



## EDUCATIONAL SUPPORT FOR STUDENTS WITH AUTISM SPECTRUM DISORDERS: A PEDAGOGICAL MODEL FOR INCLUSIVE LEARNING ENVIRONMENTS

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### **Abstract:**

Educational support for students with Autism Spectrum Disorders (ASD) is a growing priority within inclusive pedagogy. Traditional support models often rely on deficit-based interventions, failing to address the complex, multidimensional needs of students with ASD. This study presents a redefined concept of support as an integrated pedagogical process—one that fosters participation, autonomy, and cognitive, communicative, and adaptive growth. Drawing on theoretical foundations and empirical classroom research, the study introduces the SPARK model (Supportive Environment, Partnership, Autonomy, Results, Communication) as a framework for structuring inclusive educational practices. The model was developed through action research in real educational settings with 58 students with ASD and their teachers. Findings demonstrate that personalized, consistent, and structured support leads to improved student engagement, learning outcomes, and social inclusion. Teachers reported increased confidence in implementing differentiated strategies, while students showed higher levels of participation and motivation. The SPARK model proves to be both a conceptual and practical tool, enabling educators to transform daily teaching routines into inclusive experiences. This research contributes to the field of inclusive education by offering an evidence-based approach that supports systemic change in how support is perceived and enacted across educational environments.

**Keywords:** autism spectrum disorders; educational support; inclusive education; pedagogical model

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## 1. Introduction

### 1.1 Conceptualizing Educational Support in Inclusive Pedagogy

The evolving landscape of contemporary education presents new challenges and demands for teaching methodologies, learning environments, and pedagogical strategies. One of the most pressing issues in the field of education today is the need to provide meaningful support to students with diverse learning profiles, particularly those diagnosed with Autism Spectrum Disorders (ASD). The concept of educational support has undergone a significant transformation in recent decades, shifting from a marginal, auxiliary intervention toward a central pillar of inclusive education.

Historically, support in education was perceived primarily as a compensatory mechanism, designed to assist students in overcoming deficits or limitations (Florian, 2014). Such an approach often placed students with special educational needs on the periphery of the educational system, segregating their experiences from mainstream learning environments. However, contemporary pedagogical research has redefined the purpose and scope of educational support, emphasizing its role in creating inclusive, adaptive, and participatory learning contexts (Ghazali *et al.*, 2019; Busari *et al.*, 2025; Leifler, 2020).

Inclusive education, as a global educational agenda, requires schools to accommodate the heterogeneity of learners, addressing differences not as problems to be fixed, but as opportunities for innovation and growth (UNESCO, 1994; Ainscow & Sandill, 2010). This paradigm shift entails rethinking how support is conceptualized, organized, and implemented. Rather than offering occasional interventions for specific difficulties, educational support is now seen as an integral pedagogical process that promotes engagement, personal development, and social integration for all students (Fidosieva, 2025b), particularly for those who experience developmental differences such as ASD.

Students with ASD present a wide spectrum of needs and abilities, encompassing social, communicative, cognitive, and behavioral domains (Wing, 2002). These characteristics require individualized, flexible, and proactive educational strategies, which go beyond standard curriculum delivery. The presence of communication barriers, challenges in social interaction, and differences in sensory processing often demand innovative teaching practices, tailored support systems, and the active participation of educational teams, families, and the community.

Despite advancements in educational policies and the adoption of inclusion as a guiding principle in many national legislations, a gap remains between theoretical commitments to inclusion and actual classroom practice. Many teachers report feeling unprepared to meet the complex needs of students with ASD, leading to increased professional stress and, at times, unintended exclusion (Florian & Spratt, 2013). There is a growing consensus in the scientific community that systematic, research-based models of educational support are essential to bridge this gap and ensure that inclusive education is implemented effectively and sustainably.

## 1.2 Towards a Comprehensive Model of Educational Support

Building on these considerations, this paper addresses the need for a systematic and comprehensive model of educational support, one that aligns with the principles of inclusive pedagogy while being sensitive to the specific characteristics of students with Autism Spectrum Disorders (ASD). The current educational climate demands practical tools that help educators transform abstract concepts of support into concrete actions embedded in everyday classroom practice.

The objectives of this study are:

- To explore the theoretical foundations of educational support as an active, multidimensional process within inclusive education.
- To analyze the specific needs of students with ASD in terms of communication, cognitive functioning, and adaptive behavior.

The research questions guiding this study include:

- How can educational support be redefined to meet the diverse needs of students with ASD within inclusive classrooms?
- What are the key components of effective support strategies that promote both academic success and social participation?
- How does the application of the model of support in education impact teaching practices, student engagement, and learning outcomes?

Methodologically, the study employs a mixed-method approach, combining theoretical analysis, case studies, and empirical research through fieldwork. Action research principles are applied to ensure that the interventions are tested and refined in authentic educational contexts, reflecting the real challenges and opportunities faced by educators and students alike.

In presenting both theoretical underpinnings and practical applications, this article aims to contribute to the scientific discourse on inclusive education and pedagogical support, offering a viable pathway for educators to foster equitable learning environments. The goal is not only to support students with ASD but also to enrich the educational system by promoting diversity, participation, and shared achievement.

## 2. Literature Review

### 2.1 Conceptual Foundations of Support in Education

The phenomenon of educational support has become a distinct concept within pedagogical research, undergoing substantial evolution over the past decades. Originally perceived as a set of corrective actions aimed at addressing the difficulties of students with special educational needs and disabilities, educational support is now recognized as a fundamental mechanism for ensuring equal opportunities for all learners (Booth & Ainscow, 2000; Tomlinson, 2017), regardless of their developmental, cognitive, or social characteristics.

