a wide variety of webinars designed to provide proven instructional strategies and ideas that teachers can use to support their efforts to implement best processes and practices.

The system of professional standards describes in detail only the requirements for the organization of the educational process, while the development of educational programs is the prerogative of the Higher Education Institution, which focuses on the demands of society and employers, the opinion of professional societies and the teaching staff.

In general, the entire system of higher education in the United States has a pronounced humanitarian orientation, since according to various profiles of specialist training, American institutions of higher education are divided into: natural and mathematical (8%), engineering and technical (8%), management, business and finance (12%), humanitarian and social (72%). The core of higher education in the United States consists of liberal arts colleges or College of Arts and Letters, which can be part of a university or function independently. They are closely related to all university colleges, as they offer general education programs required to obtain a bachelor's degree in any field. As an independent functional unit, the college awards degrees in the humanities. The programs of liberal arts colleges cover four main fields of knowledge - humanities, social sciences, natural sciences, and technology.

Analysis of curricula and programs of liberal arts colleges that are part of certain American universities (Southern California, North Carolina (Chapel Hill), Princeton, Rutgers, Old Dominion, Virginia, etc.) testified that the purpose of general education programs is the further spiritual development of young people, raising their general cultural level, development of erudition and the ability to communicate with people; acquainting students with masterpieces of world art and literature, understanding their role in the development of civilization, helping them to navigate in society and adapt to rapid social changes.

In particular, based on the analysis of the curriculum of the University of Southern California, we found that the program of the general education cycle consists of two parts, the first of which («Levels of Skills») involves the development of creative writing skills, math skills, scientific reading, and foreign languages. The second part (Areas of Study) covers knowledge about the natural world, American and world culture, methodological approaches to the study of personality, culture and In addition, for freshmen to complete their general education, there is an alternative program called «Thematic Option», which is based on an interdisciplinary, integrated approach. The purpose of the four courses offered for study is to teach students to formulate ethical issues and to understand opposing views, to be aware of the influence of historical, political and social realities on personal choice. Symbols and Conceptual Systems

course Systems)» studies the structures through which our experience is formed in religion, philosophy, literature, music, as well as the theory of interpretation. The course «Quality of Life: Culture and Value» offers a systematic argumentation of values and ways of life through familiarization with the masterpieces of Western traditional, classical and biblical literature. The course «The Process of Change in Science» studies critical problems of the development of scientific thought, and the course «Change and the Future» is devoted to the problems of global interconnection. At the Old Dominion University (Virginia), in addition to courses for the development of various skills, during the first two years of study, students are offered to study 6 «perspective» courses that develop aesthetic views, perception and understanding of American culture («Fine and Performing Arts Perspective»); analyze the influence of the past on the current state and further development of American society («Historical Perspective»); emphasize the development of critical reading and analysis («Literary Perspective»); cover and solve various philosophical and ethical issues («Philosophical Perspective»); involve familiarization with scientific research methods and the development of the ability to discuss various scientific and technical problems («Natural Science Perspective») and social, ideological, ethical issues («Social Science Perspective»). In general, these courses are aimed at understanding the origins of world culture and values, American realities, the development of erudition, the ability to discuss various problems, defend one's own views, understand prospects for the development of society, political and informal organizations [210, p. 42-44].

The Bachelor of Humanities training program at the Princeton University College of Liberal Arts consists of five parts: 1) development of the ability to write scientific documents – abstracts, reports, essays, etc.); 2) learning foreign languages; 3) courses in each of the main fields of knowledge – natural sciences (laboratory courses), technical, sociological and humanitarian sciences, history, philosophy and religious studies; 4) studying mathematics; 5) specialization program – choosing a profiling department, taking a certain number of courses (8-12), writing an independent research paper.

The analysis of the curricula proved that programs of general education have a serious attitude to natural and scientific knowledge and real reality, at the same time, great attention is paid to historical and cultural aspects, as this helps a better understanding of modernity. Overall, general education programs contain the same number of general scientific and general humanitarian subjects; cultural, ethical, and psychological components are mandatory. Increasing globalization and informatization of social life requires a person with a broad general humanitarian outlook, able to realize himself in the context of new social values, able to think and act, relying not only on their interests, the interests of their people, their social group, but also on the interests of all the humanity.

After completing general education, a student can proceed to special training. To qualify for a teaching degree, students must have a GPA of at least 2.7, pass a criminal background check, and pass tests in reading, writing, and math (or have high scores on the SAT or ACT high school graduation tests).

Consider how teachers are trained at Appalachian State University, which believes that just as young people need to be taught reading, writing, or math, they also need education in business, marketing, financial, family, home, and technology literacy. Today, more and more high schools in America offer vocational training programs, which are increasingly called «Career and Technical Education Programs» It is a program of courses and special courses that allow students to explore career options, develop academic skills, achieve high academic standards, and prepare for specific jobs in industry or for entry into higher education. Students acquire various specialties at the level of a skilled worker. The scale of professional and technical training is very significant. Students are usually offered at least two or three professional training courses. In a number of schools, this set reaches six courses. At least two-thirds of secondary school students study at least one vocational training program.

Appalachian State University prepares future teachers for this program through five certification tracks: Business, Finance, and Information Technology Education; business, marketing and entrepreneurship education; family and consumer sciences;

technology, engineering and design education; commercial and industrial education. The university prepares teachers of professional and specialized training for secondary and senior schools, higher schools. The Bachelor's Career and Technical Education program, major in Technology, Engineering and Design Education, examines technological literacy in the areas of design, engineering, communications, manufacturing, construction and transportation technologies, and offers a second specialization related to with STEM education, graphic communications, design and technology, or materials science [211]. To get a diploma, you need to complete 120 hours. The curriculum consists of compulsory general education courses (44 hours), a professional block (24 hours), blocks «Basic requirements for career growth and technical education» (14 hours), «Requirements for basic specialization» (21 hours), «Second specialization» (18 hours and 2 hours of electives depending on the chosen second specialization).

Among the general education courses, eight hours of chemistry, biology or physics (according to the further specialization of future teachers), four hours of algebra with applied programs and the course «Society and Technology» (3 hours) are mandatory.

