Professional Development and Competence Formation among Specialists Working with Children with Autism Spectrum Disorder

[1]Nurul Khairani Ismail, [2*]Hasrul Hosshan, [3]Mohd Hariz Muhamad Adnan, [4]Irina Nigmatullina, [5]Violetta Garachshenko, [6]Oksana Balandina

[1]National University of Malaysia [2-3] Sultan Idris Educational University, Malaysia [4-5] Kazan Federal University, Russia [6]Volga Region Research Mediacal University, Russia.

*hasrul.hosshan@fpm.upsi.edu.my

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ABSTRACT:

The overarching goal of the article is to examine professional competence formation within the framework of continuing professional education. The study provides preliminary empirical insights into competence development within continuing professional education systems. The authors of the article raise the issue of developing professional competences among pedagogical specialists working with children with ASD. In light of the development of educational infrastructure, there is a need to improve the professional skills of specialists in teaching children with ASD and providing them with assistance. The survey of specialists working with children with ASD showed uneven formation of professional competences after completing the training programs. The best results were shown by school teachers and specialists in defectology, while the lowest results were observed among educators. Weaknesses were found in all groups of respondents, especially regarding the skills in applying the technology of propaedeutics and prevention of ASD progression, and applying the technology for working within an interdisciplinary team to support children with ASD and their families.

Keywords: competences, specialists, supplementary education, children, autism spectrum disorder, ASD.

1. INTRODUCTION

Modern developments in Russia's lifelong education system underscore the growing need for professional training models that equip teachers not only with solid theoretical knowledge but also with the capacity to apply their acquired competencies effectively in professional practice. This need is particularly pronounced among educators working in special and inclusive education settings with children with autism spectrum disorder (ASD). In the present study, lifelong education is conceptualised as education that occurs throughout an individual's professional development along personalised learning trajectories, aimed at maximising personal and professional potential (Nigmatullina et al., 2024).

The system of continuing professional education is currently undergoing substantial transformation, driven by shifts in socio-economic conditions and evolving state priorities related to the education of children with disabilities. Within this context, enhancing teachers' professional mastery has

become increasingly important. Priority areas include practice-oriented training, the formation of professional competences aligned with labour functions, differentiation of specialist training profiles, the adoption of innovative approaches to competence assessment, and the development of reflective and critical professional thinking (Leonova, 2021; Khitryuk & Sergeeva, 2019). These priorities reflect a broader shift toward competency-based and outcome-oriented models of professional preparation within lifelong education systems.

Despite these developments, existing systems of special and inclusive education remain insufficient in ensuring comprehensive preparation of specialists for professional work with children with disabilities. This limitation is particularly evident in relation to children with ASD, whose developmental characteristics and educational needs are highly heterogeneous and complex (Lauritsen, 2013). As a result, a substantial proportion of applied professional knowledge and skills is acquired only after graduates enter the workforce, rather than during initial pedagogical training. Consequently, educational institutions and employers increasingly rely on supplementary professional education as a key mechanism for supporting the transition from theoretical knowledge to applied competence (Nigmatullina et al., 2023).

A growing body of research has documented challenges associated with the development of professional competencies among educators working with children with ASD. National studies have identified persistent professional deficits among preschool and school teachers, particularly in applied, methodological, and interdisciplinary domains (Makarova & Blinov, 2024; Nigmatullina et al., 2024). Other research has highlighted difficulties related to psychological readiness, emotional regulation, and coping with the demands of correctional and inclusive practice (Lobanov, 2022; Sheveleva, 2024). In addition, insufficient awareness and limited professional preparation among preschool specialists have been shown to contribute to uncertainty and reduced confidence when working with children on the autism spectrum (Petersson-Bloom, 2021)

International literature further corroborates these findings, demonstrating that educators often possess general knowledge about ASD but lack the applied professional competences required for effective classroom implementation, interdisciplinary collaboration, and preventive intervention (Lessner, Listiakova, & Preece, 2020; Wilson & Landa, 2019). Research also indicates that short-term professional development initiatives tend to prioritise theoretical understanding over sustained skill development, resulting in limited transfer of training into everyday professional practice (Able et al., 2015; Alexander et al., 2015). Moreover, effective support for children with ASD has been shown to depend heavily on coordinated collaboration among teachers, therapists, psychologists, and families, yet such interdisciplinary competences remain insufficiently developed within many professional training models (Hart Barnett & O'Shaughnessy, 2015; Syriopoulou-Delli et al., 2016).