From a theoretical perspective, educational support encompasses both individualized interventions directed at the specific needs of students and systemic

transformations in the learning environment to facilitate inclusive participation. This dual focus requires the involvement of various disciplines, including pedagogy, psychology, and social sciences (Cutrona & Russell, 1990), to address the multifaceted nature of support (Florian & Spratt, 2013). In pedagogical terms, support is subordinated to the principles of individualization and diversity (Tomlinson, 2017), which reflect the variety of abilities, needs, and learning profiles present in today's classrooms (Perrenoud, 1992; Rousseau, 2014).

The redefinition of educational support has been significantly influenced by the development of inclusive education as a global standard (UNESCO, 1994). Inclusive education moves beyond mere physical integration, focusing instead on the creation of learning environments that adapt to the uniqueness of each student (Booth & Ainscow, 2000). In this context, support is not considered a marginal practice but a core pedagogical responsibility. It is intended to foster conditions where all students, including those with ASD, are active participants in learning processes, not passive recipients of assistance.

International classification systems such as the International Classification of Functioning, Disability and Health (ICF) also highlight the relational aspect of disability, defining it as an interaction between the individual and environmental factors (World Health Organization, 2018). Educational support becomes the central mechanism for overcoming these environmental barriers, enabling students with disabilities to fully participate in academic and social activities.

The principles of inclusive support have also been reinforced by key global initiatives, including the World Conference on Education for All (UNESCO, 1990) and the Salamanca Statement (UNESCO, 1994), both of which emphasize the right of all children to quality education. The Salamanca Framework in particular stresses the necessity of restructuring educational systems to remove barriers and implement personalized support measures aimed at fostering participation and achievement for every student, regardless of ability.

These developments have led to a reconceptualization of the teacher's role, transforming the educator from a transmitter of knowledge into a facilitator of learning, social integration, and developmental support (Houssaye, 2003; Loiacono & Valenti, 2010). Teaching is no longer solely about delivering content but about building meaningful relationships, understanding students' needs, and organizing adaptive learning environments that promote growth, autonomy, and resilience.

### **3. Material and Methods**

This study is structured to explore in depth the pedagogical meaning of educational support, moving beyond formal definitions and focusing instead on the real interactions, processes, and experiences that occur within the classroom. As a meeting point between student and teacher, needs and resources, expectations and possibilities, support emerges as a dynamic process of adaptation and meaning-making.

The aim of the study is to analyze and present a comprehensive model for studying educational support that integrates theoretical frameworks with practical application in authentic educational settings. It allows for the observation of the achievements of students with Autism Spectrum Disorders (ASD) in the context of structured pedagogical support. The results seek to reveal the living pedagogical essence of support—that which arises in the encounter between teacher and learner, between individual needs and available resources, between pedagogical intent and school reality. The study is grounded in the understanding that support represents a system of resources, tools, interactions, and relationships aimed at balancing the needs of the student with the general goals of education. This perspective necessitates a qualitative, practice-oriented, and engaging research approach. The methodological framework is based on action research, where educational practice is embedded within the research process itself. Through observation, analysis, and reflection on real school situations, the study seeks to understand how, when, with what means, and to what effect educational support influences the achievements of students with ASD.

The object of the study is the processes and conditions that define the provision of support in education. The subject of the study is educational support, conceptualized as a pedagogical interaction structured within the educational situation. The research is guided by the following principles:

- Support is examined as a process, not as a static model;
- The student is viewed as an active participant in dynamic pedagogical interaction;
- Educational practice is seen as a source of knowledge and conceptual insight.

The tools for observing and assessing the processes and phenomena related to support provision are designed with reference to the developmental characteristics of students with ASD. The focus is on progress in three core areas: adaptive, communicative, and cognitive development. The selected tools are tailored to individual learning profiles and applicable within inclusive school environments.

The research employs the following instruments:

- EIS Methodology – a standardized tool for functional assessment of children with intellectual disabilities and ASD, adapted for the Bulgarian context by Prof. Dr. Anelia Garbacheva (Garbacheva, 2015) from Bricker (2013). It evaluates adaptive, communicative, and cognitive domains, including educational goals (criteria), learning tasks (indicators), and achievement markers. The tool supports individual progress tracking and evaluation of the effects of pedagogical support.
- Autism Treatment Evaluation Checklist (ATEC)<sup>1</sup> – a standardized instrument for assessing cognitive, linguistic, behavioral, and sensory functioning in children with ASD. It was used to calculate gross scores and classify students according to the intensity of expressed characteristics.
- Autism Quality Indicators (2016)<sup>2</sup> – a tool designed to evaluate the quality of educational support across four functional domains: (1) Functional assessment; (2)

Support plan/methods of teaching; (3) Student achievement; and (4) Family involvement.

The methodological framework of this study conceptualizes educational support as a **living, pedagogical, and dynamic process**. By combining qualitative approaches, action research, and the application of EIS, ATEC, and AQI instruments, the study offers a comprehensive analysis of the impact of support on the development of students with ASD. It thus contributes to the understanding of support in education as a **context-dependent pedagogical interaction**, in which the student, the teacher, and the learning environment are in constant and reciprocal relationship.

