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PEDAGOGICAL TECHNOLOGY FOR PREPARING FUTURE TEACHERS TO WORK WITH GIFTED CHILDREN



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Pedagogical technology is an independent type of scientific and methodological product, including conceptual, substantive, procedural and diagnostic-effective components that ensure the systematic organization of the educational process and the achievement of predictable results of professional training of teaching staff.

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1. Explanatory Note

Relevance. The relevance of developing pedagogical technology for training future teachers to work with gifted children is determined by current trends in the development of education and the requirements for the professional activity of a teacher. International and national studies emphasize the importance of systemic support for gifted students and the need for special training of teachers to work with this category [1,2].

Modern schools are focused on developing the intellectual and creative potential of the individual, which requires the teacher to understand the nature of giftedness and to master the technologies of its development. Research shows that gifted students have specific cognitive characteristics, including high information processing speed, flexibility of thinking, and the ability to generate original ideas [3,4]. Along with this, there are features of the emotional sphere, such as increased sensitivity and a tendency to perfectionism, as well as difficulties in social adaptation [5], which requires an integrated approach to teacher training.

The scientific literature highlights the contradiction between the need to personalize learning and the predominance of standardized educational practices. Gifted students need individual educational trajectories, differentiated tasks, and variable forms of learning [6]. At the same time, research shows an insufficient level of readiness of teachers to design an educational environment focused on the development of giftedness.

The development of not only cognitive, but also emotional and social competencies of students is of particular importance. Modern approaches to education consider giftedness as a multidimensional phenomenon that includes intellectual, personal and social components [7]. The lack of systemic support in these areas can lead to decreased learning motivation and difficulties in socialization.

An additional factor of actualization is the digitalization of education. In the context of the development of digital technologies, the role of adaptive educational platforms, data analytics and artificial intelligence tools is increasing, allowing for a personalized approach to learning [8]. The training of future teachers requires the inclusion of digital competencies that ensure the effective use of these tools in working with gifted students.

The development of pedagogical technology for the training of future teachers, focused on the development of cognitive, emotional and social competencies with the integration of digital tools, is conditioned by the modern requirements of the education system and is aimed at improving the effectiveness of working with gifted and talented students. The key characteristic of this technology is its integrative nature, which ensures the formation of these competencies of the future teacher in a single system based on the digital educational environment.

Training is implemented in an activity-based logic: theoretical knowledge about giftedness is immediately translated into practice through the design of the educational environment, the development of individual educational trajectories and the modeling of pedagogical situations. The formation of competencies is carried

out through the solution of complex professional tasks that require an analysis of the characteristics of students and the choice of sound pedagogical solutions.

The system-forming feature is the interrelation of key components: diagnostics determines the design of the educational environment, design determines the choice of technologies, and implementation is accompanied by an assessment of effectiveness and correction of solutions.

Additional importance is attached to the integration of digital tools (educational analytics, adaptive platforms) that provide personalization and support for the development of gifted students. The presented technology is considered as a comprehensive and practice-oriented model of preparing a future teacher for professional activity in a modern school.

The novelty of the technology: it consists in integrating the cognitive, emotional and social components of future teacher training in a single logic of professional activity with the inclusion of digital tools as a system-forming element. Unlike traditional models, the technology is focused on the activity-based formation of competencies through the design of the educational environment, the development of individual trajectories and the use of educational analytics. The novelty also manifests itself in ensuring the interconnection of diagnostics, design, implementation and evaluation of the effectiveness of educational solutions.

Leading ideas of technology:

- integration of cognitive, emotional and social development as the basis for teacher training to work with gifted students
- implementation of an activity-based approach through solving practice-oriented professional tasks
- personalization of training based on diagnostics and design of individual educational trajectories
- systemic interrelation of the stages of pedagogical activity (diagnosis - design - implementation - evaluation)
- the use of digital technologies as a tool for diagnosis, maintenance and analysis of educational results

The purpose of the technology is to form the professional readiness and abilities of future teachers to design and implement an educational environment that ensures the development of gifted and talented students based on the integration of cognitive, emotional and social competencies using digital tools.

Technology objectives:

1. To form a systematic knowledge about the nature of giftedness and its manifestations
2. To develop the skills of diagnosis and identification of gifted students
3. Develop skills in designing the educational environment and individual educational trajectories
4. Master the technologies of personalized and differentiated learning
5. To form the competencies of psychological and pedagogical support and evaluation of the effectiveness of educational solutions

The practical significance of the technology is determined by its applicability in the system of higher pedagogical education to prepare future teachers to work

with gifted students. The implementation of the technology ensures the readiness and abilities of university students to diagnose, design the educational environment, organize training and support the development of schoolchildren. The use of digital tools expands the possibilities of personalization and evaluation of results. The technology can be introduced into the educational programs of higher education organizations, the professional development system and serve as the basis for the development of practice-oriented courses and methodological materials.

Expected results of the technology implementation. The implementation of pedagogical technology provides:

- formation of professional readiness of future teachers to work with gifted children;
- development of diagnostic competence;
- formation of skills in designing individual educational routes;
- development of research competence;
- willingness to use digital technologies and artificial intelligence;
- improving the quality of psychological and pedagogical support for gifted students;
- development of a reflective culture and readiness for continuous professional development.

2. The conceptual part of the pedagogical technology of training future teachers to work with gifted children

2.1 Theoretical and methodological foundations of pedagogical technology for training future teachers to work with gifted children

The pedagogical technology being developed is based on a set of modern methodological approaches that provide a holistic understanding of the preparation of future teachers to work with gifted and talented students in the context of digitalization of education.

The methodological framework is formed through the integration of competence-based, activity-based, personality-oriented, systemic and digital approaches.

-The competence-based approach determines the orientation of training towards the formation of professional skills and readiness to solve real pedagogical tasks, including diagnosis, design and support of the development of gifted students.

The competence approach determines the orientation of the future teacher's training towards the formation of not only a knowledge system, but also stable professional skills that allow effective action in real pedagogical situations. In this logic, the learning outcome is considered as the ability to apply knowledge in practice, make informed decisions and be responsible for their consequences [1,2].

In the context of working with gifted students, the competence approach involves the formation of a set of interrelated professional competencies. These include the ability to carry out pedagogical diagnostics, including the identification of signs of various types of giftedness, the analysis of individual characteristics of students and the interpretation of the data obtained. An important component is the ability to design an educational environment focused on developing the potential of students, as well as to develop individual educational trajectories, taking into account the level of training, the pace of learning and cognitive interests.

A special place is occupied by the willingness and ability to implement pedagogical technologies aimed at developing critical and divergent thinking, organizing research and project activities, as well as creating conditions for in-depth and variable content development. Along with this, the competence of psychological and pedagogical support is being formed, including the ability to take into account the emotional and social characteristics of gifted students, maintain their motivation and provide a favorable educational environment.

The competence approach also involves the development of reflective skills that allow future teachers to analyze their own professional activities, evaluate the effectiveness of applied methods and adjust educational decisions. In the context of digitalization of education, an important element is the ability to use digital tools to diagnose, personalize learning and analyze educational outcomes [1,2].

- The activity-based approach ensures the organization of the future teacher's training through active involvement in professionally oriented activities that are close to the real conditions of educational practice. In this logic, the acquisition of knowledge does not occur in isolation, but in the process of its application in solving specific pedagogical tasks [9, 10].

The implementation of the approach involves modeling professional situations in which students analyze the characteristics of gifted children, identify problematic aspects of their development and develop sound educational solutions. An important element is the design of the educational environment and individual educational trajectories, which allows the future teacher to develop the ability to purposefully manage the educational process.

Special attention is paid to the implementation of practice-oriented tasks, including the development of differentiated educational materials, the selection and justification of pedagogical technologies, as well as forecasting learning outcomes. In the process of such activities, the skills of analysis, decision-making and pedagogical design are formed.

The activity-based approach also involves the development of reflective skills that ensure the assessment of the effectiveness of decisions made, the identification of errors and the correction of pedagogical actions. The inclusion of students in the cycle "analysis - design - implementation - evaluation" contributes to the formation of professional thinking and readiness to work with gifted students in a modern school [9, 10].

-A personality-oriented approach sets the need to take into account the individual characteristics of students, their cognitive, emotional and social development. The personality-oriented approach determines the orientation of the educational process towards recognizing the uniqueness of each student and the need to take into account their individual characteristics, including cognitive, emotional and social development. Within the framework of this approach, the student is considered as an active subject of educational activity, possessing his own interests, abilities, learning pace and style of cognitive activity [11].

In the context of working with gifted students, a personality-oriented approach involves identifying their individual potential and creating conditions for its maximum disclosure. Of particular importance is taking into account advanced cognitive development, high cognitive motivation, as well as possible emotional and social characteristics such as sensitivity, perfectionism, or difficulties in interacting with peers [11].

The approach is implemented through the personalization of learning, which involves a variety of content, forms and methods of teaching, as well as the development of individual educational trajectories. The teacher acts not only as a translator of knowledge, but also as an organizer of the developing environment and accompanying the process of individual student growth.

A personality-oriented approach also involves the creation of a supportive educational environment that promotes the formation of positive self-esteem, the development of independence and responsibility for learning outcomes. Together, these provisions provide conditions for the harmonious development of a gifted student and increase the effectiveness of the educational process [11].

-A systematic approach allows us to consider teacher training as an interconnected structure that combines the diagnosis, design, implementation and evaluation of the educational process.

A systematic approach ensures that future teacher training is considered as an integrated, hierarchically organized structure in which all components are interconnected and interdependent. Within the framework of this approach, pedagogical activity is structured as a sequence of logically related stages: diagnosis of individual characteristics of students, design of the educational environment and individual trajectories, implementation of pedagogical solutions and subsequent assessment of their effectiveness. Each link performs a specific function and simultaneously influences other elements of the system, ensuring the integrity and manageability of the educational process [12].

A systematic approach also involves the coordination of goals, content, methods, and learning outcomes, which allows for the consistency of pedagogical actions and focus on achieving planned educational outcomes. According to this logic, the training of future teachers is focused on the formation of the ability to see the educational process in its entirety, predict the consequences of pedagogical decisions and carry out their correction [12].

-The digital approach complements this system with educational analytics and personalization tools. The digital approach expands the capabilities of this system by including educational analytics tools and personalizing learning. The use of digital platforms, adaptive systems, and data analysis tools allows us to obtain objective information about the dynamics of student development, identify their individual educational needs, and promptly adjust educational decisions. The integration of digital technologies contributes to improving the accuracy of diagnostics, the effectiveness of designing the educational environment and the validity of evaluating learning outcomes [1,2].

