

Competencies of Specialists Working with Children with ASD in the System of Continuing Education

Irina Nigmatullina¹, Veronika Vasina², Lilia Pavlova³, Violetta Garachshenko⁴, Sin Kuen Fung⁵

¹ Kazan (Volga Region) Federal University, Kazan, Russia

E-mail: irinigma@mail.ru

ORCID: <https://orcid.org/0000-0001-6151-6164>

² Kazan (Volga Region) Federal University, Kazan, Russia

E-mail: virash1@mail.ru

ORCID: <https://orcid.org/0000-0003-4553-6442>

³ Kazan (Volga Region) Federal University, Kazan, Russia

E-mail: lilyabrik@yandex.ru

ORCID: <https://orcid.org/0000-0002-0144-5103>

⁴ Kazan (Volga Region) Federal University, Kazan, Russia

E-mail: gr.violetta97@mail.ru

ORCID: <https://orcid.org/0009-0004-8576-8867>

⁵ The Education University of Hong Kong, Hong Kong, China

E-mail: kfsin@eduhk.hk

ORCID: <https://orcid.org/0000-0001-8923-1443>

DOI: 10.26907/esd.19.3.05

EDN: JEQKQD

Submitted: 1 March 2024; Accepted: 1 July 2024

Abstract

This paper identifies the competencies of specialists working with children with Autism Spectrum Disorder (ASD) using a modular competence approach in the continuing education system. The study provided additional training to specialists in Tatarstan and conducted an online survey of 104 participants who had completed advanced training. The survey identified an uneven formation of competencies among specialists, with teachers and educators less prepared to interact with children with ASD than speech therapists and psychologists. Inadequacies were found in all groups, especially in diagnosis and technology applications. A model of additional education was developed for specialists in the integrated support system for children with ASD that needs to be expanded to include teachers and educators involved in inclusive education.

Keywords: preschool age, autism spectrum disorder, modular competency-based learning approach, continuing education system, training of specialists.

Компетенции специалистов, работающих с детьми с расстройствами аутистического спектра, в системе непрерывного образования

Ирина А. Нигматуллина¹, Вероника В. Васина², Лилия Д. Павлова³,
Виолетта В. Гаращенко⁴, Куен Фунг Син⁵

¹ Казанский (Приволжский) федеральный университет, г. Казань, Россия

E-mail: irinigta@mail.ru

ORCID: <https://orcid.org/0000-0001-6151-6164>

² Казанский (Приволжский) федеральный университет, г. Казань, Россия

E-mail: virash1@mail.ru

ORCID: <http://orcid.org/0000-0003-4553-6442>

³ Казанский (Приволжский) федеральный университет, г. Казань, Россия

E-mail: lilyabrik@yandex.ru

ORCID: <https://orcid.org/0000-0002-0144-5103>

⁴ Казанский (Приволжский) федеральный университет, г. Казань, Россия

E-mail: gr.violetta97@mail.ru

ORCID: <https://orcid.org/0009-0004-8576-8867>

⁵ Университет образования Гонконга, Гонконг, Китай

E-mail: kfsin@eduhk.hk

ORCID: <https://orcid.org/0000-0001-8923-1443>

DOI: 10.26907/esd.19.3.05

EDN: JEQKQD

Дата поступления: 1 марта 2024; Дата принятия в печать: 1 июля 2024

Аннотация

В данной статье выявлены компетенции специалистов, работающих с детьми с расстройствами аутистического спектра (РАС), с использованием модульного компетентностного подхода в системе непрерывного образования. В рамках исследования было организовано дополнительное обучение специалистов в Татарстане и проведен онлайн-опрос 104 участников, прошедших повышение квалификации. Исследование выявило неравномерность формирования компетенций у специалистов: учителя и воспитатели оказались менее подготовлены к взаимодействию с детьми с расстройствами аутистического спектра, чем логопеды и психологи. Недостатки были выявлены во всех группах компетенций, особенно в диагностике и применении технологий. Для специалистов системы комплексного сопровождения детей с расстройствами аутистического спектра разработана модель дополнительного образования, которую необходимо расширить, включив в нее учителей и воспитателей инклюзивного образования.

Ключевые слова: дошкольный возраст, расстройства аутистического спектра, модульный компетентностный подход к обучению, система непрерывного образования, подготовка специалистов.

Introduction

Researching the training of professionals who work with children who have ASD from the perspective of a modular-competency approach to training is crucial in today's continuing education system. Broadly speaking, the idea of how education for

kids with disabilities is developing in the Russian Federation suggests adjustments to the way experts are trained (Analytical report, 2020). Guidelines for determining systemic training modifications: extent of training; practice-oriented training linked to competencies across educational and professional stages; strengthening the foundations for specialization and recognizing essential elements of defectologists' training; fostering professional reasoning; implementation of contemporary assessment tools for evaluating professional competencies.

In diversifying educational pathways, provisions aim to define and validate contemporary teacher education principles for students, including those with ASD, across various levels. The guidelines should: assist specialists in understanding special educational needs in children (based on the unity of mental development laws); embrace “otherness” as experiential values; and guide the educational process to foster competencies for effective socialization. Experts must adhere to the relationship between specific educational needs, their manifestations in structured activities, and unique circumstances designed to address these needs. In other words, experts should understand the learning process from a systemic perspective, recognizing the cause-and-effect relationships among its elements (Mazilov & Kostrigin, 2022). Consequently, it is essential to revise the education of professionals. To ensure the psychological safety of participants, the training of specialists must incorporate psychological principles. This will involve developing competencies to understand the mental development laws and personality trait formation at various ages. Modifying the methodological training of instructors is equally important. Through such training, specialists can acquire the skills necessary to adapt procedures to meet the unique educational requirements of children (Ovsyannikova et al., 2022). A scientific rationale is required to elucidate the nature of professional activities and the training of new individuals to support toddlers with ASD. A distinctive need is the provision of accompaniment to meet their educational requirements. Chereneva and Stoyanova (2022) emphasized modern techniques for the differential diagnosis of ASD. Happé and Frith (1994) and Lauritsen (2013) advocated for the training of specialists. For comprehensive research, Tachibana and colleagues present a systematic review and meta-analysis of therapies for preschoolers with ASD (Tachibana et al., 2017). Psychological and pedagogical support for inclusive education is required across various organizational levels, ensuring a scientific approach and integration into the national education framework. Training for teachers, school psychologists, and social educators is essential for this purpose (Ugryumova, 2018). Furthermore, innovative organizational strategies in this preparation involve a collaborative examination of diverse academic fields and the development of projects reflecting the characteristics of each discipline's professional training activities (Ovsyannikova et al., 2022; Romashchuk, 2023).