The professional block is represented by courses - «Getting to know students, teachers and schools» (3 hours), «Basics of equality in education» (3 hours), «Different students: teaching and learning (3 hours), «Assessment for learning» (3 hours), «Teaching by students» (12 hours). «Introduction to Learners, Teachers, and Schools» is an introductory course designed to guide future teachers to research and understand the complex relationships between students, teachers, schools, and educational structures. and to provide students with the fundamental skills and knowledge to understand teaching and learning as a socially constructed and context-dependent experience. In addition to lectures, the course includes 10 hours of practice (clinical experience). The interdisciplinary Foundations of Educational Equity course is designed to help students develop a critical perspective on the public school and its socioeconomic, political, cultural, and historical role in society. The course focuses on how schools can and should engage with and support all students, and how components

of identity and positionality, such as gender, social class, race and ethnicity, and sexual orientation, affect our educational experiences and trajectories. The course is based on findings and methods from philosophy, sociology, anthropology, history, economics, psychology, and political science, the main tenets of which are used to critically examine issues of equity and inclusion in the classroom. «Diverse Learners: Teaching and Learning» offers a variety of pedagogical strategies to help future teachers create a supportive classroom environment by reflecting on their own experiences/identities and learning about their students and their families. In this course, students explore research-based approaches to providing culturally relevant and inclusive learning, with an emphasis on understanding teaching and learning from an ecological systems perspective that takes into account individual, family, school, and broader sociocultural and political factors. In addition to lectures, the course includes 40 hours of practice (clinical experience). In the Assessment for Learning course, students explore the factors that influence assessment practices and policies in institutions, districts, schools, and classrooms, as well as accountability systems and how assessment results inform educational decision-making. In addition to lectures, this course includes 20 hours of practice (clinical experience). The course «Student Teaching» is a practical experience of teaching under the guidance of experienced teachers during one semester.

The Career and Technical Education Core Requirements block contains 6 courses that must be completed with a minimum grade of «C» (2.0). The course «An Introduction to Career and Technical Education» (1 hour) provides an overview of career and technical education programs, their goals and outcomes in schools in North Carolina and throughout the United States; the role of these programs in public education; faculty responsibilities and the historical context of these programs, including major laws affecting career and technical education. The Career and Technical Education Curriculum (3 hours) course provides an overview of North Carolina career and technical education curriculum development that students will use to prepare detailed instructional units and daily lesson plans. The course «Management of Career and Technical Education Programs and Student Organizations (3 hours)» is

designed to provide future teachers of career and technical education with the knowledge and skills necessary to effective organization and management of educational programs and student organizations (CTSO). In Research in Career and Technical Education (3 hours), students will conduct their own research, design and develop an original project in their specific field of study based on the skills that they developed in their previous coursework. The course «Methods and Materials in Career and Technical Education» (3 hours) involves the study of educational strategies appropriate for use in career and technical education classes (grades 6-12) and focuses on, in particular, instructional theory, standards-based instructional design, instructional methods, and classroom management. «Practicum in Career and Technical Education» (1 hour) is aimed at familiarizing future teachers of career and technical education with classrooms and school communities through field experience in secondary schools (observation, participation in work of career and technical education classes, teaching in small and large classes). At the seminar classes, the practical experience is analyzed and discussed.

Major Course Requirement includes seven courses, including «Construction Methods I» (3 hours), «Architectural Graphics and Modeling I» (3 hours), «Introduction to the Technology Teaching Profession» (3 hours), «Teaching the T&E in STEM» (3 hours), «Introduction to Fabrication» (3 hours), «Information Systems for Business and Education Professionals» (3 hours), «Computer Design Applications for Business and Educational Professionals)» (3 hours). In addition, you must complete (with the help of an advisor) nine hours of electives within your specialization.

The Second Academic Concentration offers a choice of the following areas: graphic communications, materials science, STEM, and sustainable design and technology. Other specialties are also possible on the recommendation of the program coordinator.

In general, there is no single system of pedagogical education in the USA, after all, neither is the system of higher education, which includes a number of elements connected by a fairly loose and conditional connection, which constantly change,

change their purpose and name. The complexity and confusion is what amazes the researcher of teacher training in the United States - you can become a teacher in a year at liberal arts colleges or local junior colleges, in five years at the teacher training colleges of major American universities, and there are no typical teacher training programs. The training program for future teachers usually consists of general education; subject-content training, i.e. teaching the professional subject of the future teacher; professional and pedagogical training and integrative training, i.e. combining the three previous components during practice.

The main requirement for the professionalism of teachers is thorough knowledge of humanities and natural sciences; knowledge of the taught subject and the skills and abilities that students must possess; knowledge of the structure, content of the academic program and supporting resources for it; knowledge of general and specific methods of teaching the subject and assessing the success of students; awareness of a multicultural (racial, ethnic, social and economic aspects) approach to work in the educational environment; knowledge of psychological and physiological aspects of human development; knowledge, skills and abilities, readiness for their wide application for comprehensive development of the student.

Regarding American teacher training programs, it is appropriate to note that they pay less attention to the study of theoretical concepts, and more to a practical, creative, flexible, accessible approach to teacher education with wide opportunities for free choice. Improving the quality and efficiency of the educational process in higher education in the United States is carried out by rethinking traditional forms and methods of teaching, facilitating the conditions for student occupations by individualizing education, increasing the range of the latest technical tools, and wide application of new, non-traditional forms of education. At the same time, broad academic freedom led to a weakening of the sense of unity between teachers and students.

Teacher training in the USA became more active in the 1980s due to a number of reasons, primarily the increase in professional requirements. Numerous psychological and pedagogical studies have appeared in which the connection between

the effectiveness of student learning and teacher training is substantiated; the need to create an institute for professional training of teachers for higher education became obvious. Therefore, the national program «Preparing Future Faculty» (PFF) was born in the USA. Participation in the program is mandatory for all new teachers and interns. The program is attended by students selected on a competitive basis who wish to start teaching activities in higher education. The main forms of professional training in the PFF program are educational workshops, the purpose of which is the development of teaching competence. The program of such workshops includes: 1) learning efficiency, learning strategies, learning high-level thinking; 2) active and cooperative learning; 3) construction, design and redesign of courses; 4) assistance to new and young teachers; 5) design and presentation of effective training workshops; 6) professional orientation. An important component of professional training in the PFF program is the ongoing seminar «Preparation for a teacher's career», the purpose of which is to: inform students about various dimensions of pedagogical activity; familiarization with the peculiarities of the career organization, corporate culture; motivating them to long-term independent research of the foundations of a successful teaching career. Active learning methods are the main ones: trainings, educational workshops, cooperative learning methods, educational excursions, etc. [212].

It is important to note that each US university has its own forms and means of professional training of future teachers, additional to the national program. Thus, in some universities, future teachers undergo mandatory training at Centers for Teaching and Training for Employees (FCTL), the purpose of which is to improve the quality of student education by supporting professional development and stimulating pedagogical activity. The centers implement two main programs: one is aimed at mastering future teachers with the latest teaching methods, another – at mastering the strategy of personal growth. This program involves the creation of a portfolio, which contains several components: a description of the methodology of professional activity; the place and role of the discipline in the curriculum; steps of self-education; plans for the future. Also attached are materials that confirm the implementation of the planned steps: work plans, control papers, the results of student evaluations, and self-

evaluation. The developed portfolio of a teacher reveals his own intentions regarding learning, allows to design a learning strategy, check its success and implement corrective measures.