The theoretical basis is a multifactorial understanding of giftedness as a multidimensional phenomenon that includes intellectual, creative, and socio-emotional components. Modern research emphasizes the need for an integrated approach to the development of gifted students, taking into account the influence of the educational environment and learning conditions [1]. In this logic, giftedness is considered not as a fixed characteristic, but as a developing potential that requires a specially organized educational environment.

An essential place in the conceptual framework is occupied by the principle of personalization of learning, which involves the design of individual educational trajectories and the adaptation of the content, pace and forms of learning to the characteristics of students. Current research in the field of differentiated learning confirms the need for flexible educational solutions and variability of pedagogical strategies [2].

An important component is the activity-practical orientation of training, in which the formation of competencies is carried out through the solution of complex pedagogical tasks. This approach corresponds to modern models of teacher training, focused on practice and reflexive development of professional activity [8].

Of particular importance is the integration of digital technologies that provide new opportunities for diagnosis, personalization and support of the educational process. The use of adaptive platforms, data analysis tools and artificial intelligence elements is considered as a necessary condition for improvement [8].

The fundamental logic of technology is built as an interconnected system of stages: the diagnosis of individual characteristics of students, the design of the educational environment and individual trajectories, the implementation of pedagogical solutions and the subsequent assessment of their effectiveness with the possibility of adjustment. This structure ensures the transition from the fragmentary assimilation of knowledge to the formation of professional thinking of the future teacher.

The conceptual basis of the technology is the integration of modern scientific approaches focused on the comprehensive development of the student's personality and the teacher's preparation for professional activity in a digital and personalized educational environment.

2.2 Structural and functional model of pedagogical technology for training future teachers to work with gifted children

In order to obtain a holistic view of the content and mechanisms of implementation of the developed pedagogical technology, a structural and functional model was built reflecting the interrelation of its main components (Fig.1). The model allows us to present the logic of forming the professional readiness of future teachers to work with gifted children and determine the sequence of technology implementation.



Figure 1. Structural and functional model of pedagogical technology for training future teachers to work with gifted children

The structural and functional model of pedagogical technology for training future teachers to work with gifted children reflects the logic, content and mechanisms of formation of professional readiness of future teachers to identify, teach, develop and support gifted students in modern education.

The model is based on a systematic approach and includes interrelated components: targeted, methodological, substantive, procedural, organizational, pedagogical, and diagnostic-effective.

The target component defines the strategic orientation of the technology and is focused on the formation of professional readiness and abilities of future teachers to work with gifted children. This result is considered as an integrative personality education, including motivational, cognitive, activity and reflexive components[12].

The methodological basis of the model consists of competence-based, activity-based, personality-oriented, systemic and digital approaches. Their integration ensures that the educational process focuses on the development of professional competencies, the formation of a value attitude towards teaching, taking into account the individual characteristics of students and creating conditions for realizing the potential of each child[13].

The content component is represented by a system of interrelated modules that ensure the consistent formation of professional knowledge, skills, and competencies. The component structure includes modules aimed at studying the theoretical foundations of giftedness, mastering methods for diagnosing and identifying giftedness, designing an educational environment, studying modern pedagogical technologies, mastering technologies of psychological and pedagogical support and acquiring practical professional experience.

The procedural component reveals the mechanism of technology implementation and includes four successive stages: motivational-value, cognitive-content, practical-activity and reflexive-evaluative. Step-by-step implementation ensures the transition from the formation of professional motivation to the development of theoretical knowledge, the development of practical skills and the formation of the ability to professional reflection.

The effectiveness of technology implementation is ensured by a system of organizational and pedagogical conditions, including the formation of students' professional motivation, the integration of theoretical and practical training, the personalization of education, the digitalization of the educational process, the development of networking, mentoring, research activities and reflexive support of professional development. The combination of these conditions creates an educational environment conducive to the formation of professional readiness of future teachers.

The diagnostic and performance component provides an assessment of the effectiveness of the technology and includes a system of criteria, indicators, levels and diagnostic tools. Professional readiness is assessed according to motivational, cognitive, activity and reflexive criteria. The diagnostic results make it possible to determine the level of professional readiness and ability of future teachers and monitor the dynamics of students' professional development[13].

The result of the model's implementation is the formed professional readiness and abilities of future teachers to identify, teach, develop and support gifted children in a personalized, inclusive and digital education.

The presented structural and functional model reflects an integrated system of training future teachers to work with gifted children, ensures the interconnection of all components of pedagogical technology and determines the mechanisms for achieving the planned educational results.

2.3 Principles of implementation of pedagogical technology for training future teachers to work with gifted children

The effectiveness of training future teachers to work with gifted children is determined not only by the choice of methodological approaches and the content of professional training, but also by the observance of a system of principles reflecting the basic patterns of the organization of the educational process. The principles of the implementation of pedagogical technology serve as guidelines that determine the content, organization, methods and means of training future teachers and ensure the achievement of planned learning outcomes.

The developed pedagogical technology is based on a set of interrelated principles reflecting current trends in the development of teacher education, the requirements for professional teacher training and the specifics of working with gifted students.

1. The principle of scientific approach presupposes the construction of the content of training based on modern achievements of pedagogy, psychology, cognitive sciences, theory of giftedness and educational analytics. The training of future teachers is carried out taking into account relevant domestic and foreign research in the field of identification, development and support of gifted children. The implementation of this principle ensures the formation of scientifically sound ideas about the nature of giftedness, the patterns of its development and modern technologies of pedagogical support for talented students. In the context of the rapid renewal of scientific knowledge, the ability of a future teacher to critically analyze scientific information and use research results in professional activities is of particular importance [14, 2].

2. The principle of consistency provides for the consideration of future teacher training as an integral process, including interrelated components: goals, content, methods, forms, means of teaching, organizational and pedagogical conditions and the results of training. Within the framework of this principle, the formation of professional readiness is carried out through the consistent integration of motivational, cognitive, activity and reflexive components. Consistency ensures the consistency of all elements of technology and the focus of the educational process on achieving a single result - the training of a teacher who is able to work effectively with gifted students.

3. The principle of professional orientation. This principle presupposes the orientation of the educational process towards solving real professional problems that arise in the activity of a teacher when working with gifted children. The content of the training is based on the actual needs of a modern school and includes the development of diagnostic methods, the design of the educational environment, the organization of research activities of students and psychological and pedagogical support. The implementation of the principle of professional orientation contributes to the formation of practical readiness of future teachers for professional activity and ensures the connection of theoretical training with educational practice.

4. The principle of practice-oriented approach. The training of future teachers to work with gifted children should be as close as possible to the conditions of real

professional activity. According to this principle, a significant part of the training is carried out through the analysis of pedagogical cases, solving professional situations, project and research activities, teaching practice and internships. The practice-oriented nature of training contributes to the formation of professional skills, the development of pedagogical thinking and the acquisition of experience in solving problems of accompanying gifted students [15].

5. The principle of personalization of training. Modern educational policy is focused on recognizing the uniqueness of each student and the need to take into account their individual educational needs. In the process of training future teachers, this principle is implemented through the construction of individual educational trajectories, the ability to choose research and project topics, the variability of the content of training and the use of adaptive educational technologies. Mastering the principle of personalization allows future teachers to gain experience in designing individual educational routes for gifted students and ensures readiness to implement personalized learning in professional activities [2, 14].

6. The principle of inclusivity implies the recognition of the right of every student to receive a high-quality education, regardless of the specifics of his development, social status or educational needs. In the context of the training of future teachers, this principle focuses on the formation of willingness to work with various categories of gifted students, including children with special educational needs, twice-exceptional students and representatives of various social groups. The implementation of this principle contributes to the formation of a culture of pedagogical acceptance, respect for individual differences and the creation of a favorable educational environment to unlock the potential of each child [16, 2].

7. The principle of digitalization and educational analytics. The development of digital technologies has a significant impact on the content of the professional activity of a modern teacher. In this regard, the training of future teachers should include the development of digital educational resources, educational analytics tools, adaptive platforms and artificial intelligence technologies. The implementation of this principle ensures the formation of digital competence of future teachers, the development of skills in analyzing educational data and making pedagogical decisions based on objective information about the achievements of students [2, 14].

8. The principle of research orientation. Working with gifted children requires constant analysis of educational practice, the search for effective pedagogical solutions and the use of modern scientific achievements. Therefore, the training of future teachers should include elements of research activities aimed at developing analytical thinking, pedagogical research skills and readiness for innovation. The implementation of this principle contributes to the formation of research competence and readiness of future teachers for continuous professional development.

9. The principle of reflexivity presupposes the development of the future teacher's ability to introspect, self-evaluate and comprehend the results of their own activities. In the process of preparation, students learn to analyze their own achievements and difficulties, evaluate the effectiveness of pedagogical decisions and determine the directions of further professional development. Reflexive activity

is considered as the most important mechanism of a teacher's professional development and a condition for his continuous self-education [17].

The set of principles of scientific approach, consistency, professional orientation, practice orientation, personalization, inclusivity, digitalization, research orientation and reflexivity forms the conceptual basis of pedagogical technology for training future teachers to work with gifted children. Their implementation ensures the integrity of the educational process and creates conditions for the formation of a professionally competent teacher who is able to effectively identify, develop and support gifted students in modern education.

3. The substantive part of the pedagogical technology of preparing future teachers to work with gifted children

3.1. The content of training future teachers to work with gifted children

The substantive part of pedagogical technology is a system of scientifically based knowledge, professional competencies, practical skills and personal qualities necessary for a future teacher to work effectively with gifted children in the context of the transformation of modern education. The technology is based on the provisions of competence-based, activity-based, personality-oriented, axiological, systemic, inclusive and digital approaches that provide comprehensive training for teachers to identify, develop and support various categories of gifted students.

Modern research highlights the need to rethink traditional teacher training for working with gifted children. According to the research of the OECD [14], Holmes and co-authors [15], Karakaş Mısır [18], as well as the recommendations of UNESCO [2], a modern teacher should have not only subject knowledge, but also competencies in personalizing learning, analyzing educational data, using digital technologies and artificial intelligence to support the individual development of students. In this regard, the technology content includes six interrelated modules.