The imperative for advanced professional training for educators and specialists within the comprehensive support system for children with ASD, particularly in the domains of special and inclusive education, necessitates individuals who not only possess extensive theoretical insight into the complexities surrounding ASD but also exhibit the professional capabilities required to effectively apply this knowledge in practice. This underscores the relevance of the study: the ability to accurately diagnose, foresee solutions to corrective challenges, and provide support to children with ASD in alignment with their distinct developmental trajectories through the utilization of modern methodologies that have demonstrated their efficacy; readiness to collaborate and extend support to families with children diagnosed with ASD; the establishment of learning environments that will endow educators with the requisite skills to engage with children diagnosed with autism within the frameworks of inclusive and special education; and the further advancement of

competencies aligned with professional standards for the training of educators in the field of ASD instruction. It has been established that specialized education and supplementary training are essential components of foundational teacher education, and that practical encounters with children with ASD can expose the inadequacies faced by novice educators in inclusive educational contexts.

The professional competency of contemporary teachers has been the subject of several domestic and international studies (Able et al., 2015). Support from educators and students is necessary for students with ASD to participate fully in society. The professional development requirements of educators dealing with students with ASD in inclusive schools were brought to light by Corkum (Corkum et al., 2014). Petersson-Bloom (2021) also discussed professional growth and raising early childhood practitioners' knowledge of autism problems. Increased collaboration between all clinicians working with children on the autism spectrum is recommended by Hart-Barnett and O'Shaughnessy (2015). For their additional training, Teo and colleagues evaluated and analyzed teacher awareness (Teo et al., 2022). Preschoolers with ASD experience obstacles when implementing new pedagogical programs, as examined by Wilson and Landa (2019). One paragraph in the monograph by Burlakova and Fedorova (2019) is devoted to the development of professional competence for teachers working with ASD in inclusive schools. They distinguished three tiers of professional proficiency, the majority of which are currently developed through further study. It is important to remember that professional competency is focused on treating autism on an individual basis.

Chereneva and Volodenkova (2016) described technologies for interdepartmental cooperation between domestic and foreign scientists and practitioners in the development of children in this category and presented an interdepartmental model for organizing a system of assistance for children with ASD (Krasnoyarsk region). They demonstrated expertise in creating parental initiatives for children with ASD to prepare professionals to work with them (ibid, 2016). Contemporary research indicates that professionals frequently run into psychological obstacles brought on by a shattered perception of an ASD child as well as unfavorable attitudes and beliefs about working with such dysontogenesis (Menshchikova & Pogorelov, 2017). When working with children with ASD, the specialist should be psychologically prepared, imaginative, and motivated to tackle the repercussions of ASD correctional work (Lobanov, 2022).

The study involving forty-three educators revealed inadequate competency in helping children with ASD in inclusive settings according to Platokhina and Abashina (2018). The researchers developed a curriculum "Features of educational work with children diagnosed with early childhood autism" to improve instructors' professional skills. The program not only equips teachers with technological and subject-matter expertise for organizing educational work, but also enhances their knowledge of the psychological and pedagogical traits of children with ASD. Observations of children with autism's unique characteristics assist teachers in planning and adjusting lessons. This program empowers teachers to support children with autism effectively in inclusive classrooms by providing them with essential knowledge and creating an adaptive learning space (Gaichenko, 2020).

Each specialist responsible for educating children with ASD must possess a certain skill set. These professionals comprise the head teacher, methodologist, inclusive education coordinator, supervisor, curator, tutor, speech pathologist, psychologist, and pedagogical specialists, as well as regular and subject teachers. Dovbnya et al. (2018) and Khaustov (2020) define the essential specialized competencies of specialists that enable them to interact with children with ASD successfully. When creating a structural-functional model of comprehensive assistance for children with ASD, Nigmatullina, Vasina, and

Mukhamedshina integrated the training of professionals in the continuing education system (Nigmatullina et al., 2021). Following their study, Nigmatullina, Stepashkina, and Pavlova (2023) set out to determine the psychological readiness of teachers to work with children with ASD in preschool settings. The study found that teachers are very knowledgeable about contemporary diagnostic, corrective, training, and development methods and procedures (Nigmatullina et al., 2023). In addition, they possess the ability to create and carry out customized correctional plans when setting up exceptional circumstances. However, it was discovered that working with children who have ASD requires a deep level of practical knowledge, skills, and abilities (Burlakova & Fedorova, 2019). Teachers are largely left without instructional and psychological support. To better serve students with ASD, educators should have continuous professional development opportunities, psychological support, increased preschool education training, and advanced courses (Khitryuk & Sergeeva, 2019).

Recognizing the competencies of various professionals working with children with ASD is an ongoing research issue. Specialists were trained in a modular, competency-based system of lifelong education. The study aims to employ the module-competency approach within the lifelong learning system to assess the proficiencies of experts handling ASD children.

Methodology

The goal of this study is to achieve the objectives stated here. The applicability of the 10 core competencies in the Professional Standards to psychologists, preschool teachers, and speech pathologists should be determined. The researchers evaluated the pros and cons of competencies established for working with children with ASD using a modular approach in the continuing education system following the completion of relevant training programs.

