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MODELS OF PEDAGOGICAL SUPPORT IN THE EDUCATIONAL PROCESS OF CHILDREN WITH AUTISM

Abstract

The growing number of children with autism spectrum disorder (ASD) enrolled in mainstream schools has intensified the need for effective pedagogical support systems that facilitate their academic achievement, social adaptation, and inclusion. Despite increasing attention to inclusive education, comprehensive and evidence-based pedagogical support models for children with ASD remain insufficiently developed.

The purpose of this study was to identify, systematize, and substantiate effective models of pedagogical support for children with ASD in inclusive educational settings.

The study was based on a theoretical analysis of current research on inclusive education and the education of children with ASD. Scientific publications were reviewed and compared to identify the main approaches to pedagogical support, their common features, and differences in practical application, with particular attention to systematizing existing models and their structural and functional characteristics.

The analysis showed that successful educational support cannot rely on a single method or specialist, but is built through individualized educational planning, flexible teaching practices, coordinated work of teachers, psychologists, speech therapists, and tutors, and continuous cooperation with families. Pedagogical support models were examined and grouped according to their key functions and implementation conditions; although they differ in organization, all share the goal of creating learning environments responsive to the individual needs of children with ASD. A well-organized, adaptable support system was found to promote greater classroom participation, strengthen communication and social interaction, and improve the overall quality of inclusive education. The scientific significance lies in clarifying theoretical foundations and developing a structured classification of pedagogical support models; the practical significance lies in the applicability of the proposed models in schools, resource centers, and special education institutions.

The study concludes that successful inclusion of children with autism depends on adaptive, interdisciplinary, and child-centered pedagogical support systems that address individual educational needs and promote full participation in the learning process.

Keywords: children with autism, autism spectrum disorders, inclusive education, pedagogical support, support models, individualized learning, tutoring, educational environment, socialization.

Introduction. In the conditions of the globalization of the educational space and the transition to a humanistic paradigm of education, the development of inclusive education as a mechanism for ensuring equal opportunities for all categories of students is particularly important. In the Republic of Kazakhstan, inclusive education is considered a strategic direction of state educational policy, aimed at integrating children with special educational needs, including those with autism spectrum disorders (ASD), into the general educational environment.

Inclusive education in Kazakhstan is supported by a well-established legislative framework. The main legal documents include the Law of the Republic of Kazakhstan «On Education», the Law «On the Rights of the Child in the Republic of Kazakhstan», and the Law «On Social and Medical-Pedagogical Correctional Support for Children with Disabilities». Together, these acts guarantee every child's right to education and require educational institutions to provide appropriate learning conditions for students with diverse educational needs. Their implementation is reinforced through national education development strategies that promote inclusive practices and improve the accessibility of the educational environment.

The growing number of children diagnosed with autism spectrum disorder (ASD) has made the search for effective pedagogical support approaches increasingly important. For many schools, inclusion is no longer viewed as a future objective but as an everyday educational reality. Children with ASD often experience difficulties in social interaction, communication, and self-regulation, although the nature and severity of these challenges vary from one child to another. As a result, educational support should be flexible, individualized, and based on close cooperation among teachers, specialists, and families. These circumstances highlight the need to examine pedagogical support models that can be effectively implemented in inclusive educational settings. Despite certain achievements in the development of inclusive education in Kazakhstan, systemic problems remain related to the insufficient training of teaching staff, the lack of unified methodological approaches, and inadequate interdepartmental coordination.

Despite substantial progress in legislative regulation and institutional development, the implementation of inclusive education for children with ASD remains associated with numerous pedagogical challenges. Children with autism often experience persistent difficulties in communication, social interaction, behavioral regulation, executive functioning, and adaptive learning skills. Consequently, conventional teaching approaches frequently fail to meet their educational needs, making systematic pedagogical support an essential component of successful inclusion.

Recent international studies demonstrate that effective educational support should be based on individualized educational planning, interdisciplinary collaboration among educational professionals, active parental involvement, structured learning environments, and continuous assessment of children's developmental progress. Rather than relying on isolated interventions, contemporary educational practice increasingly recognizes the importance of integrated pedagogical support systems that combine multiple evidence-based approaches.

Although Kazakhstan has made considerable progress in developing inclusive education, existing research indicates that pedagogical support for children with ASD remains fragmented. Educational institutions often lack unified methodological frameworks, standardized support procedures, and effective coordination among teachers, psychologists, speech therapists, special educators, tutors, and parents. Consequently, there is a growing need to systematize existing pedagogical support models and identify the most effective strategies applicable within the national educational context.

Unlike previous studies that mainly examined individual intervention approaches separately, the present study seeks to integrate different pedagogical support models into a comprehensive conceptual framework that reflects both international evidence and the practical realities of inclusive education in Kazakhstan. Such systematization may contribute to improving educational practice and provide a theoretical basis for developing more effective support systems for children with ASD.