Taken together, the literature highlights the need to strengthen professional training systems for educators working with children with ASD, particularly within supplementary and continuing education frameworks. Effective professional preparation requires not only theoretical knowledge of ASD but also well-developed professional competences for applying evidence-based technologies in diagnosis and intervention, addressing correctional challenges, engaging in interdisciplinary teamwork, and supporting families raising children with ASD (Nigmatullina et al., 2024). It also requires creating educational conditions that foster the development of applied competence among teachers working in both inclusive and special education settings, alongside the continuous refinement of professional standards for ASD-related practice.

Despite the growing body of research addressing professional knowledge deficits and training needs among educators working with children with ASD, there remains limited empirical evidence on how professional competences are formed following participation in supplementary professional education programmes, particularly across different categories of pedagogical specialists. Existing

studies rarely provide comparative analyses of applied competence development among preschool educators, school teachers, teacher-defectologists, and speech-language pathologists. To address this gap, the present study aims to descriptively examine strengths and weaknesses in the formation of professional competences among pedagogical specialists working with children with ASD after completing supplementary professional education programmes, and to compare self-reported competence profiles across specialist groups. By empirically examining patterns of competence formation, this study contributes to the literature on ASD-focused professional development and provides an evidence-based foundation for the design of targeted, modular-competency models within lifelong education systems.

2. LITERATURE REVIEW

Professional standards provide the foundational framework for defining the competencies required of pedagogical specialists working with children with autism spectrum disorder (ASD). These standards emphasise key professional functions, including the joint implementation of adapted educational programmes, individualised educational planning, adjustment of instructional tasks, interpretation of developmental monitoring data, and the creation of learning environments responsive to children's individual needs. Importantly, these requirements apply across professional roles-educators, school teachers, teacher-defectologists, speech-language pathologists, and educational psychologists-highlighting the interdisciplinary nature of educational and corrective support for children with ASD (Leonova, 2021; Alkhimina & Blinov, 2023). However, while professional standards articulate expected outcomes, they do not, in themselves, ensure that such competences are effectively developed or applied in practice.

To better understand this gap between formal requirements and professional performance, it is necessary to clarify the conceptual distinction between *competence* and *competency*. Competence is generally understood as the set of knowledge, skills, abilities, personal qualities, and experience that a professional is expected to possess within a given social and occupational context (Khazova, 2024). This concept reflects normative expectations embedded in professional standards. In contrast, *competency* refers to an integrated system of interrelated personal qualities encompassing knowledge, skills, methods of action, practical experience, and cognitive characteristics that enable effective decision-making and productive professional activity in specific situations (Khazova, 2024). This distinction is particularly relevant in ASD education, where professionals must continuously adapt their actions to highly individualised and dynamic developmental profiles.

Building on this conceptual framework, a growing body of empirical research has documented persistent professional deficits among teachers working with children with ASD. Studies focusing on preschool educators have identified difficulties in methodological orientation, regulatory and legal knowledge, curriculum design and implementation, interaction with families, and provision of psychological-pedagogical support (Makarova & Blinov, 2024). These challenges are especially pronounced in early childhood settings, where teachers are often the primary agents of both educational and developmental intervention. Such findings suggest that, despite awareness of ASD-related issues, many educators struggle to translate theoretical knowledge into effective professional action.