## 4. Results

### 4.1 Social, Psychological, and Legislative Dimensions of Educational Support

The transition toward inclusive educational practices has been accompanied by significant legislative and policy changes, both globally and at the national level. In Bulgaria, the Pre-school and School Education Act (2016<sup>3</sup>) and the Regulation on Inclusive Education (2017<sup>4</sup>) provide a legal framework that formally introduces the concept of support into the education system. These normative acts distinguish between general support for personal development, aimed at all students, and additional support, specifically designed for students with special educational needs, disabilities, or those at risk of social exclusion.

Despite these advances, the term “special support” remains underdefined in Bulgarian legislation. Although it is used in institutional contexts such as Centers for Special Educational Support (in Bulgaria), it lacks a clear legal definition as a standalone concept (Pre-school and School Education Act, 2016). This creates practical challenges for educators, who must navigate between the ideals of inclusion and the specific needs of students with profound disabilities. The absence of precise terminology often results in uncertainty about the scope, content, and application of support interventions, particularly for students with complex developmental profiles.

From a social perspective, educational support is closely linked to the processes of social integration and participation. According to House (1981), social support includes emotional, instrumental, informational, and evaluative dimensions, each contributing to the individual’s sense of belonging and self-efficacy. In educational settings, these forms of support manifest through encouragement, adapted materials, personalized feedback, and the creation of safe communicative environments.

The psychological aspects of support emphasize the role of emotional security, motivation, and self-esteem in the learning process (Wampold, 2001). Research demonstrates that students who receive consistent psychological support exhibit lower levels of stress, higher resilience, and greater engagement with learning tasks (Uchino, 2004; Thoits, 2011). For students with Autism Spectrum Disorders (ASD), this is particularly relevant, as they often face communication barriers and challenges in social interaction.

In this context, educational support must include not only academic scaffolding, but also communication facilitation and adaptive strategies that account for the unique profiles of learners with ASD. The implementation of Augmentative and Alternative Communication (AAC) systems, such as PECS (Picture Exchange Communication System) or Cboard, plays a crucial role in supporting students who experience difficulties in verbal communication (Fidosieva, 2025a). These systems allow students to participate actively in classroom interactions, express their needs, and engage in social relationships. Moreover, support for students with ASD must be aligned with early intervention principles, recognizing the importance of timely responses to developmental challenges (Leifler *et al.*, 2020; Oroian *et al.*, 2024). This proactive approach emphasizes the creation of personalized educational plans, the use of symbolic communication systems, and the incorporation of adaptive technologies to enhance learning outcomes and promote autonomy.

In sum, educational support is not a static service or an administrative obligation; it is a dynamic, systemic, and interdisciplinary phenomenon that permeates all aspects of teaching and learning (Florian & Spratt, 2013). It requires continuous reflection, collaboration among stakeholders, and a commitment to the principles of human dignity, equity, and educational justice.

#### **4.2 Participants and Group Formation**

The study involved 58 children and students with Autism Spectrum Disorders (ASD), aged between 4 and 18 years, enrolled in kindergartens, schools, and Centers for Special Educational Support in Bulgaria. The data were collected and analyzed by 58 teacher-researchers directly involved in the educational process.

The Autism Treatment Evaluation Checklist (ATEC) was used to assess the participants' general functional condition across four primary domains:

- Speech, language, and communication habits
- Social skills
- Sensory and cognitive development
- Behavior and physical health

The distribution of results is as follows:

- 13 students (22%) scored between 0–40, indicating mild to moderate characteristics.
- 45 students (78%) scored above 41, suggesting a significant need for support in at least one domain.

This division into Group A (mild to moderate needs) and Group B (more intensive needs) allowed for detailed monitoring of symptom severity and the corresponding necessity for targeted pedagogical interventions.

### 4.3 Student Achievements in the Context of Structured Support

The results confirm that providing structured and targeted educational support has a significant impact on the adaptive, communicative, and cognitive development of students with ASD.

The analysis is based on a comparison of two time points (T1 and T2), with differences recorded using EIS (Educational Interaction Scales), applied by teacher-researchers in real educational situations.

**Table 1:** Learning Achievements – Comparison of Period 1 and Period 2

Category	N	T1	T2	Difference	Rank
<b>Adaptive Development – Y1</b>	<b>10</b>	<b>57.92</b>	<b>65.99</b>	<b>+8.07</b>	<b>-</b>
Eating	10	52.52	60.60	+8.08	6
Personal Hygiene	10	57.77	68.33	+10.56	5
Dressing and Undressing	10	63.49	69.04	+5.55	10
<b>Communicative Development – Y2</b>	<b>10</b>	<b>13.03</b>	<b>22.19</b>	<b>+9.16</b>	<b>-</b>
Communicative Interactions	10	8.45	21.78	+13.33	2
Word and Sentence Construction	10	17.62	22.60	+4.98	11
<b>Cognitive Development – Y3</b>	<b>10</b>	<b>29.80</b>	<b>37.40</b>	<b>+7.60</b>	<b>-</b>
Concept Formation	10	22.22	25.55	+3.33	12
Categorization	10	51.38	56.94	+5.56	9
Sequencing	10	29.62	36.10	+6.42	8
Event Recall	10	31.48	45.83	+14.35	1
Problem Solving	10	10.31	11.11	+0.80	13
Play	10	28.57	39.67	+11.10	4
Mathematical Concepts	10	41.66	53.70	+12.04	3
Phonological Awareness/Pre-Reading	10	23.23	30.30	+7.07	7
<b>Overall Mean (Y1 + Y2 + Y3)</b>	<b>10</b>	<b>33.58</b>	<b>41.86</b>	<b>+8.28</b>	<b>-</b>

#### 4.3.1 Adaptive Development (Y1)

An average increase of +8.07 points was recorded between T1 and T2. The most significant improvements were:

- Personal hygiene: +10.56,
- Eating independently: +8.08,
- Dressing and undressing: +5.55.