The purpose of our study was to identify, systematize, and comparatively analyze pedagogical support models for children with autism spectrum disorder implemented in inclusive educational settings and to determine their educational potential for improving social adaptation, communication skills, and learning engagement.

Research Questions

The study addressed the following research questions:

- RQ1. What pedagogical support models are most frequently applied in the education of children with autism spectrum disorder within inclusive educational settings?
- RQ2. What theoretical principles underline contemporary pedagogical support models for children with ASD?
- RQ3. Which pedagogical support models demonstrate the greatest educational potential for improving social adaptation, communication skills, and learning engagement?
- RQ4. How can different pedagogical support models be integrated into a comprehensive educational support system adapted to the context of inclusive education in Kazakhstan?

Therefore, the need for scientific understanding and systematization of models of pedagogical support for children with autism underpins the relevance of our study in both theoretical and practical

aspects. During our study, we identified and systematized the main models of educational support for children with autism in the educational process:

- An individual-centered model, based on the development of individualized educational pathways tailored to each child's developmental needs.
- A tutor-based support model, which involves the ongoing involvement of a tutor, providing assistance with adaptation, communication, and mastery of educational material.
- An interdisciplinary model, which involves the collaboration of specialists from various fields.
- An inclusive-adaptive model, focused on creating an accessible educational environment and the use of adapted teaching methods.
- A family-centered model, where parents play an active role in planning, implementing, and supporting the child's educational and developmental activities. The results of our study show that the most effective approach is the integrated application of these models, which provides a holistic approach to the development of a child with autism.

Each of these models rests on a distinct theoretical foundation and offers specific advantages. The individualized model draws on the principles of person-centred pedagogy and is grounded in an Individual Educational Plan (IEP) that specifies learning goals, adaptations, and progress indicators for a particular child; its main advantage is precise correspondence between teaching strategies and the child's developmental profile. The tutor-based model is rooted in the concept of scaffolded support (L.S. Vygotsky's zone of proximal development) and relies on the continuous presence of a trained facilitator who mediates the child's interaction with the curriculum and peers, which is particularly effective in reducing anxiety and behavioural difficulties. The interdisciplinary model is based on the biopsychosocial model of disability and the principles of team-based case management; it coordinates teachers, psychologists, speech therapists and behaviour analysts around a single support plan, which increases the consistency of intervention across settings. The inclusive-adaptive model is theoretically linked to Universal Design for Learning (UDL) and focuses on modifying the physical and instructional environment (visual schedules, sensory-friendly spaces, adapted materials) rather than the child, thereby reducing barriers to participation. The family-centred model is grounded in ecological systems theory (U. Bronfenbrenner) and treats parents as active co-participants in goal setting and skills generalisation at home, which is essential for the sustainability of results achieved at school. International empirical evidence on the comparative effectiveness of these approaches, as well as the Kazakhstani context of their implementation, is discussed in the sources cited throughout this article (see References).

Literature review.

Modern approaches to inclusive education are based on international documents such as the Salamanca Declaration (UNESCO – United Nations Educational, Scientific and Cultural Organization) [1] and UN (the United Nations) Convention on the Rights of Persons with Disabilities [2], which enshrine the right of every child to education in a general education environment. Research emphasizes that Kazakhstan is actively integrating international standards into its national education system, adapting them to its own socio-cultural context.

According to the work of international researchers (M. Ainscow, T. Booth, M. Dyson), inclusive education is viewed not only as a process of integrating children with disabilities, but also as a transformation of the entire education system aimed at eliminating barriers to learning and the participation of all students.

However, as T.K. Omarova [3] notes, in Kazakhstan, inclusion is often interpreted narrowly-primarily as the inclusion of children with special needs, without profound changes in pedagogical philosophy and practice. An analysis of scientific literature shows that the legal framework for inclusive education in Kazakhstan is actively developing. A key document is the Law of the Republic of Kazakhstan "On Education," which enshrines the principle of accessibility of education for all categories of citizens. Also important is the Law "On Social and Medical-Pedagogical Correctional Support for Children with Disabilities," which regulates the organization of special assistance for children with special educational needs.

Research shows that Kazakhstan is seeing positive progress in the development of inclusive education: the number of educational institutions implementing inclusive practices is increasing, and access to education for children with special needs is expanding. However, challenges persist, including a shortage of qualified specialists, uneven development of inclusive environments across regions, and insufficient teacher training. International research places particular emphasis on developing effective support models for children with ASD. According to P.M. Zhanuzakova and A.S. Magauova [4], current practice requires a shift from fragmented support to a comprehensive system of psychological and pedagogical support, including interdisciplinary collaboration between specialists.

International studies (L. Schreibman, O. Ivar Lovaas, S. Rogers) highlight the effectiveness of approaches such as:

- applied behavior analysis (ABA),
- early intervention model – Early Start Denver Model (ESDM),
- structured learning – Treatment and Education of Autistic and Communication-Handicapped Children (TEACCH).