This theory–practice gap has been further substantiated by studies examining teachers' readiness for direct work with children with ASD. Research by Nigmatullina et al. (2023) demonstrated that preschool teachers frequently struggle to apply their theoretical understanding of ASD in compensatory and inclusive classroom contexts. These difficulties include adapting instructional materials, managing behavioural challenges, and implementing evidence-based corrective strategies. Collectively, these findings indicate that professional deficits are not merely informational but are closely tied to the insufficient development of applied competences.

In addition to methodological challenges, emotional and functional strain have emerged as significant factors affecting professional competence. Research

examining the functional states of teachers working with children with ASD has revealed high levels of fatigue and emotional burnout, even among specialists who possess adequate theoretical knowledge of the disorder (Farkhutdinova et al., 2024). These results underscore the multidimensional nature of professional competence, which encompasses not only technical skills but also emotional resilience, stress management, and access to supportive professional environments. Without addressing these dimensions, professional training risks producing specialists who are theoretically prepared but practically vulnerable.

International research reinforces and extends these national findings, indicating that challenges in the formation of ASD-related competence are not context-specific but systemic. Systematic reviews have shown that many educators report feeling insufficiently prepared to teach students with ASD and lack confidence in applying specialised instructional strategies (Gómez-Marí et al., 2021; Lessner Listiakova & Preece, 2020). Moreover, teachers' limited ASD-specific training has been associated with misconceptions about autistic behaviour, inconsistent pedagogical practices, and reduced instructional expectations for students with ASD.

A recurring theme in both national and international literature is the critical role of interdisciplinary collaboration in effective ASD support. Research consistently shows that high-quality educational and corrective interventions require coordinated efforts among teachers, psychologists, speech-language pathologists, therapists, and families. Nevertheless, significant barriers to collaboration persist, including unclear professional roles, insufficient training in teamwork, and institutional constraints (Hart Barnett & O'Shaughnessy, 2015; Syriopoulou-Delli et al., 2016; Wilson & Landa, 2019). These findings suggest that competence development must explicitly address collaborative and communicative dimensions rather than focusing exclusively on individual professional skills.

In response to these challenges, researchers have increasingly advocated for supplementary professional education grounded in competency-based and modular approaches. Such approaches emphasise applied learning, interdisciplinary integration, and alignment with professional labour functions (Khitryuk & Sergeeva, 2019). Empirical evidence indicates that while advanced training courses are effective in strengthening theoretical knowledge and professional self-efficacy, they are often insufficient for developing complex applied competences. Studies employing a modular-competency framework have demonstrated uneven competence development across professional groups, with educators and general teachers typically exhibiting lower applied competence than specialised professionals such as speech-language pathologists and psychologists (Nigmatullina et al., 2024).

Taken together, the literature suggests that improving professional competence in ASD education requires a shift from short-term knowledge enhancement toward sustained, practice-oriented, and interdisciplinary professional development. The modular-competency approach offers a theoretically grounded and empirically supported pathway for addressing persistent deficits in applied, collaborative, and preventive professional competences among pedagogical specialists working with children with ASD. Based on the reviewed literature, professional competence in ASD-focused educational practice can be conceptualised across several applied domains, including instructional adaptation, assessment-related practice, interdisciplinary collaboration, preventive intervention, ethical practice, and the professional application of acquired knowledge. These domains informed the development of the competence self-assessment questionnaire used in the present study. Accordingly, the study adopts an exploratory descriptive approach to profile perceived competence formation across different categories of pedagogical specialists.

3. METHODOLOGY

The participants were 149 pedagogical specialists employed in educational organisations within the Volga Federal District, where children with autism spectrum disorder (ASD) are educated in inclusive and special education settings. All participants had completed advanced training courses in 2024 under

the programme *"Application of technologies, methods, and techniques for the prevention and correction of developmental disorders in students with ASD."* The sample included preschool educators, school teachers, teacher-defectologists, and speech-language pathologists. All participants were actively engaged in professional practice with children with ASD at the time of data collection.