These results indicate that students have become more autonomous and confident in daily routines, closely linked to the application of structured pedagogical strategies such as predictability, visual aids, and participation in daily life activities.

#### 4.3.2 Communicative Development (Y2)

The average improvement in communication was +9.16 points, with particular growth in:

- Communicative interactions: +13.33,
- Word and sentence construction: +4.98.



These results confirm the effectiveness of using visual cards, choice boards, social stories, and role-play games, which stimulate not only understanding but also the initiative in communication.

#### 4.3.3 Cognitive Development (Y3)

Cognitive progress averaged +7.60 points, with the most significant gains in:

- Event recall: +14.35,
- Mathematical concepts: +12.04,
- Play skills: +11.10.

These results indicate increased cognitive activity and engagement, supported by adapted tasks, visual materials, and concrete manipulatives, applied as part of the educational support system.

#### 4.4 Results from Autism Quality Indicators (AQI)

The use of Autism Quality Indicators (AQI) allowed for a structured assessment of the quality of educational support. A factor analysis revealed four principal components that summarize the interaction between the educational environment, participants, and support methods.

**Table 2:** Factor Loadings for Autism Quality Indicators (AQI)

Factor	Item	Factor Loading
<b>I: Environmental Adaptation</b>	Visual Schedules	0.927
	Physical Environment	0.750
	Inclusive Activities with Peers	0.736
	Environmental Stimuli	0.717
<b>II: Autonomy</b>	Skill Reinforcement	0.809
	Independent Functioning	0.791
	Activity Performance Forms	0.617
<b>III: Achievement</b>	Appropriate Methods	0.873
	Leisure Time Management	0.722
<b>IV: Communication and Accompaniment</b>	Communication System	0.797
	Social Interactions	0.779
	Academic and Professional Skills	0.689
	Communication and Active Participation	0.633
	Suitable Activities	0.619

##### 4.4.1 Factor I: Environmental Adaptation

Visual schedules (0.927) and environmental structuring are critical for predictability, reducing anxiety and improving self-regulation. Clear spatial organization and peer interaction activities are key in supporting perception and behavior.

#### **4.4.2 Factor II: Autonomy**

Indicators related to independent functioning, such as choice-making and skill consolidation, highlight the importance of empowering the learner, fostering self-management and responsibility in educational tasks.

#### **4.4.3 Factor III: Achievement**

The appropriate use of visual and game-based methods facilitates real cognitive and behavioral progress. Students show increased participation, concentration, and understanding when supported by structured teaching approaches.

#### **4.4.4 Factor IV: Communication and Accompaniment**

Communication is seen as a mediator between participation and development. Active adult accompaniment, combined with AAC tools, helps students express needs, make choices, and experience social interaction in meaningful ways.

#### **4.5 Internal Consistency and Validity**

The internal consistency of AQI (Cronbach's  $\alpha = 0.943$ ) confirms the reliability of the instrument and the validity of the observations. The results indicate that effective educational support is multifaceted and interconnected, requiring an integrative approach that encompasses:

- Structured, visually adapted environments
- Opportunities for choice and independent action
- Cognitive achievement through adapted tasks
- Communication as a core element of learning

These findings provide the empirical basis for the systematization of a pedagogical model, where support is not just an add-on service but a comprehensive design of the learning process.

### **5. Discussion**

#### **5.1 The Role of Structured Support in Inclusive Education**

The results of this study provide strong empirical evidence that structured and consistent educational support significantly enhances the adaptive, communicative, and cognitive development of students with Autism Spectrum Disorders (ASD). This finding validates the theoretical assumptions outlined in the Theoretical Framework, where support is conceptualized as an assistive service and central component of the pedagogical process. The collected data indicate that support strategies, when systematically applied, can mitigate learning barriers and promote meaningful participation, aligning with the inclusive education principles advocated in global policy documents (UNESCO, 1990, 1994).

One of the most significant outcomes of the research is the clear evidence that adaptive functioning improves notably when the learning environment is structured to

meet the specific needs of students with ASD. The results from the adaptive development domain (Y1) showed an average improvement of +8.07 points, with the most substantial progress in personal hygiene (+10.56 points) and independent eating (+8.08 points). These findings underscore the necessity of integrating daily life skills into the educational process, transforming routine activities into pedagogical opportunities. This approach is consistent with Vygotskian developmental theory (Vygotsky, 1929), which emphasizes the importance of learning through social and functional interaction.

The successful implementation of such support strategies reflects the practical application of predictability, routine, and visual scaffolding as key elements in facilitating the autonomy of learners with ASD. The strong correlation between environmental structuring and progress in adaptive functioning found in the AQI factor analysis (visual schedules - 0.927) highlights the environment as a pedagogical resource, not merely as a physical space but as a structured learning system. When the environment provides clear signals about what will happen, when, and how, students with ASD can anticipate tasks, reduce anxiety, and increase independent functioning (Oroian *et al.*, 2024).

This environmental adaptation is not solely about physical arrangement but involves the pedagogical design of interaction sequences, the organization of time, and the clear delineation of expectations. By reducing ambiguity and ensuring consistent routines, teachers help students develop a sense of security, which is fundamental for the cognitive and emotional engagement (Houssaye, 2003) required for learning.