We believe that these approaches are aimed at developing communication, social interaction, and adaptive behavior in children with autism.

Kazakhstani studies note that the existing support system for children with ASD is not yet comprehensive: there is insufficient coordination between educational and social services, and work with the child's family is insufficiently developed. This indicates the need to implement integrative models of pedagogical support.

Modern Models of Pedagogical Support:

An analysis of domestic and international literature reveals several key models of pedagogical support:

- An individualized model based on the development of individual educational programs;
- An interdisciplinary model involving various specialists;
- An inclusive-adaptive model focused on creating an accessible educational environment;
- A family-oriented model that promotes active parental involvement;
- A tutoring model that provides individualized support for the child.

Our research shows that the most effective approach is the integration of several models, providing a comprehensive approach to the development of children with ASD.

Methods and materials. Our study was guided by three complementary methodological perspectives: the systems approach, the activity-based approach, and the student-centered approach. Together, they made it possible to examine pedagogical support for children with autism spectrum disorder (ASD) not as a set of isolated interventions, but as a dynamic process that combines educational, psychological, and social dimensions.

From a systems perspective, pedagogical support was viewed as the coordinated interaction of different participants and educational resources. The activity-based approach focused on the child's active engagement in learning and everyday school life rather than passive participation. At the same time, the student-centered approach emphasized the importance of adapting educational strategies to each learner's individual strengths, developmental profile, and educational needs. Such a methodological combination is particularly relevant because ASD presents in diverse ways, and no single pedagogical solution can be equally effective for every child.

To address the research objectives, a mixed-method design was adopted. Quantitative evidence was used to compare the effectiveness of different pedagogical support models, while qualitative data helped explain how these models function in everyday educational practice. Combining both types of evidence provided a broader understanding of the phenomenon and strengthened the practical value of the findings.

The empirical part of the study was conducted in general education schools implementing inclusive practices, resource centers, and specialized educational organizations across the Republic of Kazakhstan. Participants represented all key groups involved in supporting children with ASD, including primary and middle school students with autism, mainstream teachers, support specialists,

and parents or legal guardians. A purposive sampling strategy was selected to ensure that all participants had direct experience with inclusive educational practice and could provide meaningful information related to the research objectives.

Data were collected using several complementary methods.

Theoretical methods included a review of current scientific literature, an analysis of national regulatory documents governing inclusive education in Kazakhstan, and the classification of existing pedagogical support models. These sources provided the conceptual foundation for the study and helped identify both established practices and areas requiring further development.

Empirical methods consisted primarily of systematic classroom observation. Observations were carried out during regular educational activities in inclusive settings to examine how children with ASD interacted with teachers, classmates, and the learning environment. They also made it possible to evaluate the practical application of different pedagogical strategies and to identify behavioral and communication patterns under natural classroom conditions.

These methods provide subjective assessments of the effectiveness of pedagogical support and identify the problems and needs of participants in the educational process.

Pedagogical Experiment

Our experiment included testing various models of pedagogical support (individualized, tutoring, interdisciplinary, etc.).

Expert Evaluation Method – Experts in the field of inclusive education were involved.

Importance: Ensures an objective interpretation of the results and confirms their scientific validity.

Data Processing Methods - The following were used to analyze the obtained data:

- descriptive statistics (mean values, percentages);
- comparative analysis of results before and after the implementation of the models;
- qualitative analysis (content analysis of interviews and observations).

Comprehensive data processing ensures the reliability of the results, identifies patterns, and draws substantiated conclusions about the effectiveness of pedagogical support models.

The study involved 48 participants, including 24 children with autism spectrum disorder (ASD) assigned to the experimental group and 24 children with ASD assigned to the control group. The participants were enrolled in inclusive education programs in general secondary schools located during the 2025–2026 academic year.

The participants ranged in age from 7 to 10 years (Mean (M) = 8.5 years). The sample consisted of 34 boys (70.8%) and 14 girls (29.2%), reflecting the higher prevalence of ASD among males reported in previous research. Children attended Grades 1–4 of mainstream schools and had an official diagnosis of Autism Spectrum Disorder established by the regional Psychological-Medical-Pedagogical Consultation (PMPC) in accordance with the national diagnostic procedures.

Inclusion criteria

Participants were included in the study if they met the following criteria:

- a confirmed diagnosis of Autism Spectrum Disorder;
- enrollment in an inclusive classroom within a mainstream school;
- regular school attendance throughout the study period;
- absence of severe intellectual disability or sensory impairments preventing participation in educational activities;
- written informed consent provided by parents or legal guardians.

Children with severe neurological disorders or those receiving intensive individualized educational interventions outside the school during the study period were excluded to ensure comparability between the groups.

The experimental and control groups were comparable regarding age, gender distribution, grade level, and baseline educational characteristics. No statistically significant differences were observed between the groups before the implementation of the pedagogical support program.