Module 1. Theoretical foundations of giftedness

The purpose of the module is to form a modern scientific picture of giftedness among future teachers as a complex multicomponent phenomenon determined by the interaction of cognitive, personal, motivational and social factors.

The content of the module provides for the study of modern concepts of giftedness, including the three-ring model of J. R.R. Tolkien. Renzulli[3], a differentiated model of giftedness and talent by F. Gagne[19], the theory of successful intelligence by R. Sternberg[4], G. Gardner's model of multiple intelligence[7], modern cognitive theories of ability development and concepts of talent development. Special attention is paid to the analysis of modern research in the field of neuropsychology and cognitive science, revealing the mechanisms of formation of high intellectual abilities.

Future teachers study the features of intellectual, creative, artistic, technical, athletic and leadership talents, as well as the specifics of the manifestation of giftedness in different age periods. The issues of asynchronous development, emotional sensitivity, perfectionism, social adaptation and motivation of gifted students are considered.

The module analyzes current international practices of supporting gifted children in countries with high educational outcomes, including Finland, Singapore, South Korea, Canada and the United Kingdom.

The result of mastering the module is a well-formed system of scientific ideas about the nature of giftedness, an understanding of its diversity and factors influencing the development of students' potential.

Module 2. Diagnosis and identification of giftedness

The purpose of the module is to form the diagnostic competence of future teachers.

Modern research emphasizes that the identification of giftedness should be comprehensive and take into account not only academic achievements, but also creativity, motivation, leadership potential, research abilities and the peculiarities of social behavior of students[20, 18].

The content of the module includes the study of modern approaches to the diagnosis of giftedness, the principles of psychological and pedagogical monitoring, methods of pedagogical observation, expert assessment and analysis of educational achievements. Future teachers master the methods of compiling a psychological and pedagogical profile of a gifted child, analyze the possibilities of using psychometric methods for assessing intelligence, creativity, achievement motivation and self-regulation.

Special attention is paid to the development of digital diagnostic and educational analytics tools (learning analytics), which make it possible to identify hidden educational needs of students and track the dynamics of their development. The possibilities of using artificial intelligence to analyze educational data and build individual educational trajectories are considered.

The practical part of the module involves the development of diagnostic maps, observations, case analysis and interpretation of research results.

The result is the future teacher's willingness to comprehensively identify various types of giftedness and make informed pedagogical decisions.

Module 3. Designing an educational environment for the development of giftedness

The purpose of the module is to develop future teachers' competencies in designing an educational environment that ensures the maximum realization of students' potential.

According to the research of Vidal-Fernandez [21], Siemens [22], Chen [23], the most effective conditions for the development of giftedness are personalized learning, flexible organization of the educational process and the ability to choose an individual development trajectory.

The content of the module includes the development of technologies for designing individual educational routes, support programs for gifted students, models of accelerated, in-depth and enriched learning. Future teachers study methods for differentiating the content of education, designing research activities, organizing subject laboratories, student scientific societies, and project teams.

Special attention is paid to the formation of skills in using digital educational platforms, adaptive learning systems, electronic portfolios and educational analytics tools to support the individual development of students.

The practical work is aimed at developing individual educational routes, talent development programs and support models for students of various categories.

The result of mastering the module is the ability to create an educational environment that stimulates the intellectual, creative and personal development of students.

Module 4. Modern pedagogical technologies for teaching gifted children

The purpose of the module is to master learning technologies that promote the development of a high level of cognitive activity and creative thinking.

Modern research shows that the development of giftedness is most effectively carried out through problem-based, research, project and creative learning [15, 14].

The module's content includes the study of problem-based learning technologies, research-based learning, STEM and STEAM approaches, project activities, case method, debate technologies, technologies for developing critical thinking, divergent thinking and creativity.

A separate section is devoted to the use of artificial intelligence in education. Future teachers are exploring the possibilities of using intelligent educational systems to personalize learning, adapt content, and monitor educational outcomes.

Considerable attention is paid to technologies of formation of skills of the XXI century: critical thinking, communication, cooperation, creativity and independent learning.

Practical training includes the development of lesson fragments, the design of educational cases, research tasks and interdisciplinary projects for gifted students.

The result is the willingness of teachers to apply modern educational technologies to develop the intellectual and creative potential of students.

Module 5. Psychological and pedagogical support for gifted children

The purpose of the module is to develop competencies to support the personal development of gifted students.

Modern research shows that the academic achievements of gifted children are directly related to the level of self-regulation, intrinsic motivation and psychological well-being [17, 18].

The content of the module is aimed at studying the mechanisms of formation of educational motivation, development of self-regulation, emotional intelligence, stress tolerance and social interaction skills.

Future teachers study the features of the emotional development of gifted children, the causes of anxiety, perfectionism, excellent student syndrome and emotional burnout. The methods of psychological support for students and technologies for creating a positive educational environment are considered.

Special attention is paid to interaction with parents, organization of family counseling support and building partnerships between the school and the family.

Practical work includes the analysis of problem situations, modeling of consultative conversations and the development of programs of psychological and pedagogical support.

The result of mastering the module is the readiness of the future teacher to ensure the harmonious development of the personality of a gifted child.

Module 6. Practice-oriented training

The purpose of the module is the integration of acquired knowledge and the formation of professional readiness for independent work with gifted children.

The module is based on the principles of practice-oriented and reflective learning. Within its framework, students analyze real pedagogical cases, develop programs for the development of giftedness, diagnose students' abilities, design individual educational routes and participate in organizing students' research activities.

Practical training is provided on the basis of general education schools, specialized educational institutions for gifted children, continuing education centers and university laboratories.

A special place in the implementation of technology is occupied by pedagogical practice, which ensures the integration of theoretical training and real professional experience working with gifted and talented students. During the practice, future teachers gain experience in identifying and diagnosing signs of giftedness, designing and implementing an educational environment that takes into account the individual educational needs of students, including in inclusive education.

The content of the practice includes the observation and analysis of the educational process, the development and conduct of training sessions using differentiated and personalized teaching methods, the use of digital tools to support the educational activities of gifted students, as well as the design of individual educational routes and development programs.

An important area of practical training is the organization of interaction with gifted students, their parents, teachers, psychologists and other support specialists. Future teachers participate in consulting, project and research activities, acquire the skills of pedagogical support, developing the creative potential of students and creating a favorable socio-psychological climate for their self-realization.

Special attention is paid to the reflective analysis of one's own professional activities, evaluating the effectiveness of applied pedagogical technologies, identifying difficulties in working with gifted students and finding ways to overcome them. Such experience contributes to the formation of professional readiness and the ability of future teachers to design and implement an educational environment that ensures the development of gifted and talented students in personalized, inclusive and digital education.

The result of mastering the module is the formed readiness of the future teacher to identify, teach, develop and support gifted children in modern education.

The substantive part of pedagogical technology ensures the comprehensive formation of professional competencies of future teachers and creates the basis for the training of a new generation of teachers who are able to work effectively with gifted children in a personalized, inclusive and digital education.

3.2. Educational and methodological support of pedagogical technology for training future teachers to work with gifted children

Educational and methodological support for the pedagogical technology of training future teachers to work with gifted children is an integrated system of normative, educational, methodological, diagnostic, digital and practice-oriented resources aimed at forming the professional readiness of future teachers to identify, train, develop and support gifted students. This component of the technology provides organizational and pedagogical conditions for the implementation of all its structural elements and contributes to the achievement of planned educational results.

The basis of educational and methodological support is the regulatory framework governing the training of teaching staff and the organization of work with gifted children. It includes regulatory documents of the Republic of Kazakhstan in the field of education, state mandatory standards of higher education, conceptual documents on the development and support of gifted students, as well as international recommendations and strategic documents of international organizations aimed at developing human potential, providing quality education and supporting talented youth.

The implementation of the technology is provided by a system of internal regulatory and organizational and methodological documents of the university, including an educational program for teacher training, a curriculum, a catalog of elective subjects, work programs of academic disciplines, programs of pedagogical practices, regulations on the organization of research activities of students, academic mobility, academic mentoring, final certification of students, as well as regulations for the functioning of digital educational the environment of the university. Cooperation agreements with basic schools, specialized educational organizations for gifted children, resource and scientific and methodological centers that provide practice-oriented training for future teachers play an important role.

The university's institutional and corporate policy in the field of training teachers to work with gifted students is implemented through the integration of the content of the disciplines of the psychological and pedagogical cycle, the organization of research and project activities of students, conducting scientific and methodological seminars, master classes and trainings, attracting students to participate in competitions, Olympiads and scientific projects, as well as through the system of pedagogical practice on the basis of educational organizations providing support and development of gifted children.

The educational and methodological support of the technology includes a set of specially developed materials aimed at forming the readiness of future teachers to identify, support and develop gifted and talented students. It includes the author's elective course "Pedagogical technologies for the development of gifted and talented schoolchildren, an educational and methodological complex for designing an educational environment for gifted students, a digital case bank for working with various types of giftedness (academic, intellectual, creative, leadership), diagnostic

materials for identifying signs of giftedness, as well as methodological recommendations on the development of individual educational routes.

The practice-oriented component is represented by a system of professional cases simulating real pedagogical situations of accompanying gifted students, a set of project tasks for creating a developing educational environment, tasks for developing extracurricular activities and research projects for gifted children, as well as an electronic portfolio of future teachers. An important element is the digital resource package, which includes online platforms, artificial intelligence tools, services for monitoring educational achievements and organizing personalized learning for gifted students.

The use of these materials ensures the step-by-step formation of future teachers' competencies in the field of diagnosis of giftedness, design of the educational environment, pedagogical support, interaction with the family and the use of digital technologies in working with gifted and talented students [14].

Diagnostic support is of particular importance in the structure of technology, aimed at developing students' skills to identify and evaluate various types of giftedness. The diagnostic tools include maps of pedagogical observation, diagnostic checklists, methods for assessing intellectual, academic and creative abilities, tools for studying educational motivation and self-regulation of students, as well as tools for monitoring the formation of professional competencies of future teachers. An essential role is played by the student's electronic portfolio, which allows tracking the dynamics of his professional development and the level of readiness to work with gifted children.

In the context of the digital transformation of education, digital provision of pedagogical technology is becoming particularly relevant. It includes the use of modern learning management systems (LMS), digital educational platforms, collaboration services, educational analytics tools and artificial intelligence technologies designed to personalize the educational process and support individual educational trajectories of students. In addition, electronic libraries, scientific databases and digital repositories provide students with access to relevant research in the field of pedagogy and psychology of giftedness[14].