Moreover, the findings demonstrate that structured support is essential for reducing behavioral challenges. The correlation between structured environments and improvements in behavior and task engagement suggests that many so-called "behavioral problems" are in fact manifestations of environmental mismatch (Schopler, 1997). By providing visual supports, clear routines, and opportunities for meaningful participation, educators can transform potential crises into learning moments, redirecting energy from behavioral resistance toward productive engagement.

These results also reveal the importance of consistent adult accompaniment. The role of the teacher is not passive observation but active mediation (Bruner, 1960), guiding the student through daily activities, providing appropriate prompts, and gradually fading support to foster autonomy. This is in line with Bruner's concept of scaffolding, where the teacher temporarily provides the structures needed for task completion, which are gradually internalized by the learner.

The improvement in adaptive behavior further suggests that students with ASD are capable of significant progress when educational practices are aligned with their cognitive and sensory processing styles. This challenges deficit-based models that focus solely on limitations and instead supports a strength-based pedagogical perspective, where support is designed to leverage existing abilities while systematically building new competencies.

In summary, the first key interpretation of the data is that structured support leads to measurable functional gains in adaptive behavior for students with ASD. This

reinforces the theoretical position that support is not a compensatory add-on but a core educational strategy, essential for transforming inclusion from a theoretical ideal into a lived classroom reality. The environment, routines, materials, and interactions must be intentionally designed to align with the learner's profile, fostering participation, competence, and autonomy.

## 5.2 Communication as a Central Element of Support

Another critical finding of the study concerns the central role of communication in the educational support process. The results from the communicative development domain (Y2) show a marked improvement of +9.16 points, with the most notable progress in communicative interactions (+13.33 points). This suggests that structured support not only facilitates basic functional skills but also promotes active social engagement and communicative participation, which are often challenging for students with Autism Spectrum Disorders (ASD) (Leigler *et al.*, 2020).

In traditional educational models, communication is frequently compartmentalized as a separate therapeutic goal, isolated from the core curriculum. However, the present study reinforces the view that communication is not an isolated function but a transversal competence, embedded in all aspects of learning, participation, and socialization. Communication serves as a gateway to inclusion, making it a priority area in the development of support strategies.

The observed improvements are linked to the consistent use of visual supports, choice boards, social narratives, and role-play scenarios, which enable students to initiate and sustain interactions. These tools align with alternative and augmentative communication (AAC) principles, providing multimodal pathways for students to express needs, preferences, and emotions. By lowering the communicative barrier, these interventions foster not just linguistic output but the understanding of communicative intent and reciprocity—a key developmental milestone for students with ASD.

The AQI factor analysis supports this, highlighting Factor IV: Accompaniment and Communication, with high factor loadings on items related to communication systems (0.797) and social interactions (0.779). This demonstrates that communication cannot be reduced to vocabulary acquisition or sentence construction; rather, it is a dynamic social practice, mediated by the environment, partners, and context (Busari *et al.*, 2025). The teacher's role becomes that of a communication facilitator, co-constructing meaning with the student through structured interactions, shared attention, and scaffolded dialogue (Bruner, 1960).

Moreover, the results reveal that the act of communication itself is a form of participation and autonomy. When students are provided with tools for expressing preferences, making choices, and initiating contact, they are no longer passive recipients of educational content but become active agents in their learning process (Bruner, 1960). This transition from passive compliance to active participation represents a paradigm shift in how we conceptualize both support and communication in inclusive education.

The data also reflect the importance of visual communication strategies, which align with the cognitive and sensory profiles typical of ASD. Visual materials reduce processing demands, offering concrete and predictable representations of abstract concepts, thereby making communication more accessible (Fidosieva, 2025a). These findings are consistent with other studies demonstrating that visual structures (Schopler, 1997) reduce anxiety and enhance understanding for students with ASD.

Furthermore, communication development in the context of structured support is not limited to verbal language. It encompasses gestures, signs, pictures, symbols, and technological communication aids, providing a multimodal communicative repertoire that broadens the student's ability to interact with peers, teachers, and the environment. This approach supports the notion of total communication, where multiple channels are simultaneously employed to support expression and comprehension.

In conclusion, the study highlights that communication is not a secondary objective but a central pillar of educational support. Effective support systems for students with ASD must integrate communication strategies into every aspect of teaching and learning, ensuring that students have the tools, opportunities, and confidence to interact, express themselves, and participate meaningfully in their educational and social environments.

### **5.3 Autonomy, Cognitive Development, and the Role of Adaptation**

Beyond adaptive and communicative skills, the study's findings underscore the importance of cognitive development as a central target of educational support. The data indicate an average improvement of +7.60 points in cognitive functioning (Y3), with specific areas such as event recall (+14.35 points), mathematical concepts (+12.04 points), and play (+11.10 points) showing the most significant gains.

These results confirm that when students with ASD are engaged through structured, visually supported, and contextually meaningful activities, they are capable of substantial cognitive growth. This aligns with cognitive theories emphasizing concrete, experience-based learning for children with ASD, who often struggle with abstract reasoning, flexibility of thought, and generalization (Busari *et al.*, 2025). The improvements suggest that learning is optimized when tasks are broken down into predictable steps, supported by consistent visual aids, and directly linked to the learner's daily experiences.

The AQI factor analysis reinforces this interpretation through Factor III: Achievement, where items related to appropriate teaching methods (0.873) and leisure time management (0.722) indicate that cognitive and social achievements are deeply interconnected. Learning does not occur in isolation; it is embedded in the student's ability to interact, explore, and participate actively in social and educational contexts.