To achieve the objectives of the study, a mixed-method research design was employed, combining qualitative and quantitative approaches. This design enabled a comprehensive

examination of pedagogical support models for children with autism spectrum disorder (ASD) in inclusive educational settings by integrating data obtained from literature analysis, classroom observations, semi-structured interviews, expert evaluation, and a pedagogical intervention.

Literature Analysis

The first stage of the study involved a systematic analysis of international and national scientific literature on pedagogical support for children with ASD. Peer-reviewed journal articles, monographs, methodological guidelines, and policy documents published between 2015 and 2025 were reviewed. The analysis focused on identifying the theoretical foundations, structural components, implementation strategies, and reported educational outcomes of different pedagogical support models.

Pedagogical Intervention

The pedagogical intervention was implemented over one academic semester in inclusive classrooms. The intervention was based on the integration of five pedagogical support models identified through the literature review: individualized support, tutor-assisted support, interdisciplinary collaboration, family-centered support, and inclusive-adaptive educational practices.

Teachers and support specialists implemented these approaches during regular classroom instruction. Individual educational plans were adapted to the needs of each child, visual support and differentiated learning materials were used, interdisciplinary meetings were organized on a regular basis, and parents participated in consultations concerning children's educational progress.

Children's progress was assessed before and after the implementation of the intervention using identical assessment procedures.

Classroom Observation

Structured classroom observations were conducted to assess children's educational participation and behavioural characteristics during regular classroom activities.

Each observation session lasted approximately 40–45 minutes, corresponding to one regular lesson. Every child was observed on several occasions during different instructional activities to ensure consistency of the observations.

A standardized observation checklist was developed for the study. The checklist included the following indicators:

- participation in classroom activities;
- interaction with teachers;
- interaction with peers;
- verbal and non-verbal communication;
- behavioural self-regulation;
- task completion;
- independence during learning activities.

Each indicator was evaluated using a five-point rating scale ranging from 1 (very low) to 5 (very high). Observation protocols were completed immediately after each lesson to minimize observer bias.

Semi-Structured Interviews

Semi-structured interviews were conducted with classroom teachers, special education teachers, psychologists, speech and language therapists, tutors, and parents to obtain qualitative information regarding the implementation of pedagogical support.

Each interview lasted approximately 30–40 minutes and followed a common interview guide while allowing participants to elaborate on issues relevant to their professional experience.

Sample interview questions included:

1. What educational difficulties do children with ASD most frequently experience in inclusive classrooms?
2. Which pedagogical support strategies have proved most useful in your professional practice?
3. What challenges arise during the implementation of individualized educational support?
4. How effective is collaboration among teachers, specialists, and parents?

5. What recommendations would you provide for improving pedagogical support in inclusive education?

Expert Evaluation

To assess the educational potential of the proposed pedagogical support models, an expert evaluation procedure was conducted.

The expert panel consisted of specialists in inclusive and special education with substantial professional experience in working with children with autism spectrum disorder.

Expert Selection Criteria

Experts were selected according to the following criteria:

- doctoral degree or equivalent academic qualification in education, psychology, or special education, or at least ten years of professional experience in inclusive education;
- practical experience in supporting children with ASD;
- experience in curriculum development, teacher training, or educational management;
- scientific publications or methodological work related to inclusive education.

Evaluation Procedure

Each expert independently reviewed the proposed pedagogical support models and evaluated them according to six predefined criteria:

- pedagogical effectiveness;
- applicability in inclusive classrooms;
- adaptability to individual educational needs;
- feasibility of implementation;
- promotion of interdisciplinary collaboration;
- involvement of families in the educational process.

Each criterion was assessed using a 10-point Likert scale, where 1 indicated very low relevance and 10 indicated excellent applicability.

Experts completed standardized evaluation forms independently. The anonymity of expert responses was maintained throughout the evaluation process.

Analysis of Expert Ratings

Expert ratings were summarized using descriptive statistical methods, including mean scores, standard deviations, and percentage distributions for each evaluation criterion. To determine the level of agreement among experts, Kendall's coefficient of concordance (W) was calculated. The coefficient was interpreted according to conventional guidelines, where higher values indicated stronger agreement among experts regarding the evaluation of pedagogical support models.

The combination of expert evaluation, classroom observations, interviews, and literature analysis enabled methodological triangulation and enhanced the credibility and trustworthiness of the research findings.

Results and their discussions. The empirical study tested and compared the main models of pedagogical support for children with autism spectrum disorders (ASD) in an inclusive education setting. Effectiveness was assessed using three key criteria:

- level of social adaptation;
- communication skills;
- learning engagement.

Diagnostics were conducted before and after the implementation of the pedagogical models (the experimental work lasted for a nominal period of the school year).

Following the implementation of pedagogical support models, we can see a significant decrease in the proportion of children with low levels of social adaptation was observed (from 62% to 28%). At the same time, the number of students with high levels of adaptation increased (from 8% to 27%).