According to the educational legislation of the USA, the federal government provides financial assistance to states and institutions that make efforts to carry out educational reform in order to improve the quality of education. The peculiarity of teacher training in the USA: the autonomy of universities, which gives freedom of action to professors and teaching staff in improving educational programs, which causes their considerable number and diversity; certification process after obtaining a diploma; the presence of basic elective subjects, which contributes to the formation of responsibility in students; the focus of the educational process on the active participation of students in acquiring knowledge, the development of creative, creative, critical and independent thinking [213, p. 7].

Two-year (community) colleges are professionally oriented. Their curricula are the same as those of the first two years of study at four-year colleges and universities, and graduates are enrolled in the third year of university. These colleges play a significant role in the adaptation of arriving emigrants, creating conditions for extensive professional training and learning the English language. Their administration often turns to art workshops, restoration, artistic and industrial enterprises, offering to create training at enterprises according to their programs.

Among the variety of colleges in the USA, Foothill College, accredited by the Western Association of Schools and Colleges, is particularly popular. Foothill is an ideal place for training in the chosen art direction. In two years of study, you can get all the necessary skills to start working in the field of art. If you wish, after Foothill, you can continue your undergraduate studies by enrolling immediately in the third year of one of the American universities. College programs are especially popular among foreign students, because in parallel with specialized disciplines, there is an opportunity to improve the level of academic English and adapt to the new education system. Foothill College consists of several faculties, one of which is the Faculty of Fine Arts and Communications. Programs on the basis of this faculty are perfect for

students who want to develop in the field of visual arts. In two years, students master artistic skills in the disciplines of drawing, ceramics, painting, illustrations, industrial design, photography and other subjects. A student chooses a set of disciplines and specialization based on his own interests and goals. At the end of the second academic year, each student already has a developed portfolio, with which you can enter art academies and art departments of leading higher education institutions in the United States and other countries.

Sotheby's Institute of Art, founded by the owners of the auction house of the same name, has been training professionals for the art world since 1969. With campuses in the world's leading cultural capitals – London, New York, Los Angeles and Hong Kong – the Sotheby's Institute offers educational programs that combine art history and market expertise, providing the knowledge and skills needed by professionals in the modern world art market. Art at Sotheby's is studied from a cultural, social and economic point of view. The intensive curriculum gives students a unique opportunity to visit museums, galleries, auction houses, private collections and make useful connections around the world. Master's degree programs study: art business, fine and decorative arts of North America, contemporary art.

Summer courses include: Introduction to Curating, Art (Impressionism to Today), Understanding the Global Art Market, Contemporary Art in New York: Acquiring and Storing Art, Fashion Art, Art History in Action, Contemporary Art, Gallery Basics , an introduction to art and finance [214].

The University of South Florida (USF) has been recognized by the Carnegie Foundation for its achievements in the field of teaching and is included in the ranking of the top 50 higher education institutions in the United States. About 47,000 students study at the university.

Among USF's most popular undergraduate and graduate programs are arts programs that touch upon the future of industry and contemporary art. The university annually graduates specialists who become successful artists and architects. The institution consists of four schools: School of Architecture and Communication Design, School of Art and Art History, School of Music, School of Theater and Dance.

In addition, the Institute of Research in Art operates on the basis of the college, which consists of the departments «Contemporary Museum Art», «Public Art» and the «Tragic Studies» project - a space where students experiment with material and forms, enjoy creative freedom, work under the guidance of leading artists and university teachers. The university's 14 master's programs are among the top 100 in the country (US News and World Report 2010).

Marshall University is among the best and ranks 16th in the U.S. ranking News & World Report 2013. About 14,000 students are studying here on undergraduate, graduate and postgraduate programs. Marshall University is distinguished by special attention to its students – 230 different student organizations work on campuses, including the Counseling Center and the Career Center. The university participates in exchange programs with two hundred colleges and universities in the USA and Canada.

Marshall University consists of thirteen colleges and schools. Among them is the College of Arts and Media, founded in 2013. There are several areas within it: a school of art and design, a school of journalism and mass communications, a school of music and theater, each with its own programs and disciplines. During their studies, students meet with guest actors and artists, participate in the annual film festival and various exhibitions at the Birke Art Gallery and Gallery 842, work for the local newspaper «The Parthenon» and on student radio. Marshall University Art School is 243.84 sq. m. m. infrastructure for working with ceramics and sculpture. The graphic design program is the best in the state of West Virginia. Graduates of the School of Art & Design work as art buyers, art critics, artists, gallerists, museum curators, photographers and stage designers.

In the Center for Preparatory Programs for International Students within the framework of the Undergraduate Pathway program, students take courses in visual arts, design, drawing, 3D design, digital media. Successful completion of such a program guarantees admission to the Bachelor of Visual Arts at Marshall University School of Art & Design.

Today, the Academy of Art University is the largest private school of art and design in the United States. About 12,000 students study here. The Academy attracts

professional art practitioners and with their help educates a new generation of artists and designers. The most popular specialties: animation, graphics and special effects, fashion, cinema and interior design.

Academy of Art University (San Francisco), founded in 1929 the famous artist and creative editor of «Sunset Magazine» R. Stevens. University teachers are professional artists and designers. Bachelor's degree offers departments: acting, animation and visual effects, architecture, web design, graphic design, interior design and architecture, fashion design, fine arts, illustration, art history and others, duration of study – 4 years. The master's degree involves 2 years of study.

The Art Institute of Chicago is a world-renowned college associated with one of the richest museums in the United States, home to about 260,000 works of art from antiquity to the present.

College education is diverse. The institution combines study in studios with traditional methods, i.e. modeling or working on looms. At the same time, students can use updated equipment, for example, computer equipment. The teaching staff consists of specialists familiar with the institute's multidisciplinary curriculum, who are true masters of their craft. The disciplinary system of the institute is also very organized, students are motivated and determined to study not only specialized disciplines, but also to participate in various master classes and author's courses.

After the bachelor's degree, some students decide to continue their studies at the master's level. A student's grade point average and GRE scores are taken into account during admission. The master's degree usually lasts 2 years, and in order to get the degree of doctor of philosophy (PhD) you need to study for another 3 years. 5–7% of master's degree graduates continue their studies in doctoral studies.

As evidenced by the analysis of scientific literature, the training of teachers of professional and artistic disciplines in the USA is carried out in two ways: professional (acquiring the educational and qualification level of a master's degree and the scientific degree of Doctor of Philosophy) or through advanced training or retraining. Graduates of master's and doctoral programs are applicants for teaching positions in institutions of higher education. However, according to S. Kennedy, obtaining a master's degree

or a doctorate does not mean becoming a professional, but only reveals a certain level of professional competence formation [215, p. 74–76].