Another crucial dimension revealed by the data is the role of autonomy in learning. The study shows that when students with ASD are provided with opportunities to make choices, initiate actions, and engage independently, their cognitive engagement increases. Factor II: Autonomy captures this, with significant loadings on skill

reinforcement (0.809) and independent functioning (0.791). These findings support the view that learning autonomy is not an optional extension of the curriculum but a core developmental goal, directly tied to self-regulation, motivation, and resilience.

Importantly, autonomy for students with ASD does not imply the absence of support but rather the careful design of learning contexts that enable independent action within structured boundaries. This requires educators to create environments where choice-making is scaffolded, transitions are clear, and expectations are transparent. Autonomy emerges when students understand the sequence of tasks, anticipate outcomes, and experience success in completing meaningful activities.

The improvements in play and mathematical concepts illustrate how cognitive development can be enhanced through functional and concrete learning opportunities. For many students with ASD, play is not spontaneous but requires explicit teaching of social scripts, game structures, and symbolic understanding (Wing, 2002; Ghazali *et al.*, 2019). By incorporating structured play activities into educational support, teachers foster both cognitive flexibility and social interaction, bridging a crucial gap in the development of executive functions.

Similarly, the gains in mathematical understanding suggest that when abstract concepts are grounded in concrete experiences, students with ASD can successfully engage with academic content. Using visual representations, manipulatives, and step-by-step instructions, educators can build mathematical reasoning in a way that aligns with the students' strengths in pattern recognition and systemization.

These findings challenge deficit-based assumptions about the learning potential of students with ASD. Instead, they point toward a strength-based approach, where teaching strategies are tailored to the learners' processing styles, and cognitive abilities are systematically developed through adaptation, participation, and guided practice.

In conclusion, this part of the discussion emphasizes that cognitive development in students with ASD is intricately linked to the quality of educational support. Autonomy, environmental adaptation, and concrete learning experiences are not peripheral concerns but central mechanisms for cognitive and academic growth. Effective support systems must therefore be designed as dynamic, interactive processes, where autonomy is nurtured, achievements are scaffolded, and cognitive engagement is embedded in meaningful social contexts.

#### **5.4 The Environment as Pedagogical Structure and Mediator**

A critical interpretation of the data concerns the environment not merely as a backdrop to learning but as an active pedagogical structure and mediator of development. The findings from the Autism Quality Indicators (AQI) highlight that the most substantial factor contributing to the effectiveness of support is the adaptation of the educational environment. Factor I: Environmental Adaptation showed the highest factor loadings, particularly for visual schedules (0.927), physical space organization (0.750), and peer interaction activities (0.736). These results underscore that for students with ASD, the

environment is not neutral—it is either a facilitator of learning or a barrier to participation.

In the context of this study, environmental adaptation includes both physical and procedural structuring. The physical dimension refers to visual supports, designated spaces for specific activities, and sensory-friendly arrangements, while the procedural aspect involves predictable routines, clear transitions, and the consistent use of visual cues and schedules (Fidosieva, 2025a). These elements reduce the cognitive load associated with ambiguity, allowing students to anticipate, prepare for, and successfully complete learning tasks.

This structuring aligns with Bronfenbrenner’s ecological systems theory, where learning is seen as the outcome of dynamic interactions between the individual and multiple environmental layers (Bronfenbrenner, 1979). For students with ASD, the microsystem—the immediate educational setting—plays a pivotal role in either enabling or restricting development. The present study confirms that when the microsystem is adapted to the learner’s needs, it creates conditions for social inclusion, cognitive engagement, and emotional regulation.

Furthermore, the environment acts as a mediator of social interaction. By organizing peer activities within structured frameworks, students with ASD are given opportunities to practice social scripts, joint attention, and turn-taking, which are often difficult to initiate spontaneously. The inclusion of peer-mediated interactions within the educational routine supports both socialization and academic learning.

The concept of the environment as pedagogy is not new, but in the context of ASD, it acquires special importance. Unlike in neurotypical development, where learning can occur in less structured and more dynamic social environments, students with ASD require explicit environmental scaffolds to access the curriculum and participate meaningfully in social life. This study confirms that the design of space, time, and interaction patterns is not peripheral but central to pedagogical effectiveness.

Additionally, the findings suggest that environmental predictability reduces behavioral incidents and increases task engagement. Anxiety and behavioral dysregulation, often labeled as “problem behaviors” in students with ASD, are frequently the result of environmental mismatch—a failure to provide clarity, structure, or appropriate sensory modulation (Schopler, 1997). By ensuring clarity of expectations and reducing uncertainty, teachers can preempt many of these challenges, shifting the focus from behavior management to learning facilitation.

Importantly, the environment also functions as a communication partner. Visual schedules, pictorial instructions, and structured routines “speak” to the student, guiding action, supporting memory, and making abstract time sequences visible and understandable. This aligns with the concept of the environment as a semiotic system, where signs and symbols are embedded in the learning context (Vygotsky, 1929; Bruner, 1960) to mediate understanding.

Finally, the structured environment fosters teacher-student co-regulation. Teachers are not merely providing materials but are actively modulating the learning

environment in real time, adjusting levels of support based on student responses, and gradually shifting from direct guidance to fostering independence. This dynamic interaction reflects a dialogic process between educator, student, and environment, where all elements are interdependent.

In summary, the data confirm that the educational environment is an integral component of the support system, not an external condition but a designed pedagogical tool. Adaptation of the environment is a form of teaching, and structured spaces become mediators of learning, communication, and social participation. This reinforces the necessity of viewing support not as the provision of additional services but as the systemic design of educational experiences where environment, instruction, and interaction are seamlessly integrated.