Data were collected using a researcher-developed online questionnaire administered via the Yandex Form platform. The instrument was developed following a structural–functional analysis of 37 scientific publications published within the previous five years, focusing on professional competence development, supplementary education, inclusive education, and pedagogical support for children with ASD. This analysis ensured alignment between the questionnaire content, professional standards, and evidence-based practices in ASD education. The questionnaire consisted of 20 items organised into two sections: professional background information, including professional role, place of work, region, and completed professional development courses; and a professional competence self-assessment that evaluated participants' perceived ability to apply knowledge, skills, and abilities acquired through supplementary professional education in professional practice. The questionnaire items were developed based on professional standards and themes consistently identified in recent literature related to ASD-focused professional competence. In addition, the instrument was reviewed by specialists in special and inclusive education to assess item clarity and relevance to professional practice. The questionnaire was designed to capture participants perceived competence in applying ASD-related professional knowledge and skills in practice following participation in supplementary professional education programmes.

The competence assessment section covered key domains of ASD-related professional activity, including the application of evidence-based methods and techniques, adaptation of educational and stimulus materials, use of psychological and pedagogical assessment data, interdisciplinary collaboration, implementation of propaedeutic and preventive practices, use of educational and digital resources, adherence to legal, moral, and ethical norms, and independent application of acquired professional competences. Each item was rated on a three-point ordinal scale, where 1 indicated difficulty in applying knowledge, skills, and abilities; 2 indicated application with the support of a mentor; and 3 indicated independent application. This response format was designed to capture both competence and autonomy in professional implementation.

Following completion of the advanced training courses, participants were invited to complete the questionnaire online. Participation was voluntary, and responses were collected anonymously to encourage accurate self-reporting. All respondents completed the questionnaire independently through the online platform. Data analysis was conducted using descriptive statistical methods. Descriptive statistical analysis was considered appropriate because the study aimed to explore and profile patterns of perceived competence formation across specialist groups rather than test causal relationships or predictive models. Mean values were calculated for each competence indicator across professional groups to identify patterns of competence formation, highlight areas of relative strength and weakness, and facilitate comparisons between different categories of specialists. This analytical approach was appropriate given the study's exploratory nature and its focus on profiling professional competences rather than examining causal relationships.

4. FINDINGS

This study examined the level of formation of professional competencies among pedagogical specialists working with children with autism spectrum disorder (ASD) after completing advanced training courses within the supplementary professional education system. Mean scores were used to identify not only general trends but also significant strengths and weaknesses, as reflected by the highest and lowest competence indicators within each specialist group. Overall, the findings reveal uneven competence formation across specialist groups, with consistently higher mean scores for theoretical and ethical components and

lower mean scores for professional competences requiring interdisciplinary collaboration and preventive practice. The table of mean comparison is depicted below.

Table 1: Comparison of Mean Scores of Competence Formation across Specialist Groups

No.	Competence Statement	Mean			
		Educators	School Teachers	Teacher-Defectologists	Speech-Language Pathologists
1	I apply new methods and techniques in working with children with ASD.	1.95	2.54	2.53	2.5
2	I implement techniques for adapting stimulus material to children's capabilities.	1.91	2.54	2.47	2.5
3	I apply psychological and pedagogical research data in my work.	1.82	2.5	2.24	2.34
4	I use regulatory/documentation prepared by relevant departments in my work.	1.73	2.5	2.39	2.24
5	I apply methods for analyzing assessment results of children with ASD.	1.86	2.46	2.31	2.3
6	I apply technologies of propaedeutics and prevention of ASD progression.	1.73	2.31	2.02	*2.16*
7	I apply technologies for working in an interdisciplinary team supporting children with ASD and their families.	*1.59*	*2.08*	*1.92*	2.24
8	I use educational resource tools in consulting parents and specialists.	2.0	2.46	2.39	2.36
9	I organize my work considering legal and ethical norms.	2.18	2.5	2.59	**2.86**
10	I apply the knowledge, skills, and abilities acquired in advanced training courses in my professional activities.	**2.45**	**2.69**	**2.84**	**2.86**

Note. Bold values indicate the highest mean score within each competence domain, whereas italicised values indicate the lowest mean score. Higher mean scores reflect greater perceived ability to independently apply ASD-related professional competences in practice.