The original theory was that the competencies of different specialists working with children with ASD could be developed to a sufficient degree through a modular competency-based approach to the lifelong education system. Consequently, within the context of the modular competence approach in the lifelong education system, training was provided to specialists dealing with children with ASD in the Republic of Tatarstan, and a survey based on the outcomes of this training was conducted.

The research method used was an online survey of teachers and specialists in a Yandex form compiled according to the professional standards of teachers, educators, speech therapists, defectologists, and psychologists (<https://forms.yandex.ru/u/646a594669387222f5a85da0/>). It was attended by 104 specialists who completed additional professional education courses. The research data was obtained based on 17 questions, consisting of two parts:

1. The first part (1–7) of the questions contained general information: the place of work, speciality, and direction of the training course.

2. The second part contained 10 questions for each respondent, aimed at assessing the quality and content of knowledge, abilities, and skills acquired as a result of completing additional vocational education courses and their compliance with the labour functions of the professional standard.

Each question contained three four-answer options, where 0 points means no competencies have been developed. 1 point: partially formed; 2 points: sufficiently formed; 3 points: fully formed.

The survey was conducted among students in 6 blocks of questions in 3 areas of advanced training:

1. Creation, modification, and execution of customized educational programs (including individualized ones) for students with ASD at various educational levels (Block 1: speech pathologist teacher, speech therapist; Block 4: school teacher, kindergarten teacher) as well as the organization of special conditions for the learning environment.

2. Support for teachers of students with ASD in the areas of special education needs, technology use, and prevention and treatment strategies (Block 2: speech pathologist teacher, speech therapist; Block 5: school teacher, kindergarten teacher).

3. Psychological and pedagogical assistance to students with ASD in their social adaptation and rehabilitation (Block 3: speech pathologist teacher, speech therapist; Block 6: educational psychologist, psychologist, medical psychologist).

Results

Each specialty has a designated training program, which informs the structure of the second section of the questions. Thus, two areas of training are offered to preschool and general education teachers: (1) developing the conditions for the learning environment and activities for the creation, modification, and execution of customized educational plans for students with ASD at various educational levels; and (2) providing pedagogical support for students with ASD in the application and implementation of technologies, methods, and techniques in the implementation of special educational needs, prevention, and correction of developmental disorders.

These three directions are designed for educators working with defectologists and speech therapists. They cover developing the framework for the learning environment and activities that support children with ASD in developing, adjusting, and implementing individual AEPs at various educational levels; pedagogical support for children with ASD in the application and implementation of technologies, methods, and techniques in the implementation of educational (special) needs, prevention, and correction of disorders; and psychological and pedagogical support for children with ASD in their social adaptation and rehabilitation.

Training programs for medical, educational, and professional psychologists are designed to support children with ASD in their social adaptation and rehabilitation through psychological and pedagogical approaches.

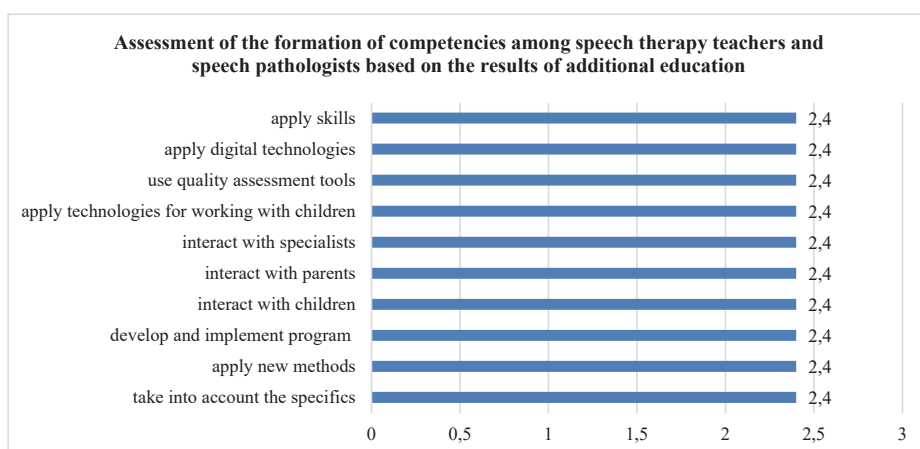


Figure 1. The average score of learning outcomes according to program №1 for speech therapists and speech pathologists

For speech therapists and speech pathologists, the average score and questions from the second block of the program on setting up the requirements for the learning environment and activities for the development, adjustment, and implementation of individual AOP for children with ASD at different educational levels (Fig. 1).

Formed skills:

- Provide for the age, psychophysical, and individual characteristics of preschoolers with ASD (2.4 points).
- Apply new technologies, methods, and techniques in the implementation of educational activities with children with ASD (2.4 points).
- Develop and implement adapted and correctional programs for children with ASD (2.4 points).
- Organize and support communication between children with ASD and other people (2.4 points).
- Know how to interact with parents of children with ASD (2.4 points).
- Know how to interact with specialists accompanied by children with ASD as part of the implementation of adapted and correctional programs for children with ASD (2.4 points).
- Apply technology to organize different types of activities with children with ASD (2.4 points).
- Use quality assessment tools to obtain feedback from one's pedagogical actions and plan further individual work with children with ASD as part of the implementation of adapted and correctional programs for working with children with ASD (2.4 points).
- Adapt materials, technologies, tools, and educational resources, including digital ones, to the abilities of children with ASD (2.4 points).
- Apply the acquired knowledge in practice (2.4 points).