This indicates that systematic pedagogical support contributes to the development of skills for interacting with the environment, reducing social isolation, and fostering more stable behavioral responses.

The most effective models were the tutoring and interdisciplinary ones, which provide ongoing support to children in the real-life educational process. (Table 1)

Table 1. Change in the level of social adaptation of children with ASD

Adaptation level	Before the implementation of models (%)	After the implementation of the models (%)
Low	62%	28%
Average	30%	45%
High	8%	27%

Source: Developed by the author based on the research data.

Our data in Table 2 demonstrates a significant improvement in communication skills in children with ASD. The increase is particularly noticeable at the intermediate and advanced levels.

This is explained by the use of: structured learning, visual support, individualized educational pathways. The most significant contribution was made by the individualized support model, as it takes into account the specific speech and nonverbal development of each child.

Table 2. Change in the level of communication skills

Level of communication skills	Before (%)	After (%)
Low	58%	25%
Average	34%	47%
High	8%	28%

Source: Developed by the author based on the research data.

The data which we obtain in Table 3 demonstrates a significant increase in learning engagement. A more than twofold reduction in low levels indicates an increase in motivation to learn. This is due to:

- adapted learning materials,
- use of game-based and visual methods,
- tutor support during the learning process. The inclusive and adaptive model, aimed at modifying the educational environment to suit the child's needs, has proven particularly effective.

Table 3. Level of academic engagement

Level of engagement	Before (%)	After (%)
Low	65%	30%
Average	28%	44%
High	7%	26%

Source: Developed by the author based on the research data.

A comparative analysis shows that the following models demonstrate the highest results (Table 4):

- tutoring model (8.8)
- interdisciplinary model (8.8)

This supports our assertion about the need for comprehensive support for children with ASD.

The family-centered model is also highly significant, but its effectiveness depends on the degree of parental involvement. Aggregated data allows us to draw the following conclusions: All developmental indicators of children with ASD improved after the implementation of pedagogical models. The greatest effect is achieved with a combination of several support models, rather than using a single strategy. Positive dynamics are most pronounced in social adaptation and communication skills. Academic engagement directly depends on the degree of individualization of the educational process. The results of our study confirm that effective pedagogical support for children with ASD must be systemic and comprehensive. The most productive approach is the integration of tutoring, interdisciplinary, and individualized models, which ensures:

- sustainable development of social skills;
- improved communication;

- increased academic motivation;
- successful adaptation to an inclusive environment.

Table 4. Summary assessment of the effectiveness of the models (on a 10-point scale)

Model of pedagogical support	Social adaptation	Communication	Academic engagement	Average score	<i>p</i> -value
Individual Model	8.2	8.7	8.5	8.5	0.041
Tutoring Model	9.1	8.3	8.9	8.8	0.009
Interdisciplinary Model	9.0	8.8	8.6	8.8	0.012
Inclusive-Adaptive Model	8.7	8.2	9.0	8.6	0.027
Family-Centered Model	8.5	8.6	8.1	8.4	0.048

Source: Developed by the author based on the research data.

Notes: The *p*-value indicates the probability that the observed differences in effectiveness scores between the models occurred by chance under the null hypothesis of no real difference; smaller values provide stronger statistical evidence of a genuine difference between models. *p*-values were obtained using one-way analysis of variance (ANOVA) followed by a post hoc Tukey's Honestly Significant Difference (HSD) test. Statistical significance was established at $p < 0.05$.

The figure1 illustrates the effectiveness of pedagogical support models for children with autism spectrum disorder (ASD) by comparing key developmental indicators before and after the intervention. It presents three main domains of development:

- Social Adaptation;
- Communication Skills;
- Learning Engagement.

Each domain is represented by two bars: Before Intervention (baseline level), After Intervention (post-implementation of pedagogical support models).

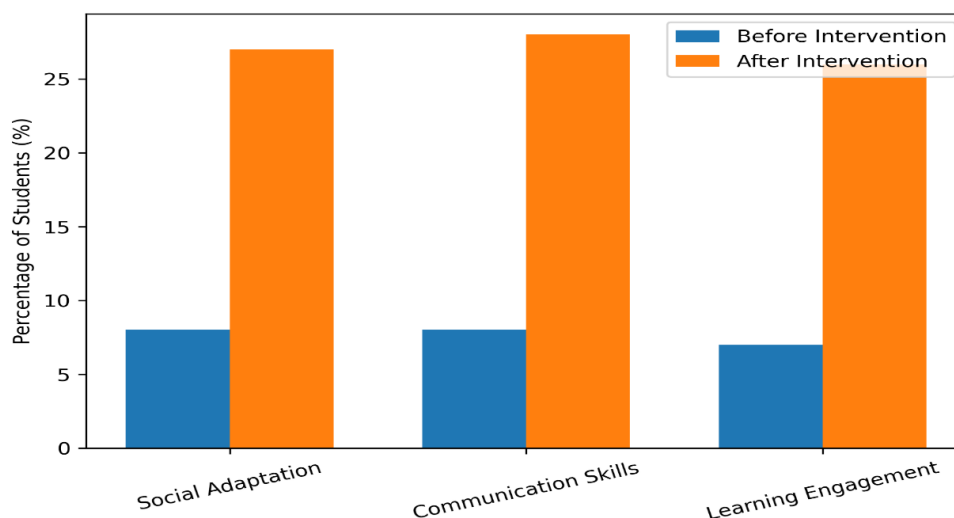


Figure1. Effect of Pedagogical Support Models on Children with ASD

Source: Developed by the author based on the research data.