Across the ten competence items, a consistent pattern of highest and lowest mean scores by professional group was evident. For Item 1 (application of new methods and techniques) and Item 2 (adaptation of stimulus material), school teachers (M = 2.54 for both items) and teacher-defectologists (M = 2.53 and M = 2.47) recorded the highest mean scores, while educators reported the lowest (M = 1.95 and M = 1.91), indicating a gap in translating ASD-specific pedagogical strategies into practice at the educator level. A similar trend was observed for Item 3 (use of psychological and pedagogical research data) and Item 5 (analysis of assessment results), where school teachers and speech-language pathologists demonstrated higher mean values (around M ≈ 2.30–2.50), whereas educators again showed the lowest

means (M = 1.82 and M = 1.86). For Item 4 (use of regulatory or departmental documentation) and Item 9 (organization of work based on legal and ethical norms), speech-language pathologists recorded the highest mean (M = 2.86 for ethical norms), followed by teacher-defectologists (M = 2.59), while educators consistently remained the lowest-scoring group (M = 1.73 and M = 2.18), suggesting weaker engagement with formal regulatory and ethical frameworks.

Clear differences were also observed in more specialized domains. For Item 6 (technologies of propaedeutics and prevention of ASD progression), speech-language pathologists reported the highest mean (M = 2.16), whereas educators again showed the lowest (M = 1.73), indicating limited preventive and early-intervention competence among less specialized practitioners. Most notably, Item 7 (interdisciplinary teamwork) emerged as the weakest area across all groups: educators recorded the lowest mean (M = 1.59), followed by teacher-defectologists (M = 1.92), school teachers (M = 2.08), and speech-language pathologists (M = 2.24), making this item the only domain where mean scores remained comparatively low even among highly specialized professionals. In contrast, Item 10 (application of knowledge and skills acquired through advanced training) consistently yielded the highest mean scores across all groups, peaking among speech-language pathologists (M = 2.86) and teacher-defectologists (M = 2.84), and remaining lowest among educators (M = 2.45). Collectively, these item-level differences indicate that while individual professional competences strengthen with specialization, collaborative and interdisciplinary competences remain insufficiently developed across professional roles.

5. DISCUSSION

The present study examined the formation of professional competences among pedagogical specialists working with children with autism spectrum disorder (ASD) following participation in supplementary professional education programmes. The findings reveal a consistent pattern of uneven competence development across specialist groups, with strengths concentrated in theoretical understanding and general professional application, and persistent weaknesses in interdisciplinary collaboration and preventive practice. These results extend the growing international literature that highlights a critical gap between knowledge acquisition and the effective application of professional competences in ASD-focused professional training.

Across all specialist groups, the highest mean scores were associated with the independent application of knowledge, skills, and abilities acquired through advanced training courses, as well as adherence to legal, moral, and ethical norms of professional practice. This pattern suggests that supplementary education programmes are generally effective in strengthening conceptual competence and professional self-efficacy. Similar trends have been documented in previous studies, indicating that professional development initiatives tend to prioritise knowledge transmission and regulatory compliance—domains that are more readily internalised than complex applied skills (Leonova, 2021; Nigmatullina et al., 2024).

In contrast, the lowest mean scores across all specialist groups were consistently observed for competences related to interdisciplinary teamwork and the application of propaedeutic and preventive technologies. These deficits are particularly concerning, given that effective ASD support is inherently interdisciplinary and preventive in nature. International research has repeatedly emphasised that coordinated collaboration among teachers, therapists, psychologists, and families is a cornerstone of evidence-based ASD intervention (Hart Barnett & O'Shaughnessy, 2015; Syriopoulou-Delli et al., 2016). The persistence of low competence levels in this domain suggests that existing professional education structures do not sufficiently prepare specialists for collaborative practice, despite its centrality to comprehensive ASD support.