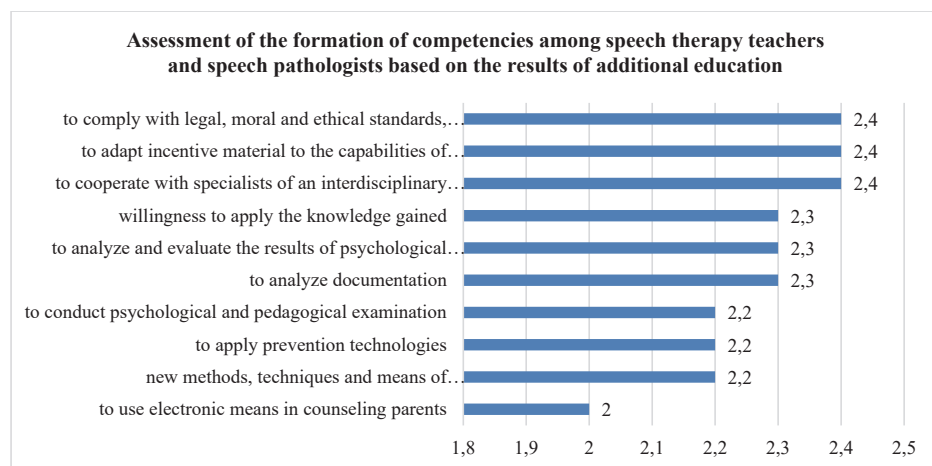


Figure 2. The average score of learning outcomes according to program № 2 for speech therapists and speech pathologists

The average score and questions from the second block of the program for teachers of speech therapists and defectologists, "Pedagogical support of children with ASD in the use and implementation of technologies, methods, and techniques in meeting special educational needs, prevention, and correction of developmental disorders," are shown in Figure 2.

- Formed skills:
- Apply new research tools, methods, and techniques in working with children with ASD (2.2 points).
 - Adapt stimulus material to the capabilities of children with ASD (2.4 points).
 - Conduct psychological and pedagogical research with children with ASD (2.2 points).
 - Understanding of documentation prepared by different departments (2.3 points).
 - Understand and analyze the psychological and pedagogical examination of children with ASD (2.3 points).
 - Apply technologies to prevent the progression of ASD, propaedeutic (2.2 points).
 - Work in an interdisciplinary team to support children with ASD and their families (2.4 points).
 - Use educational resources (including digital and distance learning) in counselling parents of children with ASD and specialists (2 points).
 - Follow the legal, moral, and ethical standards of professional ethics for a defectologist (2.4 points).
 - Apply acquired knowledge, skills, and abilities to practical activities (2.3 points).

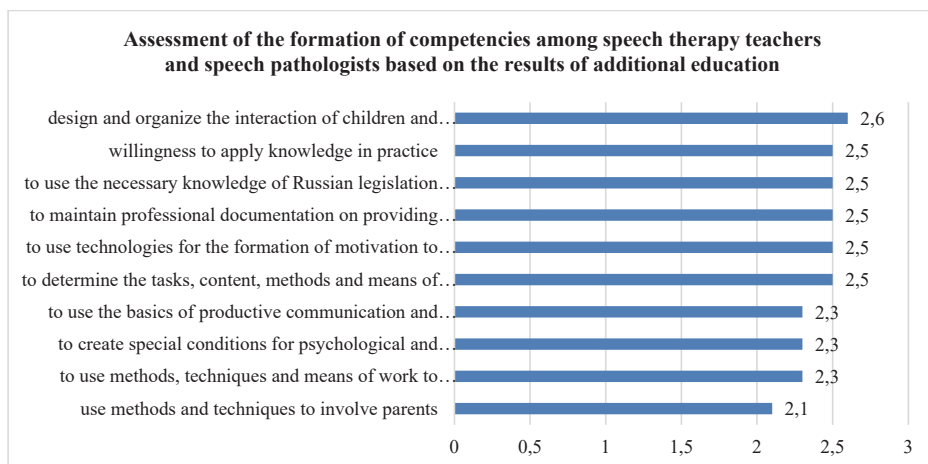


Figure 3. The average score of learning outcomes according to program № 3 for speech therapists and speech pathologists

Average score and questions of the second block in the program "Psychological and Pedagogical Assistance to Children with ASD in Their Social Adaptation and Rehabilitation" for teachers of speech therapists and teachers of defectologists (Fig. 3).

Formed skills:

- Formulate tasks, determine the content, and select the necessary methods and means of rehabilitation (habilitation) for working with children and adults with ASD (2.5 points).
- Select the necessary methods and techniques for working with families of children with ASD to include parents and members of their families in activities of psychological and pedagogical rehabilitation (habilitation), socialization, and career guidance (2.1 points).
- Apply technologies for developing motivation in children and adults with ASD to the competencies necessary for social adaptation (2.5 points).

- Apply means, methods, and techniques to work with unwanted forms of behaviour in children with ASD (2.3 points).
- Planning and organizing the interaction of children and adults with ASD with the people around them, considering their characteristics (2.6 points).
- Maintain the necessary documentation (including electronic format) for the implementation of psychological and pedagogical assistance for children and adults with ASD (2.5 points).
- Use the necessary knowledge of the Legislation of the Russian Federation on the rights of the child, disabled children, children with disabilities, and children with ASD on the rights of the disabled (2.5 points).
- Create the necessary conditions for the psychological and pedagogical rehabilitation (habilitation) of children and adults with ASD, considering their individual characteristics and developmental options (2.3 points).
- Use the basics of communication and team interaction in psychological and pedagogical assistance for children and adults with ASD (2.3 points).
- Apply acquired knowledge, skills and abilities to practical activities (2.5 points).

Weaknesses found:

- Developed skills in using digital educational resources, distance learning technologies, and e-learning in consulting parents of students with ASD and specialists;
- The formation of skills in using new methods, techniques and means of psychological and pedagogical examination of students with ASD, obtained as a result of training on the course;
- Development of skills to conduct psychological and pedagogical examinations of students with ASD;
- Development of skills to apply technologies for preventing the progression of ASD, propaedeutics of behavioural disorders;
- Use methods and techniques for involving parents and family members of children and adults with ASD in socialization activities, psychological and pedagogical rehabilitation (habilitation), and vocational guidance.