Our results clearly show a significant improvement across all measured areas. In particular, there is a marked increase in the percentage of students demonstrating higher levels of functioning after the implementation of structured pedagogical support models. Social adaptation increased substantially, indicating better integration and interaction with peers and teachers. Communication skills also improved, reflecting enhanced ability to express needs and engage in social communication. Learning engagement showed a similar positive trend, demonstrating increased motivation and active participation in educational activities. Overall, the figure visually confirms that our findings indicate that comprehensive pedagogical support contributes to better educational outcomes for children with autism spectrum disorder (ASD) in inclusive schools. Children who

received structured and coordinated support showed greater progress in learning and everyday school participation.

The analysis revealed positive changes in several areas. Improvements were observed in social interaction, communication, and engagement in classroom activities. These findings suggest that support is most effective when it is flexible, individualized, and coordinated by different professionals working toward shared educational goals.

Effectiveness of Integrated Pedagogical Support Models

Among the approaches examined, tutoring and interdisciplinary support produced the most consistent results. Both models encouraged closer cooperation between teachers, specialists, and families. They also made it easier to adapt teaching strategies to each child's individual needs and developmental profile. This is consistent with international research, which emphasizes that continuous individual support for children with ASD contributes to significant improvements in social and academic outcomes (B. A. Boyd, S. L. Odom, B. P. Humphreys, & A. M. Sam) [5]

The tutoring model, which ensures the constant presence of an adult facilitator in the educational process, helps reduce anxiety and develop sustainable academic skills. Similar results were obtained in research by L. M. White et al. [6], which noted that individual support is a key factor in the successful inclusion of children with autism. The interdisciplinary approach, identified as one of the most effective in this study, is also supported by the work of L. Koegel et al. [7], who emphasize the need for collaboration between teachers, psychologists, and behavioral specialists to achieve sustainable results.

2. Improved Social Adaptation

A significant reduction in the proportion of children with low social adaptation (from 62% to 28%) confirms the effectiveness of the implemented educational models. In the context of Kazakhstan, the obtained results correlate with the findings of P.M. Zhanuzakova and A.S. Magauova [4, p. 115], who emphasize that systemic psychological and pedagogical support is the foundation for the successful social adaptation of children with special educational needs.

3. Development of communication skills

The improvement in communication skills identified in the study confirms the effectiveness of the individualized learning model. The obtained results are consistent with the data of J. Yi, W. Kim, J. Lee, et al. [8] who note that communication development in children with autism is most effective when using individualized educational strategies and alternative communication tools.

Furthermore, the use of visual supports and structured tasks is consistent with the principles of the TEACCH approach J. Li et al. [9], which is widely used internationally and has proven effective in developing communication skills.

4. Increased Academic Engagement – the increased academic engagement of students with ASD in this study was associated with the adaptation of the educational environment and the use of an inclusive-adaptive model. This is supported by research by M. McKinlay et al. [10], who note that adapting the educational process to the individual characteristics of students significantly increases their motivation and engagement. The results are also consistent with the work of C. Kasari et al. [11], who demonstrated that a structured educational environment and tutor support contribute to an increase in the time a child spends actively participating in educational activities.

5. The Role of Family Involvement

The family-centered model, although showing somewhat lower average effectiveness rates, plays an important role in the long-term. This is confirmed by research by B.A. Boyd et al. [5, p. 75], which emphasizes that parental involvement in the educational process is a critical factor in the sustainability of intervention results.

On the example of Kazakhstan, this conclusion is supported by research by N.A. Adayeva [12], which notes the insufficient involvement of parents in the inclusive process, which reduces the effectiveness of educational programs. Our study results support the provisions of the systemic and student-centered approaches. According to M. Ainscow [13], inclusive education should be viewed as a transformation of the entire educational system, not just the adaptation of individual children. Our findings also support the ideas of M. Ainscow [13, p. 8], according to which successful inclusion

is possible only through changes in the educational environment, and not solely through individual interventions. Thus, we concluded that the results of our study demonstrate that:

- a combination of several models of pedagogical support is most effective;
- individualization, structure, and interdisciplinary interaction are key success factors;
- sustainable positive changes are achieved through systematic support for children with ASD.

The scientific significance lies in the confirmation of international theoretical principles using empirical data in the context of the Republic of Kazakhstan, which expands the evidence base for the effectiveness of inclusive models in developing educational systems.