Substantial variation was also observed between specialist groups. Preschool educators demonstrated the lowest overall competence levels, particularly in applied and collaborative domains. This finding is consistent with earlier research showing that generalist educators often struggle to translate ASD-related knowledge into practice,

especially in early childhood and inclusive settings (Makarova & Blinov, 2024; Nigmatullina et al., 2023). In contrast, teacher-defectologists and speech-language pathologists exhibited higher mean scores across most competence areas, reflecting the influence of specialised pre-service training. Nevertheless, even among these specialists, interdisciplinary collaboration and preventive competences remained comparatively underdeveloped. This finding aligns with international evidence suggesting that specialised expertise does not automatically translate into effective team-based or preventive practice (Lessner, Listiakova, & Preece, 2020; Wilson & Landa, 2019).

The persistent weakness in preventive competencies, particularly those related to propaedeutics and prevention of ASD progression, has important implications for early intervention. Preventive approaches in ASD require longitudinal planning, systematic monitoring, and close coordination with families, all of which demand advanced applied competences and sustained professional support. Prior studies have shown that short-term training programmes are unlikely to produce meaningful gains in these areas without ongoing mentoring, supervised practice, and opportunities for reflective learning (Able et al., 2015; Goronina, 2021). The present findings empirically support this position, indicating that preventive competences remain underrepresented within current supplementary education models.

From both a conceptual and methodological standpoint, the findings provide preliminary empirical support for the relevance of a modular-competency approach in identifying competence patterns across specialist groups. By systematically identifying competence deficits across specialist groups, this approach enables targeted professional retraining that extends beyond general upskilling. Consistent with the work of Khitryuk and Sergeeva (2019), the results indicate that advanced training courses primarily reinforce theoretical knowledge, whereas structured professional retraining modules are necessary to develop complex applied competences, particularly those involving interdisciplinary collaboration and preventive practice.

Several limitations should be acknowledged. First, the study relied exclusively on self-reported competence assessments, which may be influenced by social desirability bias and subjective overestimation of professional abilities. Consequently, the findings reflect perceived rather than objectively measured competence. Future research should incorporate triangulated approaches such as classroom observation, performance-based assessment, or expert evaluation. Second, the researcher-developed instrument did not undergo extensive psychometric validation, and the findings should therefore be interpreted as exploratory. Third, the study employed descriptive statistical analysis, limiting inferential interpretation of group differences. Finally, because the study was conducted within the Volga Federal District in Russia, the generalisability of the findings to other educational and cultural contexts may be limited. Nevertheless, the findings may still hold broader relevance for educational systems facing similar challenges in ASD-focused professional development, particularly those implementing inclusive education reforms and continuing professional education frameworks. Differences in teacher preparation systems, professional standards, educational policies, and the organisation of inclusive education across countries should, however, be carefully considered when interpreting and transferring the findings to other national contexts.

6. CONCLUSION

This study descriptively examined the formation of ASD-related professional competences among pedagogical specialists following participation in supplementary professional education programmes within the lifelong education system. The findings revealed uneven patterns of perceived competence formation across specialist groups, with speech-language pathologists and teacher-defectologists generally reporting higher levels of competence application than preschool educators, particularly in applied and interdisciplinary domains. Across all groups, competences related to interdisciplinary collaboration and preventive ASD practices

emerged as comparatively weaker areas, whereas legal-ethical practice and the general application of acquired professional knowledge demonstrated relatively stronger outcomes. These findings suggest that although continuing professional education may strengthen theoretical understanding and professional confidence, greater emphasis is needed on sustained practice-oriented training, interdisciplinary teamwork, and preventive intervention competences within ASD-focused professional development. Nevertheless, the findings should be interpreted cautiously, as the study relied on self-reported data, employed a researcher-developed instrument without extensive psychometric validation, and utilised descriptive statistical analysis within a specific regional educational context. Overall, the study contributes preliminary empirical insight into competence formation among specialists working with children with ASD and provides a basis for future research on more comprehensive and practice-oriented professional development models.

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