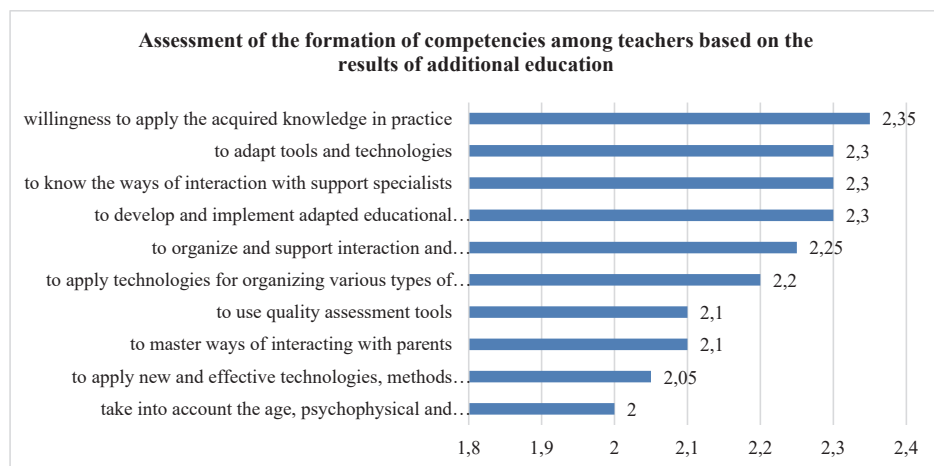


Figure 4. The average score of learning outcomes according to Program 1 for teachers

The program "Creating the Necessary Conditions for the Educational Environment and Measures for the Development, Adjustment, and Implementation of Individual Adapted Educational Programs for Children with ASD at Different Levels of Education" is aimed at preschool educators and school teachers. The average score and questions for the second block of the program are shown in Figure 4.

Formed skills:

- To provide for the age, psychophysical, and individual characteristics of children with ASD (2 points).
- Apply new technologies, methods, and techniques in the implementation of educational activities with children with ASD (2.05 points).
- Develop and implement adapted and correctional programs for children with ASD (2.3 points).
- Organize and maintain communication between children with ASD and other people (2.25 points).
- Know how to interact with parents of children with ASD (2.1 points).
- Know how to interact with specialists supporting children with ASD as part of the implementation of adapted and correctional programs for working with children with ASD (2.3 points).
- Apply technologies for organizing various types of activities with children with ASD (2.2 points).
- Use quality assessment tools to obtain feedback from one's pedagogical actions and plan further individual work with children with ASD as part of the implementation of adapted and correctional programs for working with children with ASD (2.4 points).
- Adapt materials, technologies, tools, and educational resources, including digital ones, to the abilities of children with ASD (2.3 points).
- Apply acquired knowledge, skills, and abilities to practical activities (2.35 points).

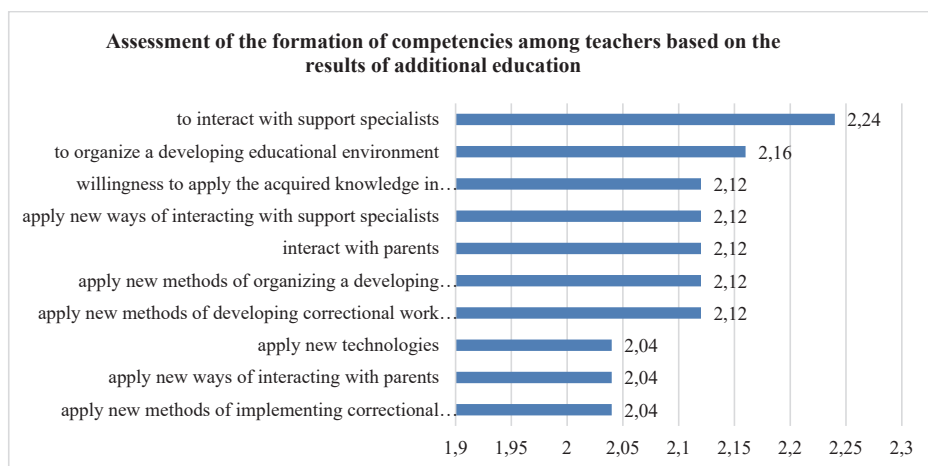


Figure 5. The average score of learning outcomes according to program 2 for teachers

For teachers in preschool institutions and schools, the average score and questions from the second block of the program "Pedagogical support for children with ASD in the use and implementation of technologies, methods, and techniques in the implementation of special educational needs, prevention, and correction of developmental disorders" (Fig. 5).

Formed skills:

- Use methods for developing and implementing adapted and corrective educational programs for children with ASD (2.12 points).
- Develop and implement adapted educational programs and correctional work programs with children with ASD (2.04 points).
- Apply new methods of organizing a developing educational environment for the implementation of educational activities in the implementation of AOP and correctional work programs with children with ASD (2.12 points).
- Organize a developmental educational environment for the implementation of educational activities in the process of implementing AOP and correctional work programs with children with ASD (2.16 points).
- Apply new ways of interacting with parents (legal representatives) of children with ASD when implementing adapted educational and correctional programs for children with ASD (2.04 points).
- Interact with parents (legal representatives) of children with ASD in the process of implementing adapted educational programs and programs of correctional work with children with ASD (2.12 points).
- Apply new ways of interacting with specialists supporting children with ASD (if any) in the process of implementing AOP and correctional work programs with children with ASD (2.12 points).
- Interact with specialists accompanying children with ASD (if available) in the process of implementing AOP and correctional work programs with children with ASD (2.24 points).
- Apply new technologies for organizing various types of activities with children with ASD in the process of implementing AOP and correctional work programs with children with ASD (2.04 points).
- Apply acquired knowledge, skills, and abilities to practical activities (2.12 points).