Universities usually offer different degrees in a variety of academic fields. There are theater and art studios for creative specialties, and modern gyms and playgrounds for sports. Some US universities are known for having particularly strong departments in certain faculties. For example, the most prestigious place to study art and design is the Academy of Art University, a private university founded in 1929 (San Francisco, California).

Both college graduates and 12-year high school graduates enroll in American institutions of higher education at the university level. Tuition is relatively affordable; it depends on the chosen specialty, the position of the university in the ranking and the financing mechanism of the institution. Studying at private universities is more expensive. However, foreign and American students pay the same amount in them, and in state institutions the tuition fee for foreigners is higher.

Classes at American higher education institutions are mostly practically oriented, while studies at universities are research-based. The campuses have research centers equipped with the latest technology. Lectures are the leading form of education. However, the teaching technology used in the US during the lecture presentation of educational material is different, the class is based on the use of research technologies; the lecturer tries not only to be a transmitter of information, but also a participant in the educational process. The research teaching technology requires the teacher to use appropriate didactic means of direct and indirect management, and the students to possess and use various methods of cognition. The educational material is presented by the teacher in such a way that encourages further independent study. Lectures often take the form of a discussion. Students are divided into discussion groups (15-30 people), which meet with the teacher 1-2 times a week and discuss the educational material. A lot of information is given for independent processing, encouraging students to research and argue their own vision of the problem. A student in the process of learning becomes an active participant in the educational process [216, p. 37-39].

At the end of the second year of study, students have the opportunity to independently choose disciplines that will be studied under the guidance of consulting teachers. 10–15% of elective courses are taught as electives, they provide students with answers to questions about their future professional activities [217, p. 152].

Implementation of new organizational forms and teaching methods that develop students' creative, critical, and scientific thinking; an interdisciplinary approach to knowledge acquisition, which was formed as a result of giving students the freedom to choose subjects (within the required minimum of credits); flexibility of internal structural modules, which allows to teach students taking into account the achievements of science and technology; lack of strict time frames; the possibility of moving on to the study of new material only after mastering the previous one; drawing up the study program by the students themselves with the help of ICT and consultants; using lectures not as the main means of transmitting information, but as an instructional form of education; increasing the role of written works; systematic verification of knowledge, which enables teachers to constantly monitor the real state of students' educational activities and adjust it); practical orientation of the content of education with simultaneous consideration of the importance of general cultural knowledge; purposeful integration of humanitarian, socio-economic, natural-scientific, technical knowledge and skills, which ensures the formation of key competencies of future specialists; permanent interaction of educational institutions with potential employers for the purpose of advance training; the unity of goals, principles, content, forms of organization of the pedagogical process, which combines theoretical and practical modules and ensures general cultural, professional-ethical, professional and personal development of future specialists; constant interaction between the teacher and students is the main feature of pedagogical education in the USA at the current stage.

Regional issues of education and culture in **Federal Republic of Germany** are decided by the federal states. However, the leading problems that concern the fields of education and culture are considered as a matter of the whole nation [218]. The peculiarities of professional education in Germany were studied by N. Abashkina,

N. Avshenyuk, O. Anweiler, J. Baumert, H. Bellenberg, H. Benner, K. Buescher, V. Hamaniuk, K. Hufner, A. Ligotskyi, N. Makhinya, L. Pukhovska, T. Vakulenko, M. Winter et al. According to their findings, the higher education system of the Federal Republic of Germany is highly developed. The country has a large number of universities with a wide range of specialties. This is due to the mental practicality, entrepreneurship, foresight of German society, caring attitude to the traditions of the past. Higher education in Germany has more than 16,000 study programs and specialties offered by the higher education system (universities, technical universities, universities of applied sciences, creative, special, non-state and private higher education institutions), most of which are funded by the state. The system of higher education in Germany includes 70 higher education institutions in the old and 28 in the new (former GDR) states; 113 specialized educational institutions in the old and 15 in the new lands. In addition, there are higher schools of management and arts, pedagogical, technical, and theological institutes [219, p. 330].

In Germany, there is a multi-level model of training specialists, it is very difficult, since there are no uniform educational requirements within the country. The structure of the higher education system consists of three types of higher schools:

1) Universities (*Universitaeten, Uni*) and institutions of higher education equivalent to them. First of all, these are classical universities, the history of which begins in the Middle Ages – the Heidelberg University named after K. Ruprecht (1386), Tübingen (1477), Albert Ludwig Freiberg (1457). This includes more modern institutions of higher education: technical universities (*Technische Universitet*); general universities (*Gesamthochschulen*), which provide special professional education and conduct scientific research; as well as pedagogical – *Padagogische Hochschulen*; theological; administrative – *Verwaltungs-fachhochschulen*; pedagogical institutes, medical colleges, philosophical and theological and church colleges, sports colleges;

2) Higher professional schools (*Fachhochschule*), which arose on the basis of engineering schools, which in 1975 granted the status of higher education. Their program includes: the study of business, economics, agriculture and applied arts. The

task of these higher schools is to carry out applied research and development, focused on a specific application [220, p. 60–61];

3) Professional academies (*Berufsakademien*), focused on the acquisition of practical skills by the students of education. Students combine the academic process with internships and practical classes directly in production, according to the chosen specialty, which allows to graduate qualified specialists. In particular, art schools (*Kunsthochschulen and Musik Hochschulen*) train specialists in all types of art and music, including musicology, art history, etc. [221, p. 45].

Private higher education institutions (*Private Hochschulen*) include: higher special schools (*Fachhochschule*), professional academies (*Berts Akademien*), private universities (*Universität*, abbreviated *UNI*), including technical ones (*Technische Universität*). Currently, about 10% of all students study in licensed private higher education institutions. Teaching in them is usually conducted in English, and tuition fees are much higher than in public universities.

The quality of education in public and private higher education institutions is high. A significant improvement in the quality of specialist training is caused by the introduction of the accreditation procedure. In 1998 the Accreditation Council for the evaluation of bachelor's and master's training programs was created, which developed standards and criteria for accreditation organizations.

Higher education institutions in Germany are in most cases subject to the federal states, which have their own laws and regulations in the field of higher education. Each of them has its own structure of educational institutions, its own approaches to professional training, its own forms of financing. Each of the 16 regions has its own terms of training teachers, requirements for qualification levels, type of state certification of graduates in compliance with the requirements of the Bologna Declaration. However, higher education institutions in Germany preserve the historical and national traditions of pedagogical training. Higher pedagogical schools prepare teachers for lower levels of education and specialized schools. Combined with universities, they survived only on separate lands [222].