The practice-oriented provision of technology is aimed at shaping the professional experience of future teachers in the real conditions of educational activity. It includes teaching practice, internships, participation of students in research and project activities, interaction with specialized educational organizations for gifted children, centers for additional education, research laboratories and other educational platforms. In the process of practical training, future teachers get the opportunity to apply theoretical knowledge in their professional activities, master modern methods of working with gifted students and gain experience in designing an educational environment conducive to the development of their abilities[14].

Educational and methodological support of pedagogical technology is a multi-level system of interrelated resources that ensure effective training of future teachers for professional activities in the field of identification, development and support of gifted children. The integrated use of normative, educational, methodological, diagnostic, digital and practice-oriented tools contributes to the formation of

professional competencies necessary for a modern teacher to work successfully in a personalized, inclusive and digital education environment. The structure of educational and methodological support for the pedagogical technology of training future teachers to work with gifted children is presented in Table 1.

Table 1 – The structure of educational and methodological support for the pedagogical technology of training future teachers to work with gifted children

№	The security component	Content	Appointment
1	Regulatory and legal support	State Standard of Higher Education, regulatory documents of the Republic of Kazakhstan in the field of education, concepts of support for gifted students, international recommendations of UNESCO and OECD	Defining the legal and organizational foundations for the training of future teachers
2	Educational and methodological support	Educational and methodological complexes of disciplines, syllabuses, teaching aids, methodological recommendations, case studies, a bank of project and research assignments	Formation of a system of professional knowledge and methodological skills
3	Diagnostic software	Observation maps, diagnostic checklists, methods for assessing giftedness, tools for assessing motivation and self-regulation, electronic portfolio	Formation of diagnostic competence and monitoring of training results
4	Digital support	LMS Moodle, Google Classroom, digital educational platforms, educational analytics tools, artificial intelligence services, scientific databases	Support for the digital transformation of the educational process and the personalization of learning
5	Practice-oriented provision	, Pedagogical practice, internship sites, specialized schools for gifted children, cognitive research laboratories, additional education centers	Developing practical experience working with gifted students
6	Scientific and research support	Scientific projects, research assignments, students' publication activity, participation in conferences and competitions	Development of research competence of future teachers

The presented system of educational and methodological support is comprehensive and ensures the implementation of all structural components of pedagogical technology. The interconnection of regulatory, educational, methodological, diagnostic, digital, practice-oriented and research resources contributes to the formation of professional readiness of future teachers to work effectively with gifted children in modern education.

To assess the effectiveness of each substantive technology module, relevant professional competencies, expected learning outcomes, and forms of control were identified. Their relationship is shown in table 2.

Table 2 – Correspondence of the content modules of technology, formed competencies, learning outcomes and forms of control

№	Technology Content Module	Emerging competencies	Learning outcomes	Forms of control
1	Theoretical foundations of giftedness	The ability to apply modern scientific knowledge about the nature, structure and patterns of talent development in professional activities	Demonstrates an understanding of modern concepts of giftedness, the peculiarities of the development of gifted students and the factors influencing the realization of their potential.	Testing, essays, colloquium, analytical review of scientific literature
2	Diagnosis and identification of giftedness	The ability to carry out psychological and pedagogical diagnostics and interpretation of the results of the assessment of students' abilities	He knows the methods of identifying various types of giftedness, analyzes and interprets diagnostic data.	Practical work, case analysis, development of diagnostic maps, solving professional situations
3	Designing an educational environment for the development of giftedness	The ability to design an educational environment and individual educational routes, taking into account the characteristics of gifted students	Develops individual educational routes, support programs, and support models for gifted students	Project protection, development of educational programs, expert evaluation of project work
4	Modern pedagogical technologies for teaching gifted children	The ability to apply modern educational technologies that ensure the development of students' intellectual and creative potential	Carries out an informed choice and application of pedagogical technologies in the process of teaching and developing gifted children	Micro-teaching, conducting training sessions, analysis of pedagogical cases
5	Psychological and pedagogical support for gifted children	The ability to provide psychological and pedagogical support for gifted students and interact with subjects of the educational process	Organizes support for the personal development of students, interacts with parents and teachers, applies technologies to support motivation and self-regulation.	Case solving, trainings, modeling of professional situations, portfolio
6	Practice-oriented training	The ability to carry out professional activities to identify, train, develop and support gifted students in real educational conditions	Demonstrates willingness to independently solve professional problems in the field of working with gifted children	Teaching practice, portfolio, defense of the final project, expert assessment of professional activity

The informative modules of pedagogical technology presented in table 2 ensure the consistent formation of professional competencies of future teachers necessary for effective work with gifted children. The interrelation of the goals of training, the content of training, expected results and forms of control ensures the integrity of the educational process and allows monitoring the level of professional readiness of students at various stages of training.

4 The procedural part of the pedagogical technology of preparing future teachers to work with gifted children

4.1 Stages of implementation of pedagogical technology for training future teachers to work with gifted children

The procedural part of pedagogical technology reveals the mechanism of its implementation and determines the sequence of pedagogical actions that ensure the formation of professional readiness of future teachers to identify, teach, develop and support gifted children. Modern research emphasizes that the training of teachers to work with gifted students should be based on the principles of continuity, practice-orientation, personalization and integration of digital technologies into the educational process. Of particular importance are the development of research competencies, the skills of designing individual educational routes and the willingness to use artificial intelligence tools in teaching [14,2,24].

The implementation of pedagogical technology is carried out sequentially and includes four interrelated stages: motivational-value, cognitive-content, practical-activity and reflexive-evaluative.

1. The motivational and value stage. The purpose of the stage is to form a stable professional motivation of future teachers to work with gifted children and to realize the importance of pedagogical activities for the development of human potential.

At this stage, students are familiarized with current trends in the development of education, state policy in the field of support for talented youth, and international experience in identifying and supporting gifted students. Special attention is paid to the formation of professional values, the humanistic orientation of pedagogical activity and the understanding of the social significance of the development of giftedness.

The content of the stage is realized through problem lectures, discussions, round tables, an analysis of successful practices of working with gifted children, meetings with practical teachers and scientists. As a result, students develop a positive motivation for professional activity and a willingness to further develop special knowledge and competencies.

2. Cognitive-content stage. The purpose of the stage is to form a system of scientific knowledge about the nature of giftedness, the patterns of its development and modern technologies for working with gifted children.

Students study modern concepts of giftedness, psychological characteristics of gifted children, methods of diagnosing abilities, models of personalized learning, technologies for developing creativity and research thinking. Considerable attention

is paid to the issues of digital transformation of education, educational analytics and the use of artificial intelligence to support individual educational trajectories. According to the recommendations of UNESCO [2] and OECD [14], a modern teacher should have competencies in the field of digital literacy and responsible use of artificial intelligence in the educational process.

The result of the stage is the formation of the cognitive basis of the professional readiness of future teachers.

3. Practical activity stage. The purpose of the stage is to develop practical skills of working with gifted students.

At this stage, students master the methods of pedagogical diagnostics, designing individual educational routes, developing support programs for gifted children, and organizing students' research and project activities. Practical training is carried out through the analysis of pedagogical cases, solving professional problems, developing educational projects, modeling pedagogical situations and passing pedagogical practice.

A special place is occupied by the development of digital learning tools, adaptive educational systems and educational analytics tools that take into account the individual characteristics of students and ensure the personalization of the educational process. Modern research shows that the use of adaptive technologies and artificial intelligence contributes to a more effective identification of students' educational needs and to improving the quality of pedagogical support.

4. Reflexive and evaluative stage. The purpose of the stage is to assess the formation of professional readiness of future teachers and the development of professional reflection skills.

At this stage, self-assessment, mutual assessment and expert assessment of the results of students' activities are carried out. Portfolios, reflective reports, project defense, analysis of pedagogical cases and results of pedagogical practice are used. Students analyze their own achievements, identify professional deficits and determine the directions of further professional development. The result of the stage is a developed ability for professional reflection and self-development.

To ensure the systematic implementation of technology in the educational process of the university, the stages of its implementation are correlated with the logic of mastering the educational program for teacher training. The step-by-step distribution of technology content across training courses ensures the consistent formation of motivational, cognitive, activity-based, and reflexive components of future teachers' professional readiness to work with gifted and talented students (Table 3).

Table 3 Step-by-step implementation of pedagogical technology in the structure of the educational program for training future teachers

Course of study	Technology implementation stage	The main content of the training	Forms of organization of activities	Expected result
1	Motivational and value-based	Formation of ideas about the nature of	Introductory disciplines of the	Formation of stable professional

		giftedness, the social significance of working with gifted students, and the value attitude towards the teaching profession	psychological and pedagogical cycle, problem lectures, discussions, meetings with practical teachers, volunteer projects, popular science seminars	motivation and interest in the problems of giftedness
2	Cognitive-meaningful	Mastering the theoretical foundations of giftedness, diagnostic methods, modern concepts of talent development, technologies of personalized and inclusive education	Academic subjects, case analysis, practical exercises, digital simulations, solving professional problems	Formation of a system of professional knowledge and understanding of the specifics of working with gifted students
3	Practical-activity	Designing the educational environment, developing individual educational routes, organizing students' research and project activities, using digital technologies and educational analytics	Project activities, pedagogical cases, educational and research work, participation in scientific projects, educational practice	Formation of professional skills in identifying, developing and supporting gifted students
4	Reflexive-evaluative and integrative	Independent solution of professional tasks, implementation of educational projects, pedagogical practice, completion of final qualification work on the subject of giftedness	Industrial and pre-graduate practice, internships, mentoring, portfolio, final qualification work	Developed professional readiness to work independently with gifted and talented students

The presented distribution of technology stages by training courses ensures its integration into the current system of higher pedagogical education and allows future teachers to be trained to work with gifted and talented students as a consistent and continuous process of professional development, covering the educational, research and practical activities of students throughout the entire period of study at the university.

4.2 Methods, forms and means of implementing pedagogical technology for training future teachers to work with gifted children

To achieve the goals of pedagogical technology, active, interactive and practice-oriented teaching methods are used, aimed at developing the professional competencies necessary for future teachers to work with gifted children. The choice of methods is determined by the content of training, the specifics of professional tasks and the need to integrate theoretical and practical training.