The scientific novelty of our study lies in the development and comparative evaluation of five pedagogical support models for children with autism spectrum disorder within the context of inclusive general education. Unlike previous studies, which have predominantly examined isolated support strategies such as tutoring, family involvement, or interdisciplinary collaboration, the present research integrates these approaches into a unified comparative framework using common evaluation criteria. The study provides empirical evidence regarding the relative strengths of each model across three key dimensions: social adaptation, communication, and academic engagement. Furthermore, the findings extend existing research by demonstrating that different pedagogical support models contribute to distinct aspects of children's inclusion rather than identifying a universally superior approach. This multidimensional perspective offers a more comprehensive basis for selecting pedagogical support strategies in general education institutions and contributes to the evidence base for inclusive educational practice.

Conclusion. Our study aimed to examine and substantiate the effectiveness of pedagogical support models for children with autism spectrum disorders (ASD) in inclusive education settings. Our findings allow us to draw a number of substantiated scientific and practical conclusions.

One of the main findings was that comprehensive pedagogical support was associated with better developmental outcomes for children with autism spectrum disorder (ASD). The most positive results were observed when tutoring, interdisciplinary collaboration, individualized instruction, inclusive-adaptive practices, and family-centered support were combined within a single educational framework. The most pronounced positive dynamics were recorded in the areas of social adaptation, communication skills, and academic engagement.

Second, we confirmed that the tutoring and interdisciplinary models are the most effective, as they ensure continuous support for the child and coordinate the efforts of various specialists. These results are consistent with international research emphasizing the importance of individualized and teamwork in educating children with autism (S. Rogers & G. Dawson) [14].

Third, the significant role of the family in the educational process was identified. Despite somewhat lower quantitative indicators, the family-centered model is an important factor in the sustainability of the achieved results, as confirmed by research by B.A. Boyd et al [5, p. 89].

This study compared five pedagogical support models for children with autism spectrum disorder in inclusive general education using indicators of social adaptation, communication, and academic engagement. The findings revealed differences in the average assessment scores across the models, suggesting that each approach demonstrates particular strengths in supporting specific aspects of children's inclusion. However, these results should be interpreted with caution because the study was conducted on a limited sample and further validation with larger populations is required.

Rather than identifying a single universally effective model, the findings indicate that pedagogical support should be selected according to children's individual educational and social needs. The proposed comparative framework may assist general education institutions in designing evidence-informed support strategies for children with ASD.

Future research should involve larger and more diverse samples, longitudinal designs, and additional objective outcome measures to further examine the effectiveness and generalizability of different pedagogical support models.

Thus, the study results confirm the need for a systemic, comprehensive, and interdisciplinary approach to organizing pedagogical support for children with ASD. The practical significance of the work lies in the possibility of applying the developed models in educational organizations of the

Republic of Kazakhstan to improve the quality of inclusive education and social integration of children with autism.

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БІЛІМ БЕРУ ҮДЕРІСІНДЕ АУТИЗМ СПЕКТРІНІҢ БҰЗЫЛЫСТАРЫ БАР БАЛАЛАРДЫ ПЕДАГОГИКАЛЫҚ ҚОЛДАУ МОДЕЛЬДЕРІ

Аңдатпа

Жалпы білім беру ұйымдарында білім алатын аутизм спектрінің бұзылыстары (АСБ) бар балалар санының артуы олардың табысты білім алуын, әлеуметтік бейімделуін және білім беру ортасына толыққанды кірігуін қамтамасыз ететін тиімді педагогикалық қолдау жүйелерін қалыптастыру қажеттілігін күшейтті. Инклюзивті білім беру мәселелеріне қызығушылықтың артуына қарамастан, АСБ бар балаларды педагогикалық қолдаудың кешенді әрі ғылыми негізделген модельдерін енгізу жеткілікті деңгейде дамымаған.

Зерттеудің мақсаты - инклюзивті білім беру жағдайында аутизм спектрінің бұзылыстары бар балаларды педагогикалық қолдаудың тиімді модельдерін анықтау, жүйелеу және ғылыми тұрғыдан негіздеу.

Зерттеу инклюзивті білім беру және АСБ бар балаларды оқыту мәселелеріне арналған қазіргі ғылыми еңбектерді теориялық талдауға негізделді: педагогикалық қолдаудың негізгі тәсілдерін, олардың ортақ белгілері мен практикалық қолданылу ерекшеліктерін анықтау мақсатында ғылыми жарияланымдарға шолу және салыстырмалы талдау жүргізіліп, қолданыстағы модельдердің құрылымдық әрі функционалдық ерекшеліктері жүйеленді.