After finishing high school (*Hauptschule*), graduates who are 16 years old enter vocational schools (*Berufsschule*), where training lasts two years. Graduates of the real school enter the college: *Berufsfachschule* (vocational and technical college); *Fachoberschule* (higher vocational school), where education lasts 2 years. Vocational and technical colleges issue a diploma on obtaining a profession, and higher vocational schools issue a certificate of completed secondary education. After that, you can enter the *Fachhochschulreife*. In addition, students prepare for admission to higher education institutions in specialized schools (*Fachschulen*) and in evening gymnasiums, where matriculation certificates are issued. There are also preparatory courses (*Studienkolleg*) for admission to higher education institutions.

There are general rules for admission to higher education institutions (HEI) throughout Germany. Admission to universities takes place twice a year. For this, you need to have a certificate of complete secondary education. It can be: general (*allgemeine*), which gives access to all higher education institutions; specialist (*fachgebundene*) – for certain faculties; for admission to higher professional schools and specific university faculties. The first two types require graduation from a gymnasium or professional institution, where education lasts 13 years. The third type of certificate is obtained after 12 years of study in vocational schools. Some areas of engineering higher education require applicants to have experience of practical work in production. It is also possible to enter a higher education institution without a certificate on the basis of competitive exams and mandatory work experience in a certain specialty.

In connection with the participation in the Bologna process (unification of the European education system), a two-stage «Bachelor - Master» training system operates in Germany. Programs awarding these degrees «are implemented differently at different universities. Some HEIs offer only master's programs. Studying at the university lasts from 4 to 6 years. A bachelor's degree is awarded to graduates of German higher education institutions and various professional academies (*Berufsakademie*) who have completed the main study program (mostly three-year). For this, graduates need to acquire, depending on the curriculum, from 180 to 240 credit

units. A bachelor's degree provides basic knowledge in the field and methodical skills, as well as a broad professional orientation. After completing their studies, future specialists write a bachelor's thesis. The duration of studies at the second degree is 2 years, sometimes one year (60-120 credits). The beginning of studies takes place immediately after the bachelor's degree or after several years of professional activity. Here, the focus is on deeper specialization and the implementation of scientific work. A master's degree is a prerequisite for admission to graduate school. The requirements for obtaining a scientific degree are determined separately for each field of knowledge. For this, teaching practice in a higher education institution is required, which is accompanied by the passing of qualifying exams. In case of successful writing and defense of the thesis, the graduate student is awarded the scientific degree of Doctor of Philosophy (*Doktor*).

No other European country has such a powerful network of art universities as Germany. Art higher education institutions offer specialties: fine arts, graphics, design, theater decorations. A condition for study is artistic talent (assessed during a creative exam). Art higher education institutions conduct their own professional exams. Once a year, art schools, academies and workshops hold an open door week. Such weeks are especially popular in the art schools of Hamburg, Berlin, Munich, Leipzig and Frankfurt am Main, where the smallest art school in Germany is located – *Frankfurter Städelschule*. Those who have the opportunity to study here have ideal conditions for learning the basics of art: ten artists who already have international recognition share their skills with 170 students. Among art historians, the *Hochschule für Grafik und Buchkunst* is considered the most prominent in its field. In 2005-2009 the famous German artist Neo Rauch taught here.

Dusseldorf is home to one of the 23 art universities in Germany. About 700 candidates annually apply to study at the Düsseldorf Academy of Arts, the most prestigious institution for those involved in the fine arts. About 100 students are accepted from all candidates. The first hurdle that those who aspire to study at this academy have to overcome is the entrance exam. High demands are placed on the creativity of applicants. The portfolio of young artists should include 20-25 original

works. A certain technique or topic is not required, but on the basis of these works, the examination board decides how talented the entrant is.

The Düsseldorf Academy of Arts offers students the following departments: film, video architecture, sculpture, visual arts, painting and photography. Experienced teachers inspire students to perform extremely difficult tasks. The painting course is studied in great detail, students theoretically and practically delve into the spectrum of painting concepts under the guidance of talented artists. Exhibitions of students and famous artists are constantly held in the Gallery of the Academy. The Düsseldorf Academy of Arts awards scholarships to the best students. Students who seek to combine their lives with artistic and pedagogical activities enter graduate school.

During their studies, students are organized to meet with the most respected creative figures. Graduates of art education institutions gain experience working with various facets of creativity, possess various techniques, which opens up good prospects for employment.

Pedagogical education in Germany is characterized by its two-phase nature: the first (academic) includes general scientific, specialized subject (2-3 disciplines) and psychological and pedagogical training. The duration is three years and ends with a state exam. The second (practical) involves an internship at an educational institution, attendance at three seminars and lasts at least two years. It involves a combination of practical training with the study of pedagogical disciplines. Under the guidance of a mentor, future teachers are required to conduct 10-12 classes every week, attend two special-subject seminars and one general one (practical psychology, general didactics and methodology, school studies), totaling 10-12 hours. for a week After completing the second phase of study, they pass the second state exam or enter a postgraduate course, within which a scientific work (dissertation) is prepared, which ends with the awarding of a doctorate degree. The duration of study depends on the scientific direction; as a rule, it is 2-5 years.

Such a two-phase model of preparation has repeatedly been criticized. Among the main disadvantages of the second phase is its excessive autonomy and separation from the educational institution.

The difference between modern pedagogical education in Germany is that there is no academic bachelor's degree, and an increase in the duration of training to 7 years is also expected. The training is professional and pedagogical. 25% of the study time is allocated to the study of general pedagogical disciplines, and 75% is made up of disciplines of the professional and professional didactic cycle and pedagogical practice. A significant amount of the students' educational load consists of practical classes and practices, which consist of many types, each of which is related to theoretical training, has a certain sequence and clear functions and is aimed at applying the knowledge, skills and abilities acquired by the student during his studies [223].

In the system of pedagogical education in Germany, a personal and practically oriented approach is observed. They provide an opportunity to create favorable conditions for the formation and development of students' abilities. Active, creative teaching methods that ensure independent educational and research activities of students are mainly used. Interactive learning methods aimed at solving a common problem, relying on experience, developing one's own position, and creating an atmosphere of cooperation, are gaining popularity. It should be noted that a student of German higher education institutions, having chosen a certain specialty and a corresponding educational program, independently organizes his curriculum, chooses time for internships and practice, participates in scientific research [224, p. 16].

A candidate for a job as a teacher (lecturer) in Germany must pass a state exam (*Staatsexamen*), after which he receives the status of an employee – state recognition of the acquired education. The procedure for taking the exam is established by the Federal Land and is conducted under its supervision.

In pedagogical institutions of higher education, two specialties are usually mastered, which are not necessarily related (for example, a teacher of drawing and foreign languages, drawing and mathematics, drawing and chemistry, biology or economics, etc.). As for the third specialty, it should belong to psychological and pedagogical sciences.