Problem-based learning promotes the development of analytical thinking and the ability to make pedagogical decisions in non-standard situations. The research method ensures the formation of research competence and scientific search skills. The project method is focused on developing the skills to design an educational environment and individual educational routes for students. The case method and the method of analyzing professional situations allow us to model real pedagogical conditions and form skills for solving practical problems of accompanying gifted children[15,21,14].

A special role in the implementation of technology is played by technologies for the development of critical and creative thinking, which ensure the formation of the ability to pedagogical analysis, forecasting and designing the educational process. In the context of the digital transformation of education, educational analytics methods and artificial intelligence technologies are becoming essential, making it possible to monitor students' educational achievements, identify individual educational needs and design personalized development trajectories.

Organizational forms of training ensure a consistent transition from the acquisition of theoretical knowledge to the acquisition of practical professional experience. Along with traditional lectures and seminars, interactive lectures, trainings, master classes, pedagogical workshops, project groups, research laboratories and internship sites are widely used. A significant place in the implementation of technology is given to pedagogical practice, since it provides the transition from the theoretical development of talent issues to the acquisition of professional experience in real educational conditions. The formation of professional readiness of future teachers is carried out through their direct involvement in the processes of identification, pedagogical support and development of gifted students. The main mechanisms are the observation and analysis of the educational activities of gifted children, the diagnosis of their educational needs, the development and implementation of individual educational routes, the design of a developing educational environment, the organization of research and project activities of students, as well as interaction with teachers, psychologists and parents.

The resource base of pedagogical practice consists of practice bases, during which students perform professionally oriented tasks, develop educational projects, form a digital portfolio and carry out a reflective analysis of their own activities, which ensures the development of cognitive, emotional and activity components of professional readiness to work with gifted and talented students.

Learning tools are represented by a set of traditional and digital educational resources. Their use provides access to relevant scientific knowledge, promotes the development of digital competence of future teachers and creates conditions for the personalization of the educational process. A special place is occupied by digital learning management platforms, artificial intelligence systems, educational analytics tools and electronic portfolios that provide support for the professional development of students throughout the entire training period. To ensure the purposeful formation of future teachers' professional readiness to work with gifted children, various teaching methods are used within the framework of technology, each of which is focused on the development of certain professional competencies

[2,14,23]. The relationship between the applied methods and the competencies being formed is presented in table 4.

Table 4 – Teaching methods and emerging professional competencies

№	Teaching methods	Purpose of application	Emerging competencies
1	Problem-based learning	Formation of the ability to solve pedagogical problems in non-standard educational situations	The ability to analyze pedagogical situations, identify problems and make informed pedagogical decisions
2	The research method	Development of scientific research and pedagogical research skills	The ability to carry out research activities in the field of education and use its results in professional practice
3	The design method	Formation of skills to design the educational process and individual educational routes	The ability to design an educational environment and support programs for gifted students
4	The case method	Developing skills in analyzing professional situations and choosing effective ways to solve them	The ability to diagnose students' educational needs and choose effective pedagogical strategies
5	The method of pedagogical modeling	Formation of skills in designing and forecasting pedagogical activity	The ability to model the educational process and predict the results of pedagogical influences
6	Critical thinking technologies	Formation of the ability to analyze, evaluate and interpret information	The ability to critically analyze information and make informed professional decisions
7	Creative thinking technologies	Developing the ability to find new pedagogical solutions	The ability to develop innovative approaches to the education and development of gifted children
8	Educational analytics methods	Developing skills in analyzing educational data and monitoring student achievements	The ability to use digital technologies and educational analytics to make pedagogical decisions

The teaching methods used, described in Table 2, are aimed at forming various components of the professional readiness of future teachers. Their integrated application ensures the development of analytical, diagnostic, research, design and methodological competencies necessary for effective work with gifted students. However, the effectiveness of the formation of these competencies is determined not only by the choice of teaching methods, but also by the organization of appropriate forms of the educational process and the use of modern learning tools. The organizational forms of education and the means used ensure the practical implementation of the methods under consideration and create conditions for achieving the planned results of training future teachers. Their relationship is shown in table 5.

Table 5– Forms and means of implementation of pedagogical technology

№	Forms of education	Funds used	Planned result
1	Lectures and interactive lectures	Multimedia presentations, video materials, electronic educational resources, scientific publications	Formation of a system of scientific knowledge about the nature of giftedness, modern approaches to its identification, development and maintenance

2	Seminars and practical exercises	Pedagogical cases, diagnostic materials, practical tasks, situational tasks	Formation of the ability to analyze professional situations, diagnose educational needs and choose effective strategies for pedagogical interaction
3	Trainings and workshops	Practice-oriented tasks, pedagogical situations, training exercises	Development of pedagogical communication skills, counseling, support and support for gifted students
4	Project teams	Digital educational platforms, project banks, templates for individual educational routes	Formation of the ability to design an educational environment, individual educational routes and programs for the development of gifted students
5	Research laboratories	Scientific databases, diagnostic tools, statistical data processing	Formation of the ability to carry out research activities and use research results to solve professional problems
6	Teaching practice	tools, Educational environment of educational organizations, practice programs, mentoring of teachers	Gaining experience in identifying, teaching, developing, and supporting gifted students in real-world professional settings
7	E-learning	LMS Moodle, Google Classroom, digital educational platforms, artificial intelligence services, educational analytics tools	Developing the ability to use digital technologies, educational analytics, and artificial intelligence tools to personalize learning and make pedagogical decisions.

Each form of educational organization is provided with an appropriate set of tools and is focused on achieving specific educational results. This combination of teaching methods, forms and means ensures the implementation of competence-based, activity-based and practice-oriented approaches, promotes the integration of theoretical training and pedagogical practice, and creates conditions for the formation of professional readiness of future teachers to work with gifted children.

4.3 Pedagogical conditions for the implementation of pedagogical technology for training future teachers to work with gifted children

Modern research in the field of giftedness pedagogy shows that the effectiveness of future teacher training is determined not by individual pedagogical influences, but by a system of interrelated conditions that ensure the formation of professional readiness at the personal, cognitive, activity and reflexive levels. According to the research of Holmes and co-authors [15], Zimmerman [17], OECD[14], Chen [23], Vidal-Fernandez [21] and Karakaş Mısıır [18], the training of teachers to work with gifted students should be based on the principles of personalization, practice-orientation, research activity and continuous professional development. development.

An important condition for the implementation of technology is the creation of an educational environment focused on the development of the subject position of the future teacher. Within the framework of the competence approach, the student is considered not only as an object of learning, but also as an active subject of professional development, able to independently determine the goals of his own development, choose ways to achieve professional results and reflect on his activities. Such an organization of the educational process contributes to the formation of responsibility for learning outcomes and readiness for professional self-development.

Interdisciplinary integration of the training content is of particular importance in the implementation of technology, since the professional activity of a teacher in supporting gifted and talented students requires the integrated use of knowledge from the fields of pedagogy, psychology, cognitive sciences, digital technologies, educational analytics and educational management. The implementation of the technology is based on the interdisciplinary interaction of academic disciplines, which ensures the formation of future teachers' holistic understanding of the patterns of development of giftedness, mechanisms for its identification and ways of pedagogical support.

A SWOT analysis of interdisciplinary and meta-subject relationships in the system of professional training of future teachers revealed the factors determining the potential of technology implementation. The strengths of the existing system include the integration of the psychological, pedagogical, subject-methodical and research components of training, the presence of a developed digital educational environment, a practice-oriented orientation of the educational process and an established system of pedagogical practices that provide conditions for the professional development of future teachers. At the same time, some limitations have been identified related to the insufficient representation of the issues of giftedness in the content of a number of academic disciplines, the fragmentation of interdisciplinary connections and the insufficient level of formation of students' practical experience in the field of designing the educational environment and pedagogical support for gifted students.

The possibilities of implementing the technology are due to the expansion of interdisciplinary integration of the resources of pedagogy, psychology, cognitive sciences, digital technologies, educational analytics and educational management, which contributes to the formation of complex professional competencies of future teachers. Additional potential is created by students' research and project activities, the use of digital educational platforms, as well as networking with educational organizations that implement programs for the development and support of gifted children. Potential risks include the high content content of educational programs, insufficient coordination of interdisciplinary interaction between subjects of the educational process, and limited specialized educational and methodological support for the development and support of giftedness.

The results of the analysis indicate that the proposed technology is not an autonomous component of professional training, but acts as a mechanism for integrating and improving the existing system of teacher education through updating

the content of academic disciplines, strengthening interdisciplinary connections, expanding the possibilities of pedagogical practice and the effective use of personnel, scientific, methodological, organizational and digital resources of the university.

A necessary condition is the development of the digital pedagogical culture of future teachers. In modern conditions, a teacher must have the ability to use digital educational resources, analyze educational data, apply artificial intelligence technologies to support personalized learning, and make pedagogical decisions based on data. According to the recommendations of UNESCO AI Competence Framework for Teachers [25], the development of digital and analytical competence is becoming a mandatory component of teachers' professional training.

The organization of a mentoring and professional support system for students deserves special attention. An important organizational and pedagogical mechanism for implementing the technology is the mentoring system, which provides professional support to future teachers in the process of preparing to work with gifted and talented students. Mentoring is implemented through the student's interaction with university teachers, teachers-mentors of basic schools and specialists of educational organizations with experience working with gifted children.

The main areas of mentoring are the formation of students' skills to identify signs of giftedness, design a developing educational environment, develop individual educational routes, organize students' research and project activities, use digital tools to support the educational process, as well as interact with parents and specialists in psychological and pedagogical support.

Organizational forms of mentoring include individual consultations, joint design and analysis of training sessions, supervision of pedagogical practice, master classes, professional trials, internships in specialized schools for gifted children, participation in methodological seminars and professional communities. In the course of teaching practice, students perform professionally oriented tasks under the guidance of mentors, develop and conduct training sessions, implement educational projects and carry out a reflective analysis of the results of their own activities.

The mentoring mechanism provides for step-by-step support of the student according to the "observation -joint activity - independent implementation - reflection" model. At the first stage, an introduction to effective practices of working with gifted students is carried out, at the second - joint planning and conducting educational events with a mentor, at the third - independent implementation of professional tasks, at the fourth - analysis of the results achieved and determination of directions for further professional development. Such a mentoring organization ensures the formation of professional readiness of future teachers to work with gifted and talented students in modern education.