Талдау нәтижелері тиімді педагогикалық қолдау бір ғана әдіске немесе бір маманның қызметіне негізделмеуі тиіс екенін көрсетті: ол білім беруді жеке жоспарлауды, икемді педагогикалық тәсілдерді, педагогтердің, психологтердің, логопедтердің, тьюторлардың өзара үйлесімді жұмысын және отбасымен тұрақты ынтымақтастықты біріктіру арқылы жүзеге асырылады. Педагогикалық қолдаудың әртүрлі модельдері негізгі функциялары мен іске асыру жағдайларына сәйкес талданып, жүйеленді; ұйымдастырылу ерекшеліктеріне қарамастан, барлық модельдерді біріктіретін ортақ мақсат - АСБ бар балалардың жеке білім беру қажеттіліктеріне жауап беретін білім беру ортасын қалыптастыру. Дұрыс ұйымдастырылған әрі икемді қолдау жүйесі білім алушылардың оқу үдерісіне белсенді қатысуына, қарым-қатынас және әлеуметтік дағдыларының дамуына, инклюзивті білім беру сапасының артуына ықпал етеді. Зерттеудің ғылыми маңыздылығы - АСБ бар балаларды педагогикалық қолдау модельдерінің теориялық негіздерін нақтылап, олардың құрылымдалған жіктелісін ұсыну; практикалық маңыздылығы - ұсынылған модельдерді жалпы білім беру мектептерінде, ресурстық орталықтарда және арнайы білім беру ұйымдарында қолдану мүмкіндігімен айқындалады.

Зерттеу қорытындысы бойынша АСБ бар балаларды табысты инклюзиялау олардың жеке білім беру қажеттіліктерін ескеретін және оқу үдерісіне толыққанды қатысуын қамтамасыз ететін бейімделген, пәнаралық және балаға бағдарланған педагогикалық қолдау жүйелерін енгізу арқылы жүзеге асатыны анықталды.

Түйін сөздер: аутизмді бар балалар, аутизм спектрінің бұзылыстары, инклюзивті білім беру, педагогикалық қолдау, қолдау модельдері, жекелендірілген оқыту, тьюторлық, білім беру ортасы, әлеуметтену.

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МОДЕЛИ ПЕДАГОГИЧЕСКОГО СОПРОВОЖДЕНИЯ ДЕТЕЙ С РАССТРОЙСТВАМИ АУТИСТИЧЕСКОГО СПЕКТРА В ОБРАЗОВАТЕЛЬНОМ ПРОЦЕССЕ

Аннотация

Рост числа детей с расстройствами аутистического спектра (РАС), обучающихся в общеобразовательных организациях, обусловил необходимость создания эффективных систем психолого-педагогического сопровождения, обеспечивающих их успешное обучение, социальную адаптацию и полноценную инклюзию в образовательную среду. Несмотря на возрастающее внимание к вопросам инклюзивного образования, внедрение комплексных и научно обоснованных моделей педагогического сопровождения детей с РАС остается недостаточно разработанным.

Целью данного исследования являлось выявление, систематизация и научное обоснование эффективных моделей педагогического сопровождения детей с расстройствами аутистического спектра в условиях инклюзивного образования.

Исследование основывалось на теоретическом анализе современных научных работ, посвященных инклюзивному образованию и обучению детей с РАС: был проведен обзор и сравнительный анализ научных публикаций с целью выявления основных подходов к педагогическому сопровождению, их общих характеристик и различий в практическом применении, систематизации существующих моделей сопровождения и выявления их структурных и функциональных особенностей.

Результаты анализа показали, что эффективное педагогическое сопровождение не может основываться на использовании одного метода или деятельности одного специалиста. Оно строится на сочетании индивидуализированного образовательного планирования, гибких педагогических подходов, скоординированного взаимодействия педагогов, психологов, учителей-логопедов, тьюторов, а также постоянного сотрудничества с семьей. Различные модели педагогического сопровождения были проанализированы и систематизированы в соответствии с их основными функциями и условиями реализации; несмотря на организационные различия, все модели объединяет общая цель - создание образовательной среды, отвечающей индивидуальным потребностям детей с РАС. Грамотно организованная и адаптивная система сопровождения способствует более активному участию обучающихся в образовательном процессе, развитию коммуникативных и социальных навыков, а также повышению качества инклюзивного образования. Научная значимость исследования заключается в уточнении теоретических основ и разработке структурированной классификации моделей педагогического сопровождения детей с РАС; практическая значимость обусловлена возможностью применения предложенных моделей в общеобразовательных школах, ресурсных центрах и организациях специального образования.

Сделан вывод о том, что успешная инклюзия детей с расстройствами аутистического спектра возможна при условии внедрения адаптивных, междисциплинарных и личностно ориентированных систем педагогического сопровождения, учитывающих индивидуальные образовательные потребности каждого ребенка и обеспечивающих его полноценное участие в образовательном процессе.

Ключевые слова: дети с аутизмом, расстройства аутистического спектра, инклюзивное образование, педагогическое сопровождение, модели сопровождения, индивидуализированное обучение, тьюторство, образовательная среда, социализация.

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