In higher education institutions in Germany, lectures, seminars, and practical classes aimed at the formation of a professional teacher are mostly widespread. They

provide a high theoretical level of training, deep practical skills and abilities. Arbitrary choice of study content helps students choose special courses that interest them.

Higher education in **Poland** has successfully integrated into the European educational space, but training at higher education institutions is currently in the field of critical discussion. Although the diplomas of Polish higher education institutions are recognized in all European countries, nevertheless, in the British world ranking of the Times, Polish institutions occupy a low position: in 2016–2017, the University of Warsaw dropped to 501–600, and Jagiellonian University dropped to 601–800 [225].

Problems and achievements of art and pedagogical education in Poland were studied by S. Bednarsky, K. Denek, I. Kovchyna, O. Kuchai, S. Kvyatkovskiy, V. Okon, G. Piramovich, I. Shempruch, L. Shibyak, A. Vasylyuk et al.

In 2002 in order to improve the quality of education and define educational standards, the State Accreditation Committee was created [226], which performs supervisory functions for monitoring the knowledge, skills, abilities, and professional skills of graduates of higher education institutions. In the Law «On Higher Education» of 2005 characteristics and standards for specific fields and levels of education are recorded. Control over the quality of education is accompanied by conducting research in the appropriate direction and improving the effectiveness of education in public and private institutions. Educational services in higher education institutions are evaluated according to three levels: accredited status, basic and higher level of quality. A clear distinction is made between specialized universities and universities that focus on general academic educational programs. Such reforms were aimed at raising the level of higher education, combining higher education with the field of research, ensuring the availability of education for students with low social status, and promoting the mobility of students and teachers [227].

At this stage, there are two options for training teachers in Poland: the first is educational (teachers' colleges that have the status of higher schools); the second is academic (higher professional schools, higher pedagogical schools, universities). They use three forms of education: stationary, correspondence, and evening. Education at

the first degree lasts 3 years, supplemented by a 2-year master's degree; doctoral studies last from 3 to 4 years [228, p. 23-24].

The first stage of higher education lasts 6 semesters and covers a minimum of 1,800 hours. at the day ward. Graduates receive a licentiate diploma. The training of teachers takes place in three directions: 1) scientific – in the context of the content of the training; 2) pedagogical and methodical – in the context of forms, methods and means of work; 3) methodological – the basis of which is innovative and research functions. After training, writing and defense of a diploma thesis under the guidance of a teacher is provided.

Masters of pedagogy are prepared by higher pedagogical schools, universities, and academies, which, in addition to license programs, have a master's cycle, where training lasts 4 semesters and covers 800 hours during the day and 600 hours – at the correspondence department. Master's studies are completed by passing an exam, which includes questions on pedagogy and psychology, disciplines of specialization, as well as the preparation and defense of a master's thesis [229].

While studying at pedagogical higher education institutions, students undergo pedagogical practice in schools (40-60 hours). It starts in September and lasts two weeks (40 hours). Its organization and implementation consists in the accumulation of pedagogical experience by students in order to form an operational and praxeological aspect, practical knowledge and skills, a complex of professionally important ethical and moral qualities [230, p. 237-240].

The main goal of pedagogical education in Polish higher education institutions is to give students the opportunity to acquire quality knowledge from a cycle of social and professional disciplines; master the methods and ways of formulating, solving and evaluating individual and social tasks in various spheres of life; study the goals and objectives of youth training; familiarization and borrowing of foreign experience; planning and programming of pedagogical activities; improvement of own pedagogical competence; formation of a sense of responsibility and self-criticism; ability to self-knowledge; readiness for cooperation [231, p. 251-252].

Higher education institutions of artistic profile in Poland work on two-level programs – bachelor's and master's. In particular, the University of Art and Design operates in the city of Lodz, which is one of the three higher education institutions in the country that issue a master's degree in art. The structure of this university includes the Center for Architecture and Design (2011), which unites designers and promotes the development of their community [232].

The rapid development of art education in Poland is evidenced by radical reforms in the structure of training of art teachers. In accordance with European standards, two-subject training was introduced. For example, at the University of M. Curie-Skłodowska (Lublin), the Institute of Art Education of the Faculty of Art has been expanded to the Art Department, which includes two institutes that train music and visual arts teachers. The introduction of integrated training led to the organization of a two-year course in fine arts for masters in music education, and in the basics of music for masters in fine arts.

The learning process in private educational institutions in Poland is less individually oriented, but more correlated with the requirements of the labor market (design, graphics, interior design). They provide future specialists with more practical skills that are necessary for professional activity [233, p. 33].

The teaching profession in **Japan** is extremely respected. Therefore, a large number of scientists studied the peculiarities of pedagogical education and the professional competence of teachers (H. Wakio, M. Watanabe, M. Endo, T. Inagaki, M. Kaneko, T. Nakatome, etc.) The works of O. Serdiuk, R. Siratori, Yu. Tavrovskiy, L. Troelnikova, D. Yakimov, et.al. are devoted to art education in Japan. Ukrainian scientists O. Bilyk, T. Kuchai, V. Ladanov, O. Mykhailychenko, O. Ozerska investigated the issue of educational policy in Japan.

Higher education in Japan is carried out in universities, colleges and specialized educational institutions. In 1993 Japan had 489 universities (*daigaku*), 520 junior (*tanki-daigaku*), and 65 technology (*koto-senmongakko*) colleges, two-thirds of which were private. Currently, there are already about 600 universities in Japan. The total number of students is almost 3 million.

In junior colleges, studying lasts 2–3 years. Most of the faculties belong to economics, humanities, pedagogy, and sociology. Junior colleges offer programs in child care, preschool and elementary school education, home economics, humanities, social sciences, and more. There is also a wide range of less popular programs in the arts, agriculture and mechanical engineering. Women make up almost 90% of students, as this sector reproduces their role in society.

Technological colleges are designed for high school graduates who can, after their graduation, enter a university, where they practice an abbreviated study program. Education lasts 5 years. These colleges train specialists in the fields of engineering and trade. 70% of students are male.

Higher education in Japan includes colleges with special educational programs (1–2 years of study). They offer professional education, as well as the acquisition of knowledge, skills and abilities that are needed in life. Out of about 3,500 such institutions, the vast majority are private. In 2003, there were 786,000 students studying in specialized colleges. The ratio of male and female students is approximately equal [234].

After receiving a full school education or graduating from college, you can enter a university. The bachelor's program lasts 4 years, after which the graduate can continue his studies. According to Japanese legislation, persons who have reached the age of 18 can be enrolled in higher education. Studying at the master's level programs lasts 2 years, the doctoral program – 4-5 years [235].