An essential condition for the implementation of technology is the development of a culture of pedagogical innovation, which is considered as the ability of a future teacher to design, test and evaluate the effectiveness of new educational solutions in working with gifted and talented students. Within the framework of technology, this direction is implemented through the inclusion of

students in project, research and startup activities focused on the development of innovative educational products.

The practical implementation of this condition is ensured through the implementation by students of interdisciplinary projects to create digital educational resources for gifted students, the development of personalized learning models, the design of extracurricular activities, the preparation and testing of author's methodological solutions for the development of various types of giftedness. The results of project activities are presented in the format of hackathons, pedagogical startups, innovative project competitions, scientific and practical conferences and methodological festivals.

An important mechanism is the participation of students in grant competitions, research projects, academic mobility programs and activities of student scientific associations aimed at studying the problems of development and support of gifted students. To assess innovation activity, indicators of participation in competitions and grants, the number of developed and tested educational projects, the quality of digital educational products, as well as the results of an expert assessment of the presented developments are used.

The development of a culture of pedagogical innovation within the framework of technology is ensured through a system of project, research and practice-oriented forms of activity that allow future teachers to gain experience in developing, implementing and evaluating innovative educational solutions for working with gifted and talented students.

The set of organizational and pedagogical conditions presented forms a unified system that ensures the effective implementation of pedagogical technology for preparing future teachers to work with gifted children. Their interrelation contributes to the formation of professional readiness of future teachers, the development of their research potential, digital culture, the ability to innovate and continuous professional improvement.

5. Diagnostic and effective component of pedagogical technology for training future teachers to work with gifted children

5.1 Criteria and indicators of professional readiness of future teachers to work with gifted children

The diagnostic and performance component is an integral part of pedagogical technology and is designed to evaluate the effectiveness of the process of preparing future teachers to work with gifted children. Its main function is to determine the level of professional readiness of students, identify the dynamics of professional competence development and evaluate the effectiveness of the implemented technology.

In accordance with modern research in the field of teacher education and teacher training for working with gifted students, professional readiness is considered as an integrative personality quality that combines motivational, cognitive, activity and reflexive components. Each of these components reflects a

certain aspect of the future teacher's professional development and is the object of pedagogical diagnostics.

Evaluation of the effectiveness of the pedagogical technology of training future teachers to work with gifted children is carried out on the basis of a system of criteria and indicators reflecting the level of professional readiness of students. In this context, professional readiness is considered as an integrative personal and professional education that combines motivational, value-based, cognitive, activity-based and reflexive components that ensure the ability of a future teacher to effectively identify, train, develop and support gifted students.

The selection of criteria is conditioned by the need for a comprehensive assessment of not only the level of theoretical training of students, but also the formation of their professional motivation, practical skills and the ability to professional self-development. Each criterion is disclosed through a set of indicators that determine the degree to which the planned training results have been achieved.

1. Motivational criterion - reflects the value-semantic orientation of the personality of the future teacher and characterizes the level of formation of professional motivation to work with gifted children. This criterion is one of the key components of professional readiness, as it determines the degree of student's interest in teaching, his desire for professional development and willingness to solve complex educational tasks[17,26].

In modern pedagogical science, motivation is considered as the most important factor in the professional development of a future teacher, which determines the success of mastering professional competencies and readiness for their practical application. Working with gifted students requires a high degree of professional interest, responsibility, and awareness of the importance of developing an individual's intellectual and creative potential.

Indicators of the motivational criterion are:

- sustained interest in the problems of pedagogy and psychology of giftedness;
- awareness of the social importance of working with gifted students;
- a positive attitude towards professional activities aimed at identifying and developing talent;
- striving for professional self-development and self-education;
- willingness to participate in research, project and innovation activities;
- the need to master modern technologies for teaching and accompanying gifted children;
- focus on achieving high professional performance;
- willingness to interact with students, parents and the teaching community in the development of giftedness.

The indicators of the motivation criterion were specified through a system of descriptors and diagnostic procedures that make it possible to quantify the level of their education and monitor the dynamics of the professional development of future teachers. The contents of the descriptors, diagnostic methods, and evaluation scale are presented in table 6.

Table 6 - Operationalization of indicators of the motivational criterion of professional readiness of future teachers

№	The indicator of the motivation criterion	Descriptors (measurable manifestations)	Diagnostic methods	Point evaluation
1	Sustained interest in the problems of pedagogy and psychology of giftedness	participation in elective courses, seminars, webinars on the problems of giftedness; study of scientific literature; active discussion of professional issues	questionnaire, portfolio analysis, observation	0-2
2	Awareness of the social importance of working with gifted students	the ability to substantiate the importance of working with gifted children in a reasoned manner; the manifestation of professional values	essay, interview, questionnaire	0-2
3	Positive attitude towards professional activities aimed at identifying and developing talent	voluntary participation in activities related to the support of gifted students; positive assessment of this professional activity	questionnaire, self-assessment, observation	0-2
4	Striving for professional self-development and self-education	availability of an individual development plan; participation in additional educational programs; regular updating of the professional portfolio	portfolio analysis, self-report, expert assessment	0-2
5	Willingness to participate in research, project and innovation activities	участие в научных исследованиях, конференциях, конкурсах, грантовых проектах; разработка образовательных проектов	achievement analysis, portfolio, expert assessment	0-2
6	The need to master modern technologies for teaching and accompanying gifted children	mastering digital platforms and services; using digital tools in educational and project assignments	testing, practical work analysis, observation	0-2
7	Focus on achieving high professional performance	setting professional goals; striving for high-quality assignments; participating in	self-assessment, expert assessment, performance analysis	0-2

		professional skill competitions		
8	Willingness to interact with students, parents, and the teaching community	participation in team projects; interaction with teachers and parents during practice; successful solution of communication cases	observation, expert assessment, case analysis	0-2

Each descriptor is evaluated on a three–point scale: 0 points – the indicator does not appear; 1 point – it appears situationally (episodically); 2 points - it appears steadily and systematically.

Interpretation of the results:

-0-5 points – low level of motivation criterion formation;

-6-10 points – the level is below average;

-11-15 points – average level;

-16-20 points – above average level;

-21-24 points – high level.

The high level of formation of the motivational component is manifested in the stable professional orientation of the student's personality, the presence of internal motivation to work with gifted children and the desire for continuous professional improvement.

2. Cognitive criterion - reflects the level of theoretical and methodological readiness of future teachers in the field of pedagogy and psychology of giftedness. This criterion characterizes the quality of assimilation of professional knowledge necessary for the organization of an educational process focused on the development of students' abilities and talents.

In modern conditions, the professional activity of a teacher requires possession of a wide range of scientific knowledge, including modern concepts of giftedness, patterns of its development, methods of diagnosis and support of gifted students, technologies of personalized learning and the possibilities of digital educational resources[20,18,14,2].

The indicators of the cognitive criterion are:

-knowledge of modern domestic and foreign concepts of giftedness;

-understanding the psychological and age characteristics of gifted students;

-knowledge of the types of giftedness and the features of their manifestation;

-knowledge of the theoretical foundations of the diagnosis of abilities and talents;

-knowledge of modern educational technologies for the development of giftedness;

-understanding the principles of personalized and inclusive education;

-knowledge of technologies for designing individual educational routes;

-understanding the possibilities of educational analytics and artificial intelligence, accompanied by gifted students;

-knowledge of modern approaches to the psychological and pedagogical support of talented children.

For the cognitive criterion, descriptors should reflect not just the availability of knowledge, but their level of assimilation, the ability to apply knowledge to solve professional problems and interpret pedagogical situations. It is advisable to use testing, case studies, situational tasks, case analysis, expert assessment and an interview as diagnostic tools (Table 7).

Table 7 - Operationalization of indicators of the cognitive criterion of professional readiness of future teachers to work with gifted and talented students

№	The indicator of the motivation criterion	Descriptors (measurable manifestations)	Diagnostic methods	Point estimation
1	Knowledge of modern domestic and foreign concepts of giftedness	recognizes and characterizes the basic concepts of giftedness; compares various theoretical approaches; explains the possibilities of their practical application	testing, case analysis	0-2
2	Understanding the psychological and age characteristics of gifted students	defines the psychological characteristics of gifted children of different age groups; explains the features of their development and behavior	testing, situational tasks	0-2
3	Knowledge of the types of giftedness and the peculiarities of their manifestation	classifies the types of giftedness; defines the signs of different types of giftedness based on the description of pedagogical situations	testing, case analysis	0-2
4	Knowledge of the theoretical foundations of the diagnosis of abilities and talents	knows diagnostic methods and tools; justifies the choice of diagnostic techniques depending on the purpose of the study	testing, solving professional problems	0-2
5	Knowledge of modern educational technologies for the development of giftedness	characterizes modern learning technologies; substantiates their application for various categories of gifted students	testing, case assignments	0-2
6	Understanding the principles of personalized and inclusive education	explains the principles of personalization and inclusion; suggests ways to implement them in educational practice	situational tasks, case analysis	0-2
7	Knowledge of technologies for designing individual educational routes	defines the structure of an individual educational route; develops its elements for a specific student	project assignment, expert assessment	0-2
8	Understanding the possibilities of educational analytics and artificial intelligence accompanied by gifted students	explains the functions of educational analytics and AI; suggests options for their use for monitoring and accompanying students	testing, practical tasks	0-2
9	Knowledge of modern approaches to the psychological and	characterizes support models; selects optimal support strategies depending on the educational situation	case analysis, expert assessment	0-2

	pedagogical support of talented children			
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Descriptor rating scale:

- 0 points- knowledge is missing or fragmentary, application is impossible;
- 1 point- knowledge is reproduced at the reproductive level, application is possible with the help of a teacher;
- 2 points - knowledge is systematic, meaningful and independently applied in solving professional tasks.

Interpretation of the results according to the cognitive criterion:

- 0-6 points - low level;
- 7-12 points - average level;
- 13-18 points - high level.

The formation of the cognitive component provides a scientifically based approach to the organization of the educational process and acts as the theoretical basis for the professional activity of the future teacher.

3. Activity criterion - characterizes the ability of a future teacher to apply the acquired knowledge, skills and abilities to solve professional tasks related to the identification, development and support of gifted students.

A special feature of this criterion is its practical orientation. It reflects the level of formation of professional actions and the willingness of the student to carry out pedagogical activities in real educational conditions [15,14,23].