Weaknesses found:

- Developed skills to apply new and effective technologies, methods and techniques for organizing education, upbringing and support for students with ASD;
- Developed skills to consider the age, psychophysical and individual characteristics of students with ASD;
- Development of skills in mastering ways of interacting with parents of children with ASD;
- Developed the ability to use quality assessment tools to receive feedback from one's pedagogical actions and plan further individual work with children with ASD;
- Developed skills to develop and implement adapted educational programs, programs of correctional work with students with ASD,
- The formation of skills to apply new methods of organizing a developing educational environment for the implementation of educational activities;
- Developed skills to apply new technologies for organizing various types of activities with students;
- Willingness to apply acquired knowledge, skills, and abilities to practical activities.

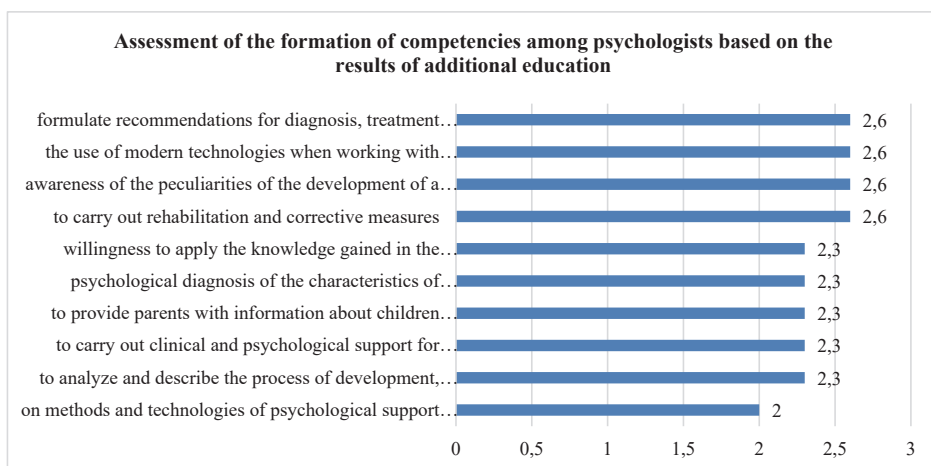


Figure 6. *The average score of the results of the training program 3 for psychologists*

Questions about the second block in the program “Psychological and Pedagogical Assistance to Children with ASD in Their Social Adaptation and Rehabilitation” for educational psychologists, psychologists, and medical psychologists (Fig. 6).

Formed skills:

- Analyze the development process, compliance of the state of cognitive functions, emotional and personal sphere with age standards, and psychological, and dynamic development in children with ASD (2.3 points).
- Carry out rehabilitation and correctional measures in individual and group form (2.6 points).
- Provide clinical and psychological support for children with ASD at all stages of rehabilitation (2.3 points).
- Clinical and psychological assistance for developmental disorders in children with ASD (2.6 points).
- Providing information about children with ASD, the current nature of psychological spheres, goals, methods of rehabilitation or correction and expected results (2.3 points).
- Conduct a study of individual children with ASD (2.3 points).
- Use modern technologies when working with children with ASD (2.6 points).
- Apply methods and technologies of psychological support for children with ASD (2 points).
- Organize an inclusive educational space for children and adolescents with ASD (2.6 points).
- Formulate a brief and free form out of 3 recommendations for the diagnosis, infection and treatment of children and adolescents with ASD (2.3 points).

Weaknesses found:

- Formation of skills to analyze and describe the development process, compliance of the state of cognitive functions, emotional and personal sphere with age standards, psychological and social functioning in children with ASD;
- Development of knowledge, skills and abilities to provide clinical and psychological support for children with ASD at all stages of the treatment and/or rehabilitation process;

- The formation of knowledge and skills to provide parents (legal representatives) with information about children with ASD regarding the nature of psychological disorders, goals, methods of rehabilitation, correctional influence and expected results;
- Development of knowledge, skills and abilities in psychological diagnostics of the characteristics of children with ASD;
- Development of knowledge and skills about methods and technologies of psychological support for children with ASD.
- All of the respondent groups had weaknesses, particularly when it came to their level of expertise in diagnosing and utilizing technology to serve kids with ASD. Teachers in kindergartens and schools without special education training to cope with children with ASD had the worst results (Fig. 7).

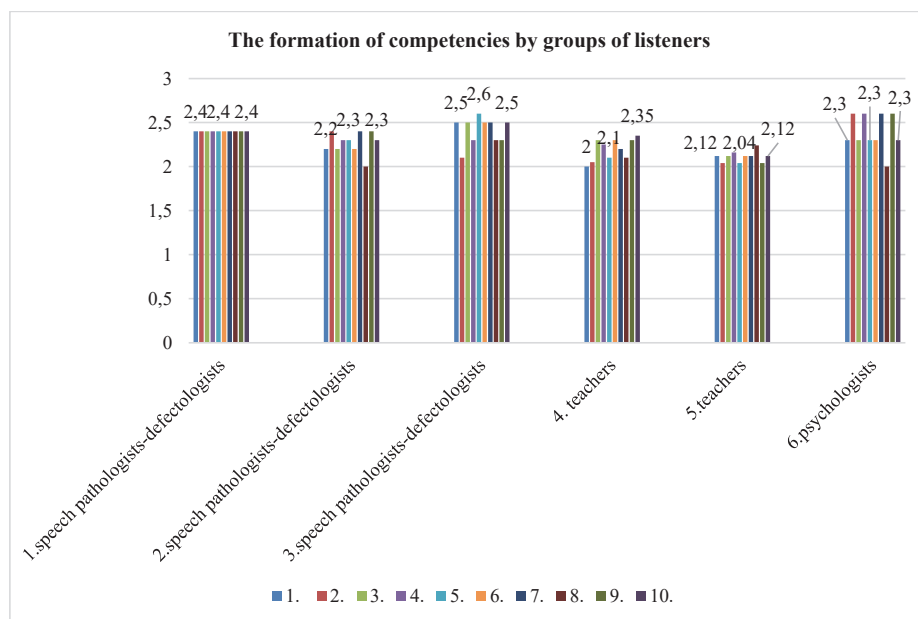


Figure 7. Comparative indicators for the formed competencies of different groups of students of the courses (0 p. - not formed, 1 p. - partially formed, 2 p. - sufficiently formed, 3 p. - fully formed)

Based on the results of the study, within the framework of the modular-competency approach, a Model of additional education for specialists in the complex support system for children with ASD was built, which consists of advanced training courses (72 hours) and 4 modules of professional retraining courses (330 hours), which makes it possible to purposefully strengthen weaknesses and develop missing professional competencies among specialists working with children with ASD.