Despite the fact that colleges belong to higher education institutions, the Japanese themselves consider only universities to be institutions of higher education. At the same time, almost 80% of school graduates enter higher education institutions, and in the near future in Japan they plan to introduce compulsory higher education, as this is required by the development of state-of-the-art technologies [236, p. 60].

Universities in Japan are large educational, scientific and industrial centers that provide integrated education and carry out interdisciplinary scientific research. Leading universities have in their structure colleges, pedagogical institutes, higher

schools, art institutes, etc. The high quality of professional and pedagogical training in these institutions is provided by highly educated scientific and pedagogical workers.

According to the results of the rating «QS World University Rankings 2021/22», three Japanese universities are among the top 50 universities in the world: University of Tokyo – on 25th place, Kyoto University – on 32nd and Osaka University in 45th place. The government of the country encourages the best universities to increase the level and volume of scientific research works with the aim of turning them into world centers of research in the field of science and technology [237].

The evaluation system in universities is similar to the European one. The minimum number of credits required to graduate from a higher education institution has been established. One credit (35 classes of 50 minutes each) involves the student's academic work for 15 weeks, provided that he has one lecture hour and 2 hours once a week. independent work or 2 hours seminar classes and one hour of independent work, or 3 hours. laboratory or practical classes [238, p. 187–188].

Evaluation is carried out by means of an essay review or a written exam at the end of the semester; defense of completed works takes place in oral form. A four-point system is adopted for evaluating knowledge – «excellent», «good», «satisfactory», «unsatisfactory».

The most prestigious Japanese higher education institutions are distinguished by the fact that they give their graduates a broad general scientific training. In technical colleges, out of five years of study, three years are spent on general education (citizen training). In universities, during the first three semesters, students also study general education courses. During the first period (two years), students have the opportunity to familiarize themselves with the chosen specialty, and teachers - to determine the scientific potential of students. There are cases when students want to change specialization and even faculty; they can do it after the end of the general science cycle. In the next two years of study, future specialists master the chosen specialty. According to researchers, no matter what reforms are carried out in the field of higher education in Japan, the general scientific training of students remains the dominant one in all areas and levels of education [239].

The academic year in Japan lasts from April to March of the following year and consists of 35 weeks. The educational process in universities is organized according to the semester system. In exceptional cases, the transfer of a student from one university to another is practiced. Education in higher education institutions can last 8 years. According to statistics covering the last 40 years, 73-77% of students invest in a four-year term. The university administration has a tolerant attitude towards «lifelong students», because strict competitive selection at admission proves the right of each of them to education.

The curriculum of higher education institutions includes compulsory subjects and optional subjects. Elective educational disciplines are determined by the availability of the material base and the appropriate teaching staff.

A bachelor's degree (*Gakushi*) in Japanese higher education institutions is obtained within 4 years. teaching. The student must accumulate credit units (*tangi*). This is possible due to the presence of the student at lectures and active participation in seminars, due to the performance of independent work). There is an exception for certain specialties, where the duration of study is 6 years. The bachelor's degree program requires about 60 credits. 36 credits are courses in social sciences, humanities and natural sciences. The remaining credits of the general science component are obtained from disciplines related to specialization, as well as at least 8 credits - from a foreign language and 4 – from physical education. Graduates must complete a minimum of 124 credits, and some faculties require 160.

The Master's degree (*Shushi*) requires 2 years of full-time study and a maximum of four years (part-time) of research. Admission to the master's degree is carried out on a competitive basis. A written and oral exam is conducted. The study ends with the writing of a dissertation and an oral exam.

Obtaining the title of Doctor of Science (*Hakushi-Go*) is possible after completing a master's degree or 5 years after obtaining a bachelor's degree. The program provides for the defense of a doctoral dissertation in oral form. Less common is the defense of a doctoral thesis, which requires the submission and defense of a research thesis.

90–93% of all teachers are educated at state universities. Practically all state universities have pedagogical faculties (teacher training faculties). Students of other faculties can also receive a teacher's diploma, subject to certain pedagogical training. Japanese students who have an inclination towards pedagogical activity can, despite the main program, study additional disciplines of a psychological and pedagogical profile and receive a license for the right to teach at a school together with a bachelor's diploma [240, p. 27].

To work in an educational institution, a graduate must obtain a teacher's certificate, which is developed on the basis of the «Law on Personal Educational Certificates» and is issued by prefectural departments of education. There are three types of basic teacher's certificate: advanced — the teacher is awarded a master's degree; first grade — the teacher was awarded a bachelor's degree; of the second class — the teacher receives the qualification of a teacher's assistant (assistant), which corresponds to the successful completion of college. A student who wishes to obtain a first-class certificate of a primary school teacher must acquire 8 credits in pedagogy and teaching methods, 41 credits for specialized disciplines and 10 credits for a course in pedagogy, methodology or a professionally oriented discipline approved by the Minister of Education [241].

To train artists and other specialists in creative fields (art, design, and crafts), there are faculties of fine arts in higher education institutions in Japan. Highly professional education, enhanced by unique and diverse research opportunities, is offered by Kyoto City University of the Arts (京都市立芸術大学), Kanazawa University of Arts and Sciences (金沢美術工芸大学), Kamido College of Culture (神戸文化芸術大学), Kyoto City University of the Arts (京都市立芸術大学).

This university is a municipal university of general and musical arts. Founded in 1880, it is the oldest art university in Japan. (The Tokyo National University of Fine Arts and Music was established in 1885.) Among its teachers and graduates, 16 have been awarded the Order of Culture, 24 are members of the Japanese Academy of Arts. The university has a faculty of fine arts, a faculty of music, and a research center for

Japanese traditional music. The department of fine arts is divided into departments of Nihonga, painting, sculpture, engraving, conceptual and media planning; the department of design with the departments of visual design, landscape design and the department of product design; the department of handicrafts (departments of ceramics, Urushi varnishing, dyeing and weaving) and the department of general science of art. Tokyo University of the Arts was established in 1949. as a result of the merger of the School of Fine Arts and the School of Music, which were founded in 1887. Since the founding of the university, its educational programs have undergone continuous development. In 2004, after the corporationization of national universities, the university became the National University of Tokyo Geijutsu Daigaku Corporation. In 2005 the university founded the Higher School of Cinema and New Media in Yokohama.

Professional art education in Japan can also be obtained at the College of Arts in Kanazawa (金沢美術工芸大学), which was founded by the municipal government in 1946. Currently, on an annual basis, the school enrolls 145 master's students, 32 in the master's program and seven in the doctoral program [242].