The main indicators of the activity criterion are:

- the ability to carry out a comprehensive identification of various types of giftedness;
- mastery of methods of pedagogical diagnostics and interpretation of results;
- the ability to analyze the educational needs of students;
- the ability to develop individual educational routes;
- the ability to design an educational environment conducive to the development of giftedness;
- the ability to apply modern pedagogical technologies and digital learning tools;
- the ability to organize the research, project and creative activities of students;
- the ability to provide psychological and pedagogical support for gifted children;
- the ability to interact with parents and the teaching staff on the development of giftedness;
- the ability to use educational analytics data to make pedagogical decisions.

To ensure an objective assessment of the level of formation of indicators of motivational (cognitive, activity) criteria, their operationalization was carried out through a system of descriptors and diagnostic procedures. The contents of the descriptors are shown in table 8.

Table 8 - Operationalization of indicators of the activity criterion of professional readiness of future teachers to work with gifted and talented students

№	The indicator of the motivation criterion	Descriptors (measurable manifestations)	Diagnostic methods	Point evaluation
1	The ability to carry out a comprehensive identification of various types of giftedness	identifies signs of various types of giftedness based on observation and analysis of students' activities; justifies the choice of diagnostic procedures; draws up a diagnostic conclusion	case analysis, observation, expert assessment	0-2
2	Knowledge of methods of pedagogical diagnostics and interpretation of results	correctly uses diagnostic techniques; analyzes and interprets the results; formulates pedagogical conclusions	practical assignment, case analysis, expert assessment	0-2
3	The ability to analyze the educational needs of students	defines the educational needs of students; identifies factors affecting the development of abilities; suggests ways of pedagogical support	situational tasks, case analysis	0-2
4	The ability to develop individual educational routes	defines the goals, content and expected results of the route; develops an individual plan for student support; takes into account the peculiarities of giftedness	project assignment, expert assessment	0-2
5	The ability to design an educational environment conducive to the development of giftedness	develops elements of the educational environment; selects resources and forms of work; provides conditions for the development of various types of giftedness	project work, expert assessment	0-2
6	The ability to apply modern pedagogical technologies and digital learning tools	uses modern educational technologies; integrates digital services and platforms into the educational process; justifies the choice of tools	observation, practical work analysis, expert assessment	0-2
7	The ability to organize students' research, project and creative activities	develops research and project assignments; organizes students' activities; provides project support	product analysis, observation, expert assessment	0-2
8	The ability to provide psychological and pedagogical support for gifted children	determines the directions of support; develops recommendations for the support of students; monitors the dynamics of development	case analysis, pedagogical practice, expert assessment	0-2
9	The ability to interact with parents and teaching staff on the development of giftedness	participates in professional communication; conducts consultations and discussions; offers joint solutions to pedagogical tasks	observation, role-playing games, expert assessment	0-2
10	The ability to use educational analytics data to make pedagogical decisions	analyzes educational data; identifies trends and problems; makes informed pedagogical decisions based on the data	practical tasks, case analysis, expert assessment	0-2

Descriptor rating scale:

- 0 points- the action is not performed or is performed with significant errors.;
- 1 point-the action is partially performed with the help of a teacher or mentor.;
- 2 points-the action is performed independently, correctly and in full.

Interpretation of the results according to the activity criterion:

- 0-7 points- low level;
- 8-14 points - average level;
- 15-20 points- high level.

The high level of the activity component indicates the formation of professional skills and the readiness of the future teacher to independently solve the tasks of pedagogical practice.

4. Reflexive criterion - reflects the future teacher's ability for professional introspection, self-assessment and continuous professional development. In modern conditions, reflection is considered as the most important mechanism of professional development of a teacher's personality, ensuring awareness of the results of his own activity and readiness for its improvement.

The reflexive component plays a special role in preparing teachers to work with gifted children, since this activity requires constant analysis of the effectiveness of applied pedagogical solutions, the search for new approaches and readiness for innovation [17, 14].

The indicators of the reflexive criterion are:

- the ability to analyze the results of their own professional activities;
- willingness for professional reflection and self-assessment;
- the ability to identify their own professional difficulties;
- ability to determine the directions of further professional development;
- willingness to learn new pedagogical technologies;
- the ability to adjust their own activities based on the analysis of the results;
- striving for continuous education and professional growth;
- willingness to innovate and introduce new educational practices;
- the ability to carry out a reflexive analysis of pedagogical situations.

To ensure an objective assessment of the level of formation of the indicators of the reflexive criterion, their operationalization was carried out through a system of descriptors, diagnostic procedures and assessment scales. This made it possible to translate qualitative characteristics into measurable indicators and monitor the dynamics of future teachers' professional development. The results of operationalization are presented in table 9.

Table 9 - Operationalization of indicators of the reflexive criterion of professional readiness of future teachers to work with gifted and talented students

№	The indicator of the motivation criterion	Descriptors (measurable manifestations)	Diagnostic methods	Point evaluation
1	The ability to analyze the results of their own professional activities	analyzes the results of completed professional assignments; identifies the causes of success and	analysis of reflective reports, expert assessment	0-2

		difficulties; formulates conclusions based on the results of activities		
2	Willingness to professional reflection and self-assessment	performs self-assessment of professional achievements; correlates the results of activities with set goals; demonstrates the ability to	self-assessment, reflective diary, questionnaire	0-2
3	The ability to identify your own professional difficulties	self-critically analyze professional deficits; analyzes the causes of difficulties; suggests ways to overcome them	case analysis, self-report, expert assessment	0-2
4	The ability to determine the directions of further professional development	formulates professional development goals; develops an individual competence improvement plan; identifies resources to achieve goals	portfolio, individual development plan, expert assessment	0-2
5	Willingness to learn new pedagogical technologies	takes the initiative in exploring new technologies; participates in training events; implements new approaches in practical tasks	portfolio analysis, observation, self-report	0-2
6	The ability to adjust their own activities based on the analysis of the results	makes changes to educational decisions after analyzing the results; takes into account the recommendations of mentors and experts; demonstrates positive activity dynamics	observation, product analysis,	0-2
7	Striving for continuing education and professional growth	participates in additional educational programs; takes online courses; systematically updates professional knowledge	portfolio expert assessment, achievement analysis, self-report	0-2
8	Willingness to innovate and introduce new educational practices	develops and tests innovative solutions; participates in competitions, projects and research; uses modern educational practices	project analysis, expert assessment, portfolio	0-2
9	The ability to carry out a reflexive analysis of pedagogical situations	analyzes pedagogical situations from the standpoint of the effectiveness of decisions made; identifies alternative options for action; argues for the choice of a behavior strategy	case analysis, situational tasks, expert assessment	0-2

Descriptor rating scale:

- 0 points- reflexive actions are absent or appear fragmentary;
- 1 point-reflexive actions manifest themselves situationally, with external support;
- 2 points- reflexive actions are carried out independently, systematically and consciously.

Interpretation of the results according to the reflexive criterion:

- 0–6 points-low level;
- 7-12 points- average level;
- 13-18 points- high level.

The results obtained make it possible to determine the individual profile of the formation of the reflexive criterion and track the dynamics of the professional development of future teachers at various stages of technology implementation.

The system of criteria and indicators of professional readiness provides a comprehensive assessment of the effectiveness of pedagogical technology for preparing future teachers to work with gifted children and allows determining the degree of formation of motivational, cognitive, activity and reflexive components of professional readiness at various stages of training.

The formation of the reflexive component ensures the future teacher's ability for continuous professional development, self-education and adaptation to the changing conditions of the educational environment.

5.2 A model for the level assessment of future teachers' professional readiness to work with gifted and talented students

In order to improve the diagnostic accuracy of assessing the professional readiness of future teachers to work with gifted and talented students, a multicomponent assessment model is used that takes into account the heterogeneity of students' educational needs and the principles of personalized training. The evaluation of the results is carried out not only on the basis of an integral indicator of readiness, but also by building an individual profile of the formation of motivational, cognitive, activity and reflexive criteria [17,26].

The differentiation of training results is represented by a five-level scale, including critical, basic, functional, advanced and innovative and creative levels. This gradation makes it possible to record in more detail qualitative changes in the structure of professional readiness, identify individual educational deficits and development resources, and monitor the dynamics of professional competence formation at various stages of technology implementation.

The profile approach to assessment provides an opportunity to build individual professional development maps reflecting the degree of formation of each criterion and their interrelation. At the same time, the level of professional readiness is determined by an integral indicator, and each student is characterized by an individual profile of formation of motivational, cognitive, activity and reflexive criteria, which may be at different levels of development. This makes it possible to design personalized training trajectories for future teachers, timely adjust the content of educational support and provide an objective assessment of students' professional progress in the process of mastering technology [17,26].

The identification of levels of professional readiness makes it possible to determine the degree to which future teachers master the competencies necessary to identify, develop and support gifted and talented students, as well as to assess the dynamics of their formation in the process of technology implementation. The level of professional readiness is determined on the basis of a comprehensive assessment

of motivational, cognitive, activity and reflexive criteria. Each level reflects the degree of formation of professional knowledge, skills, work experience, values and the ability to professional self-development.

The innovative and creative level is characterized by the systematic and stable formation of all components of professional readiness. The student demonstrates a high level of professional motivation, deep knowledge in the field of pedagogy and psychology of giftedness, and the ability to independently design and implement educational solutions for various categories of gifted students. A distinctive feature of this level is the willingness to innovate, develop and test new educational practices, use digital technologies, educational analytics and artificial intelligence tools to accompany gifted children. Reflexive activity is conscious and systematic in nature and ensures continuous professional development.

The advanced level is characterized by a high degree of formation of the main components of professional readiness. The student has stable professional motivation, systematic knowledge and is able to independently solve most professional tasks related to the identification, development and support of gifted students. At the same time, innovative activity and the ability to create their own educational solutions are manifested mainly in familiar professional situations.

The functional level is characterized by sufficient professional readiness to perform typical professional tasks. The student has the basic knowledge and technologies of working with gifted students, is able to apply them in standard pedagogical situations, develop individual elements of individual educational routes and provide pedagogical support with the advisory support of a teacher, mentor or more experienced teacher. Reflexive skills are formed at a level sufficient for analyzing one's own activities and determining the directions of further professional development.

The basic level is characterized by the partial formation of the components of professional readiness. The student shows a positive attitude towards working with gifted children, but the motivation is mainly situational. Knowledge in the field of pedagogy and psychology of giftedness is fragmentary, the application of professional skills is carried out mainly according to the model or in conditions of external support. Reflexive abilities are insufficiently developed and do not provide full-fledged independent correction of professional activity.