Discussion

The modular competency-based approach in the system of continuous education for specialist training allows for comparison of skills development across multiple modules, according to Khitryuk and Sergeeva's research (2019). Despite kindergarten and school teachers' initial hesitance towards advanced training in pedagogical support for children with ASD, the study's results were expected to be equally impactful for all

specialists, including those responsible for addressing developmental abnormalities and creating tailored educational plans for kids with ASD at various educational levels. Some instructors were reluctant to start the course, unwilling to work with ASD students after finishing it, and lacked the necessary training and motivation for an inclusive classroom. This aligns with other scientists' findings (Aisina et al., 2019; Chereneva et al., 2022). The findings of this study can be used to more accurately define advanced training course subjects based on what particular organization's employees want to learn. Going forward, it will be crucial to include motivational factors when teaching interactions with children who have ASD and administer entry testing rather than relying on training outcomes.

Conclusion

During the endeavor to address research challenges, ten essential competencies were identified by the Professional Standards applicable to psychologists, preschool and school educators, and speech pathologists. Upon completion of training in relevant programs, educators and specialists engaging with children diagnosed with ASD can employ a modular competency-based approach to evaluate competency development. This methodology has both advantages and disadvantages. The educators and specialists are subsequently integrated into the lifelong education framework. Based on an assessment conducted among specialists who assist children with ASD, there exists a disparity in competencies that these professionals acquired after the conclusion of their training programs. Such disparities can be ascribed to various factors, including selection of continuing education programs, initial educational level and area of specialization, and motivation to undergo training and apply knowledge regarding children with disabilities. Theoretical understanding constitutes the most substantial element of established competencies. All respondent groups exhibited deficiencies, particularly regarding their proficiency in diagnosing and employing technology to aid children with ASD. Due to the distinctive characteristics of the nosological group, educators and instructors in general education kindergartens and schools demonstrated lesser preparedness to engage with children with ASD, even following specialized training, then speech pathologists, speech therapists, and psychologists. Moving forward, it will be imperative to augment the study sample and the demographics of individuals eligible for advanced training provided by inclusive education professionals.

Open access, ethics and conflict of interest statement

Access to data can be provided by emailing the authors of this work. The authors declare that the rights of persons involved in the research are guaranteed, their anonymity is maintained, and there is no conflict of interest regarding the published work.

Acknowledgments

This paper has been supported by “The Strategic Academic Leadership Program” (Priority-2030) of Kazan (Volga region) Federal University.

References

- Able, H., Sreckovic, M. A., Schultz, T. R., Garwood, J. D., & Sherman, J. (2015). Views from the trenches: Teacher and student support are needed for full inclusion of students with ASD. *Teacher Education and Special Education*, 38(1), 44–57. <https://doi.org/10.1177/0888406414558096>
- Aisina, R. M., Nesterova, A. A., Suslova, T. F., & Khitryuk, V. V. (2019). Teachers' attitudes towards inclusive education of children with ASD: A review of Russian and foreign research. *Obrazovaniye i nauka – The Education and Science Journal*, 21(10), 189–210. <https://doi.org/10.17853/1994-5639-2019-10-189-210>