## **5.5 The SPARK Model: Foundations, Structure, and Implementation**

### **5.5.1 Conceptual Basis and Foundations**

The SPARK Model—an acronym for Supportive Environment, Partnership (Accompaniment), Autonomy, Results, and Communication—was conceptualized as a direct outcome of the empirical findings from this study. Rather than being a pre-defined system, SPARK is the result of factor analysis of real educational practices, observations, and interactions within inclusive classrooms involving students with Autism Spectrum Disorders (ASD). It synthesizes the factors with the highest statistical weight into a comprehensive framework for educational support.

SPARK challenges the conventional educational paradigm that emphasizes only teaching and learning as linear processes. Instead, it redefines the educational situation as a dynamic, multi-layered process, where environmental adaptation, differentiated instruction, and student autonomy are essential components. Each element of the SPARK model responds to concrete developmental needs, aiming to create a learning environment that fosters engagement, growth, and social connection.

At the heart of SPARK is the notion of achievement as a pathway to comprehensive autonomy. Achievements are not viewed merely as academic outcomes but as indicators of adaptive, communicative, and cognitive development, directly linked to the student's personal progress and social integration. Each activity within the educational process must lead to visible and shared achievements, contributing to the student's self-esteem, motivation, and participation in the learning community.

### **5.5.2 Core Components of SPARK**

- 1) Supportive Environment (S) - the first element of the SPARK model involves creating an adapted and flexible educational environment, tailored to the individual characteristics and potential of each student. This includes organizing the physical space, materials, and resources in ways that are accessible, predictable, and supportive of learning and participation. For students with ASD, environmental structure reduces anxiety, supports self-regulation, and facilitates active engagement.



- 2) Partnership / Accompaniment (P) - teachers and educational staff are not merely instructors but mentors and facilitators, who guide and accompany students throughout their learning journey. Accompaniment involves modeling behavior, mediating interactions, and providing timely support, especially during transitions or new situations. The teacher's role is to create a stable communicative and behavioral framework, fostering trust and promoting learning through empathic guidance.
- 3) Autonomy (A) - developing autonomy is a fundamental goal of SPARK. Students are encouraged to make choices, take initiative, and engage in self-directed activities, promoting confidence and independence. Autonomy is not imposed but nurtured gradually through structured opportunities, supported decision-making, and the progressive withdrawal of adult assistance as students gain competence.
- 4) Results (R) - achievements and progress are central to SPARK, serving as tangible markers of development and motivation. Learning outcomes are visible, shared, and celebrated, reinforcing the student's sense of competence. Results are not confined to academic metrics but include social, communicative, and adaptive milestones, essential for holistic development.
- 5) Communication (K) - communication is both a goal and a medium within the SPARK framework. It involves teaching students to express their needs, ideas, and emotions, using verbal, visual, or technological means. Communication fosters social connection, self-advocacy, and collaboration, transforming the classroom into a dialogic space where students are active participants, not passive recipients of instruction.

### 5.5.3 SPARK Implementation Algorithm

The implementation of SPARK follows a seven-stage algorithm, reflecting the logic of inclusive education—from assessment to reflection:

Stage	Action
<b>1. Assessment</b>	Functional evaluation of the student's strengths, challenges, and needs across developmental domains. Contextual factors such as prior experiences, behavioral patterns, and environmental conditions are analyzed to define realistic, individualized goals.
<b>2. Planning</b>	Selection of activities tailored to the student's interests, learning pace, and capabilities. Activities are structured, visualized, and functional, integrating play, social stories, self-care tasks, and communication supports.
<b>3. Environmental Organization</b>	Adaptation of the physical and social learning environment: clear spatial zoning, sensory accommodations, and visual supports (schedules, pictograms). Technologies (analog and digital) are incorporated for communication and independent work.
<b>4. Accompaniment</b>	The teacher or support specialist actively guides the student, models behavior, interprets signals, and provides real-time support, particularly during transitions and peer interactions. The goal is to create a safe and structured learning interaction.

<b>5. Promoting Autonomy</b>	Students are encouraged to make choices and decisions, increasing their sense of control. Tools include choice boards, visual prompts, and minimal assistance strategies. Autonomy is developed progressively.
<b>6. Activity Execution</b>	Implementation of the planned learning activities, adapting to the student's rhythm, resources, and needs. Flexibility is maintained, ensuring engagement, participation, and success experiences.
<b>7. Progress Evaluation</b>	Ongoing monitoring of achievements through visual charts, individual progress graphs, and communication with families. Assessment informs the next cycle of planning and intervention.

#### 5.5.4 A Pedagogical Framework for Inclusive Growth

The SPARK Model represents a transformative approach to educational support, positioning learning as a dynamic, inclusive process rather than a linear transfer of knowledge. Rooted in the empirical findings of this study, SPARK integrates the essential elements of environment, accompaniment, autonomy, achievement, and communication into a comprehensive pedagogical system that responds to the specific developmental needs of students with Autism Spectrum Disorders (ASD).

Unlike traditional models of support, where assistance is often compensatory or remedial, SPARK embodies the principles of inclusive pedagogy by embedding support directly into the structure of teaching and learning. This model shifts the focus from individual deficits to contextual opportunities, allowing the student's strengths and capacities to guide the educational process.

At its core, SPARK views support not as an external addition to teaching but as an integral element of the learning environment itself. The model conceptualizes the educational process as a living system, where each component—environmental structure, guided interaction, autonomy development, achievement recognition, and communication—interacts with the others to create a continuous cycle of growth and participation.