The critical level is characterized by insufficient formation of most components of professional readiness. The student has significant difficulties in understanding the theoretical foundations of giftedness, does not possess the necessary methods of diagnosis and support of gifted students, demonstrates low motivation for this type of professional activity and does not show a stable need for professional self-development. Performing professional actions is possible only with constant external support, and reflexive activity is episodic.

The presented five-level model, combined with a profile approach to assessment, provides a multidimensional diagnosis of future teachers' professional readiness to work with gifted and talented students. The use of integral and criterion indicators allows not only to determine the overall level of readiness, but also to identify the individual configuration of strengths and professional deficits of the

student. This creates the basis for designing personalized educational trajectories, monitoring professional progress and timely adjusting the content of training in accordance with the individual educational needs of future teachers.

5.3 Diagnostic tools for assessing the professional readiness of future teachers to work with gifted children

The most important element of the diagnostic and effective component of pedagogical technology is diagnostic tools that provide objective information about the degree of professional readiness of future teachers to work with gifted children. Its main purpose is to identify the dynamics of the development of students' professional competencies, to determine the level of formation of the motivational, cognitive, activity and reflexive components of readiness, as well as to evaluate the effectiveness of the implementation of pedagogical technology at various stages of training.

Modern approaches to assessing the quality of teacher education involve the use of a comprehensive diagnostic system based on the principles of objectivity, consistency, validity, reliability and multidimensional assessment. In this regard, within the framework of the developed technology, a set of complementary quantitative and qualitative diagnostic methods is used to obtain a holistic view of the professional development of future teachers [14, 2, 17].

Diagnostic tools include methods of self-assessment, expert assessment, pedagogical supervision, analysis of students' products and assessment of the formation of professional competencies carried out in the process of classroom and extracurricular educational activities, project and research work, professionally oriented cases, teaching practice, development of educational projects and solving professional problems related to identification, development and maintenance. gifted and talented students. The complex nature of the diagnosis makes it possible to compare different sources of information and increases the reliability of the results obtained.

The technology performance assessment system is step-by-step in nature and provides monitoring of the dynamics of the formation of professional readiness of future teachers throughout the entire period of technology implementation. Appropriate diagnostic tools have been identified for each stage, which make it possible to assess the achievement of intermediate and final educational results, as well as to carry out timely correction of the educational process.

Table 10 - A system for evaluating the effectiveness of pedagogical technology at the stages of its implementation

№	Technology implementation stage	Diagnostic tools	Estimated indicators	Evaluation result
1	Motivational and value-based	Questionnaires, professional motivation questionnaires, self-	Interest in the problems of giftedness, professional	The individual motivation profile of the student, the level

		assessment, essays, reflection sheets, observation	motivation, value-based attitude towards working with gifted students, willingness for professional development	of formation of the motivation criterion
2	Cognitive-meaningful	Testing, colloquiums, case studies, analysis of pedagogical situations, control tasks, electronic testing	Knowledge of giftedness concepts, diagnostic methods, technologies for teaching and supporting gifted students, understanding the possibilities of digital technologies and AI	The level of formation of the cognitive criterion and the degree of mastering theoretical training
3	Practical-activity	Product analysis, expert evaluation of projects, teaching practice, portfolio, supervision, case protection and project work	Skills in diagnosing giftedness, designing the educational environment, developing individual routes, and applying modern pedagogical technologies	The level of formation of the activity criterion and willingness to solve professional problems
4	Reflexive-evaluative	Reflective diary, self-analysis, expert assessment, interview, professional development portfolio, final assessment	The ability to professional reflection, self-assessment, correction of activities, to determine the directions of further development	The individual profile of professional readiness and the integral level of its formation

The diagnostic tools presented in table 10 are implemented through a set of complementary methods of quantitative and qualitative assessment, providing objective information about the dynamics of the formation of professional readiness of future teachers. One of the main diagnostic methods is a survey of students aimed at identifying the level of professional motivation, attitude to work with gifted and talented students, willingness to innovate and the desire for professional self-development. The survey makes it possible to determine the value orientations of students, the degree of their interest in mastering the technologies of working with gifted children and the level of formation of the motivational criterion of professional readiness.

To assess the cognitive criterion, testing, case studies, analysis of pedagogical situations and control work are used to determine the level of mastering theoretical knowledge in the field of pedagogy and psychology of giftedness, diagnostics of abilities, design of the educational environment and psychological and pedagogical support for gifted students.

Diagnostics of the activity criterion is carried out through an expert assessment of the results of project and research activities, analysis of professionally oriented cases, teaching practice, student portfolios and monitoring the performance of professional tasks. These methods allow us to determine the level of formation of

practical skills and the ability to apply the acquired knowledge in real teaching activities.

The assessment of the reflexive criterion is based on the analysis of reflexive diaries, self-assessment materials, professional development portfolios, interview results and expert assessment. The use of these methods makes it possible to identify the ability of students to self-analyze, evaluate the results of their own activities, identify professional deficits and design areas for further professional development.

The complex application of complementary diagnostic methods ensures the objectivity of assessing the professional readiness of future teachers, allows monitoring the dynamics of its formation and obtaining reliable information about the effectiveness of the implementation of pedagogical technology.

To assess the cognitive component, tests and control tasks are used to determine the level of theoretical readiness of students in the field of pedagogy and psychology of giftedness. The test materials include tasks on knowledge of modern concepts of giftedness, diagnostic methods, technologies for teaching and supporting gifted students, principles of personalized and inclusive education, as well as the possibilities of using digital technologies and artificial intelligence in the educational process.

An essential role in the diagnosis is played by pedagogical supervision carried out in the course of educational activities, practical assignments and passing pedagogical practice. To ensure the objectivity of the observation, specially designed observation maps and diagnostic checklists are used to record the level of professionally significant qualities, features of interaction with students, the ability to organize the educational process and the use of modern pedagogical technologies.

An important source of diagnostic information is the analysis of the products of students' activities. Individual educational routes, support programs for gifted students, research projects, methodological developments, analytical reports, diagnostic materials and other results of educational and professionally oriented activities are considered as objects of analysis. The analysis of these materials makes it possible to assess the degree of formation of the design, methodological and research competencies of future teachers [14,2,22].

To determine the level of formation of the activity component of professional readiness, an expert assessment of project work and the results of pedagogical practice is used. The experts are university professors, practice managers, mentors, and educators from educational organizations. Expert assessment makes it possible to determine the ability of students to apply their knowledge in professional activities, make pedagogical decisions, organize the educational process and provide support for gifted students.

A special place in the diagnostic system is occupied by case studies that simulate real professional situations. Solving pedagogical cases makes it possible to assess the level of formation of analytical, diagnostic and design skills, the ability of students to make informed decisions in conditions of uncertainty and choose optimal strategies for pedagogical interaction with gifted students.

Methods of self-assessment and mutual assessment are used to develop the reflexive component of professional readiness. Their use contributes to the

formation of students' ability to analyze their own activities, objectively evaluate their results, identify professional deficits and identify areas for further professional improvement. An additional tool is reflective reports, which make it possible to record changes in the professional consciousness of students and track the dynamics of their professional development.

One of the modern diagnostic tools is the student's electronic portfolio, which is a systematic collection of materials reflecting his achievements in educational, research, project and practical activities. The electronic portfolio allows you to monitor the individual educational trajectory of a student, record the results of mastering professional competencies and evaluate the dynamics of professional growth throughout the entire period of study.

Interviews and interviews are used to obtain additional information about the professional readiness of future teachers. These methods make it possible to identify the features of students' professional thinking, the depth of understanding of the issues of giftedness, the degree of awareness of professional choice and readiness for independent teaching.

The use of a set of complementary diagnostic methods provides a multi-level assessment of the results of future teachers' training to work with gifted children. The combination of quantitative and qualitative diagnostic methods allows not only to determine the current level of professional readiness, but also to identify the dynamics of its development in the process of implementing pedagogical technology.

Diagnostic tools are the most important mechanism for evaluating the effectiveness of pedagogical technology for preparing future teachers to work with gifted children. Its use provides objective monitoring of students' professional development, allows timely identification of difficulties in the preparation process and correction of the content and organization of the educational process. As a result, the diagnostic and effective component provides a scientifically based assessment of the achievement of the main result of the technology - the formation of professional readiness of future teachers to identify, develop and support gifted students in modern education.

Conclusion

The preparation of future teachers to work with gifted children is one of the priorities for the development of modern teacher education. The increasing complexity of educational tasks, the focus on personalizing learning, the development of inclusive practices and the active introduction of digital technologies require the improvement of the system of professional training of teaching staff capable of effectively identifying, developing and accompanying gifted students.

The developed pedagogical technology for preparing future teachers to work with gifted children is an integrated system of interrelated conceptual, substantive, procedural, diagnostic and effective components that ensure the formation of students' professional readiness to carry out pedagogical activities in modern education.

The conceptual basis of the technology consists of competence-based, activity-based, personality-oriented, systemic and digital approaches that provide a comprehensive understanding of the processes of identification, development and support of giftedness. The implementation of these approaches allows us to consider the training of a future teacher as a process of consistent formation of professional competencies necessary for effective work with various categories of gifted students.

The substantive part of the technology is represented by a system of interrelated modules aimed at the formation of scientific knowledge about giftedness, the development of diagnostic methods, the development of design and research skills, the mastery of modern pedagogical technologies, as well as the acquisition of practical experience in the psychological and pedagogical support of gifted children. Special attention is paid to the issues of personalization of training, the use of educational analytics and artificial intelligence tools in the professional activity of a teacher.

The procedural part of the technology provides a consistent transition from the formation of professional motivation to the development of theoretical knowledge, the development of practical skills and a reflective understanding of the results of their own activities. The use of a set of active, interactive and practice-oriented teaching methods contributes to the development of research, diagnostic, design, methodological and reflexive competence of future teachers.

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ҚАЗАҚСТАН РЕСПУБЛИКАСЫ  **РЕСПУБЛИКА КАЗАХСТАН**

СВИДЕТЕЛЬСТВО
О ВНЕСЕНИИ СВЕДЕНИЙ В ГОСУДАРСТВЕННЫЙ РЕЕСТР
ПРАВ НА ОБЪЕКТЫ, ОХРАНЯЕМЫЕ АВТОРСКИМ ПРАВОМ

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