The Kobe City College of Liberal Arts (神戸文化结果大大学) was founded in 1967. In 1970, the department of design and humanities was opened in the college. In 1990, it was renamed the Kobe Institute of Liberal Arts. In 2008, the college was merged into the Kobe University of Fashion and Design (神戸ファッション造形大学 大学大学部). Graduates of this university can work in a teaching position in various fields, including in schools and higher educational institutions of the artistic profile [243]. It should be noted that Japanese artists purposefully create their creative direction by organically connecting the artistic traditions of Japanese life and the best achievements of Western design. Students who aspire to teach after obtaining an art education at HEI can obtain a teacher's education or enter graduate school after a master's degree. The open system of teacher training is a feature of higher teacher education in Japan. Teachers are educated at universities or colleges with appropriate state accreditation. At the same time, almost 76% of all junior and technical colleges,

pedagogical institutions of higher education and universities in 1990 were accredited and received the right to train teachers, as a result of which more than half of the country's graduates received a teacher's certificate, although the need for teachers is 9 times less [244, p. 224].

In **Australia**, learning methods based on projects and real cases are actively used. According to research by A. Clarkson & D. Hill [245], this approach allows future teacher students to gain work experience in conditions close to real ones. The authors come to the conclusion that the introduction of active learning (team work, role-playing games, simulation of situations from the teacher's practical activities, project activities, etc.) in the training of teachers contributes to the improvement of the quality of education, improves the pedagogical and communicative competences of students, allows to reduce the gap between theoretical knowledge and practical skills future teachers. Thanks to this approach, future teachers are more prepared for professional activities, especially in conditions that are rapidly changing due to technological progress.

In **Finland**, considerable attention is paid to the training of teachers through work in innovative laboratories and centers of technical development, where they master the latest methods of engineering education, acquire practical skills necessary for teaching technical disciplines in the conditions of the modern educational process. As noted by K. Saarinen [246], this approach allows students to learn the latest technologies, experiment with equipment and tools, and also introduce innovative methods into the educational process. With the help of laboratory classes, future teachers gain work experience in conditions that simulate real production and technical processes, which, in turn, prepares them for the effective implementation of this knowledge in school education. According to L. Chang [247], such innovative laboratories and technological centers are an integral part of the training and professional development of teachers. An important aspect of their work is increasing the level of digital competence of teachers, helping them learn new programs and methods, which allows them to better navigate in a rapidly changing technological environment. This is especially important for teachers who work with young people

and must be familiar with modern technologies. Here, teachers can experiment with innovative methods such as virtual reality, simulations or tools for creating interactive lessons; exchange experience, discuss challenges and jointly develop new approaches to teaching, which contributes to the professional formation and development of teachers' professional skills.

A review of the literature shows that in **Canada** and **Great Britain**, online platforms are successfully used for the training of technology teachers. In particular, T. Baker [248] describes the implementation of distance courses and online platforms that allow you to acquire basic engineering knowledge and master the tools for conducting practical classes in a distance format in Canada, where there are many challenges related to geographic remoteness, lack of resources and limited access to engineering laboratories in remote regions. It is online platforms that allow overcoming these obstacles, providing students with flexibility and access to educational materials regardless of their location. Virtual laboratories, simulation programs, interactive courses with project tasks, blended learning – all this increases the quality of training and the motivation of both students and teachers. On the one hand, students get access to quality materials, can take courses at their own pace and practice technical tasks. On the other hand, teachers have the opportunity to create individual learning trajectories, adapting educational tasks to the level of knowledge of each student.

One of the main challenges of such distance learning is providing a practical component through an online format. For this purpose, special interactive programs are being developed in Canada, where students can virtually use technical tools. T. Baker emphasizes that while this approach does not completely replace real-world practice, it provides students with the basic knowledge and skills necessary for teaching, making them more prepared to work with the equipment during face-to-face training.

The literature review proved that the key aspects of effective training of technology and engineering teachers abroad are balanced theoretical and practical training, integration of practical skills and modern technologies, adaptation of educational programs to the labor market, as well as the use of active and practice-oriented methods, internships at enterprises and training on the basis of innovation

laboratories, international exchange of experience, etc. These elements contribute to the improvement of the quality of education and the training of qualified personnel who are able to effectively teach the new generation in the conditions of dynamic development of technologies [249].

Thus, after considering the key features of the training of professional teachers in foreign countries, we note that in the conditions of overcoming the traditionally formed mass-reproductive character of the development of higher education, modern progressive approaches built on a humanistic basis play a significant role. In view of this, the following aspects of the experience we have studied in the educational fields of different countries are of great importance for bringing the studied profile to the personal level of the Ukrainian higher school, in accordance with the new paradigm of education:

- broad opportunities for realizing the professional qualities of young people and helping future specialists to form competences for life in a civil democratic society have been created in the USA; the development of American scientists in the application of forms and methods of active learning, in particular regarding the organization of independent work of students, conducting interdisciplinary seminars;

- the practice of German higher education regarding the development of pedagogical reflection, the formation of the ability and readiness to critically analyze one's own practical professional activity as an important factor in the acquisition of professional and pedagogical competence; step-by-step reform of higher education with the aim of transitioning to a two-level «bachelor-master» training system; introduction of the university accreditation procedure and monitoring of the quality of university education; modernizing the content of education in order to ensure the quality of education and formed qualifications; introduction of supplements to the diploma; promotion of student mobility;

- the integration of the Republic of Poland into the single European educational space, the success of which is primarily related to the purposeful development of critical, alternative thinking among student youth, the openness of higher education to innovation and the ability to find non-standard solutions.

- in many European countries (Germany, the Netherlands, etc.), technology teacher training systems include long-term internships at enterprises, which allows future teachers to familiarize themselves with modern technical and technological processes and apply their knowledge in real conditions. Such practice contributes to the understanding of modern technologies and their implementation in the educational process;

- transformation of Japanese higher education in the era of informatization and scientific and technical progress into a powerful stimulus for the development of labor activity of the country's population; bringing young people to the norms accepted by society in early childhood, which contributes to the formation of a person as an individual, his entry into the traditional culture of the people;

- STEM-oriented approach to training technology teachers abroad which emphasizes the importance of STEM-oriented teacher education programs that integrate science, technology, engineering, and mathematics for creating a more integrated educational environment.

The study of the development of professional teacher education in different countries of the world made it possible to come to the conclusion that the leading trend in this field is international integration, which is caused by the standardization of teacher training, based on: a competency-based approach to education; continuity of education throughout life; development of interdisciplinary connections; development of international educational and research projects. These general trends dictate ways to modernize the industry in the direction of its humanization and increased attention to the personality of the future teacher of professional and pedagogic disciplines, capable of constant self-development, defending spiritual values, promoting the heritage of world and national culture. The characterized trends of higher teacher education in foreign countries should find a logical reflection, actively borrow and adapt in the higher education of Ukraine, which needs urgent modernization and further development.