- Analytical report on the number of children with autism spectrum disorders in the subjects of the Russian Federation in 2020. (2020). *Autism-frc*. <https://autism-frc.ru/education/monitoring/1265>
- Burlakova, M. A., & Fedorova, N. N. (2019). Formation of professional competence of teachers working with children with autism spectrum disorder in an inclusive school. In *Andragogical aspects of teacher training information and methodological service "Growth profile"*, (pp. 103–107). Nauka i Prosveshcheniye.
- Chereneva, E. A., & Stoyanova, I. Ya. (2022). Pathopsychological Model of Self-Regulation in Children with Cognitive Impaired Health. *Zhurnal Sibirskogo federal'nogo universiteta. Gumanitarnyye nauki – Journal Siberian Federal University. Humanities & Social Sciences*, 15(5), 649–663. <https://doi.org/10.17516/1997-1370-0816>
- Chereneva, E. A., & Volodenkova, E. A. (2016). Interdepartmental model of an organizing of the helping system to the children on the autistic spectrum in the Krasnoyarsk region. *Autizm i razvitiye narusheniy – Autism and developmental disorders*, 14(4), 19–26. <https://doi.org/10.17759/autdd.2016140404>
- Chereneva, E. A., Belyaeva, O. L., & Stoyanova, I. Ya. (2022). Current Approaches to Differential Diagnostics of Autism Spectrum Disorders and Similar Conditions. *Zhurnal Sibirskogo federal'nogo universiteta. Gumanitarnyye nauki – Journal of Siberian Federal University, Humanities and Social Sciences*, 15(3), 381–389. <https://doi.org/10.17516/1997-1370-0475>
- Corkum, P., Bryson, S. E., Smith, I. M., Giffin, C., Hume, K., & Power, A. (2014). Professional development is needed for educators working with children with autism spectrum disorders in inclusive school environments. *Exceptionality Education International*, 24(1), 33–47. <https://doi.org/10.5206/eei.v24i1.7709>
- Dovbnya, S., Morozova, T., Zalogina, A., & Monova I. (2018). *Children with autism spectrum disorders in kindergarten and school: practices with proven effectiveness*. Alpina Pro.
- Frith, U., & Happe, F. (1994). Autism: Beyond the Theory of Mind. *Cognition*, 50(1-3), 115–132. [https://doi.org/10.1016/0010-0277\(94\)90024-8](https://doi.org/10.1016/0010-0277(94)90024-8)
- Gaichenko, S. V. (2020). Teacher's readiness to teach children with autism spectrum disorder in inclusive education. *Chelovek i obrazovaniye – Man and education*, 3(64), 112–116. <https://doi.org/10.54884/S181570410020901-6>
- Hart-Barnett, J. E. & O'Shaughnessy, K. (2015). Enhancing collaboration between occupational therapists and early childhood educators working with children on the autism spectrum. *Early Childhood Education Journal*, 43(6), 467–472. <https://doi.org/10.1007/s10643-015-0689-2>
- Khaustov, A. V. (2020). On the Teaching Staff Training for the Organization of Education for Students with Autism Spectrum Disorder (ASD) in the Russian Federation. *Vestnik prakticheskoy psikhologii obrazovaniya – Bulletin of practical psychology of education*, 17(2), 79–86. <https://doi.org/10.17759/bppe.2020170207>
- Khitryuk, V. V., & Sergeeva, M. G. (2019). Development of the system of training, retraining and advanced training of teachers for inclusive education: targets, vectors, and tasks. In A. V. Gluzman, *Problems of modern pedagogical education* (203–206). RIO GPA.
- Lauritsen, M. B. (2013). Autism spectrum disorders. *European Child & Adolescent Psychiatry*, 22(1), 37–42. <https://doi.org/10.1007/s00787-012-0359-5>
- Lobanov, D. V. (2022, April 08). Features of the creative potential of teachers working with children with autism spectrum disorders. In *A child in the modern educational space of a megalopolis: Proceedings of the 9th All-Russian Scientific and practical conference with international participation*. IPPO GAOU in MGPU.
- Mazilov, V. A., & Kostigrin, A. A. (2022). The personality of the future teacher: a review of foreign studies. *Rossiyskiy psikhologicheskiy zhurnal – Russian Psychological Journal*, 19(2), 89–105. <https://doi.org/10.21702/rpj.2022.2.7>
- Menshchikova, I. A., & Pogorelov, D. N. (2017). Social and perceptive aspects of professional barriers of teachers working with students with autism spectrum disorders. *Vestnik akademii entsiklopedicheskikh nauk – Bulletin of the Academy of Encyclopedic Sciences*, 3(28), 49–56.
- Nigmatullina, I. A., Stepashkina, V. A., & Pavlova, L. D. (2023). A Child with ASD in Kindergarten: Resources for Teachers' Psychological Readiness. *Rossiyskiy psikhologicheskiy zhurnal – Russian Psychological Journal*, 20(1), 132–148. <https://doi.org/10.21702/rpj.2023.1.9>

- Nigmatullina, I. A., Vasina, V. V., Mukhamedshina, Y. O. (2021). Development of a Structural-Functional Model for Comprehensive Support of Children with Autism Spectrum Disorders. In D. B. Solovov, V. V. Savaley, A. T. Bekker, & V. I. Petukhov, (Eds.), *Proceeding of the International Science and Technology Conference "FarEastCon 2020"* (pp 71–83). Springer. https://doi.org/10.1007/978-981-16-0953-4_7
- Ovsyannikova, T., Solomatina, T., & Goyaeva, D. (2022). *Models, programs, functions: a methodological guide*. Autizm region.
- Petersson-Bloom, L. (2021). Professional development for enhancing autism spectrum disorder awareness in preschool professionals. *Journal of autism and developmental disorders*, 51(3), 950–960. <https://doi.org/10.1007/s10803-020-04562-9>
- Platokhina, N. A., & Abashina, N. N. (2018). Pre-school teachers' professional competence development for organization of work with children diagnosed "early childhood autism". *Nauchno-metodicheskiy elektronnyy zhurnal «Kontsept» – Scientific and Methodological Electronic Journal "Concept"*, 1, 11–21. <http://e-koncept.ru/2018/181002.htm>.
- Romashchuk, A. N. (2023). Activity-Based Approach to the Teaching and Psychology of Insightful Problem Solving: Scientific Concepts as a Form of Constructive Criticism. *Psychology in Russia: State of the Art*, 16(3), 14–29. <https://doi.org/10.11621/pir.2023.0302>
- Tachibana, Y., Miyazaki, C., Ota, E., Mori, R., Hwang, Y., Kobayashi, E., & Kamio, Y. (2017). A systematic review and meta-analysis of comprehensive interventions for pre-school children with autism spectrum disorder (ASD). *PloS one*, 12(12). e0186502. <https://pubmed.ncbi.nlm.nih.gov/29211740>
- Teo, J. X., Lau, B. T., & Then, P. (2022). Autism Spectrum Disorders in Sarawak: An Overview and Analysis of Educator Awareness, Training, Development Opportunities, and Challenges. *International Journal of Disability, Development and Education*, 69(2), 623–639. <https://doi.org/10.1080/1034912X.2020.1731433>
- Ugryumova, N. A. (2018). Professional competences of a teacher working with children with autistic spectrum disorders. In N. V. Fedina (Ed.), *Pedagogy of the XXI century: traditions and innovations* (pp. 82–85). Lipetsk State Pedagogical University named after P.P. Semenov-Tyan-Shansky.
- Wilson, K. P., & Landa, R. J. (2019). Barriers to educator implementation of a classroom-based intervention for preschoolers with autism spectrum disorder. *Frontiers in Education*, 4(27). <https://doi.org/10.3389/educ.2019.00027>