#### 5.5.5 Educational Transformation Through SPARK

SPARK fosters a paradigm shift in the roles of teachers and students. The teacher transitions from a transmitter of knowledge to a partner in learning, facilitating an environment where the student becomes an active co-constructor of educational experiences. This participatory model cultivates:

- Empowered learners who are aware of their goals and are supported in their pathways toward independence.
- Collaborative learning contexts where students, educators, families, and specialists jointly contribute to decision-making and adaptation processes.
- Dynamic educational routines, continuously adjusted based on student progress, emotional regulation, and social engagement.

This approach aligns with the broader goals of inclusive education and social justice, ensuring that all students, regardless of their developmental profiles, have equitable access to meaningful learning and the opportunity to achieve personal and academic success.

Crucially, SPARK is not a fixed set of procedures or standardized program. It is a flexible framework that guides educators in creating situated learning experiences, adapting in real time to the needs, behaviors, and potentials of each learner. Its cyclical structure ensures that assessment, planning, execution, and reflection are not isolated events but are continuously interwoven throughout the educational process.

This flexibility makes SPARK applicable across various educational levels and settings, from early childhood education to secondary schools, and from mainstream classrooms to specialized support centers. The model is particularly suitable for complex learning profiles such as ASD, where traditional, rigid curricula may fail to accommodate the diversity of learning and communication styles.

One of the most significant contributions of SPARK is its capacity to build a culture of participation, belonging, and mutual respect within the classroom. By centering the student's achievements and personal growth as the primary goal, SPARK creates spaces of success, where students experience their own competencies and gain confidence in their abilities.

This sense of accomplishment fosters:

- Increased motivation to engage in learning and social activities.
- Improved self-esteem and a stronger sense of agency.
- Broadened opportunities for social interaction, peer relationships, and community inclusion.

The model recognizes that learning is not merely cognitive but emotional and social, and that for students with ASD, success in communication, socialization, and autonomy is equally critical as academic achievement.

For educators and support teams, SPARK provides a structured yet adaptable methodology for professional growth. Its algorithm encourages reflective practice, prompting teachers to:

- Analyze their own teaching environments.
- Consider the individual profiles of their students.
- Co-create learning pathways that prioritize participation and co-agency.
- Evaluate outcomes not only in terms of academic progress but also in terms of social inclusion and quality of life.

Through this reflective cycle, SPARK empowers educators to become designers of inclusive learning environments, capable of adjusting strategies based on observation, dialogue, and student feedback.

SPARK aligns with international calls for sustainable, systemic inclusion in education. It moves beyond individualized support plans confined to special education and offers a whole-classroom approach where:

- Support is not additional but embedded.
- Differentiation is not an exception but the norm.
- Collaboration between general educators, special educators, therapists, and families becomes standard practice.

In this way, SPARK serves as a bridge between research and practice, between policy and implementation, and between students' needs and educational possibilities.

The SPARK model provides a pedagogical pathway for inclusive growth, where the goal is not merely academic success but holistic development, active citizenship, and social integration. Through its focus on environmental adaptation, partnership, autonomy, achievement, and communication, SPARK ignites the conditions necessary for every student—particularly those with ASD—to thrive, learn, and belong.

In essence, SPARK is the catalyst (“the spark”) that transforms learning into a shared, meaningful, and life-enhancing experience.

## 6. Conclusion

This study contributes to the ongoing discourse on inclusive education and pedagogical support for students with Autism Spectrum Disorders (ASD) by presenting empirical evidence and conceptual innovation. The research confirms that structured, consistent, and individualized support strategies significantly improve adaptive, communicative, and cognitive functioning in students with ASD. These findings validate the shift from isolated therapeutic interventions to holistic, classroom-integrated support models, emphasizing participation, autonomy, and environmental adaptation.

The introduction and systematization of the SPARK Model (Supportive Environment, Partnership, Autonomy, Results, Communication) represent a scientifically grounded response to the complexities of teaching and supporting students with ASD. Rather than being a pre-determined set of instructions, SPARK is an emergent pedagogical framework, developed from direct observation, action research, and reflection on real educational practices. It addresses not only the academic dimensions of learning but also social inclusion, emotional growth, and personal development, positioning the student at the center of the educational process.

By uniting environmental structuring, active adult accompaniment, student autonomy, achievement orientation, and communicative empowerment, SPARK creates a comprehensive system for inclusive education. It challenges traditional, linear models of teaching, advocating for dynamic, responsive, and participatory learning environments, where support is an organic part of pedagogy—not an external service.

The model also promotes a new professional culture among educators, fostering collaboration between teachers, specialists, families, and students themselves. It encourages reflective practice, data-driven decision-making, and flexible adaptation to the individual needs of each learner. The SPARK framework bridges the gap between theory and practice, providing tools for educators to design, implement, and sustain inclusive educational experiences that lead to real, measurable progress.

Given its flexible structure, the SPARK model can be adapted and tested in various educational contexts beyond ASD, including other forms of neurodiversity and special educational needs. Future research may focus on:

- Expanding the application of SPARK across diverse cultural and institutional settings.
- Developing digital tools and resources aligned with the SPARK components.
- Training programs for educators and support teams based on the SPARK methodology.

In essence, the SPARK Model provides the “spark” that ignites inclusive education, transforming classrooms into environments of growth, participation, and mutual learning. It empowers students with ASD to achieve academic success, personal fulfilment and social belonging. The model fosters an educational process where every learner has the right and the opportunity to express, develop, and connect, making inclusion not just a goal, but a lived reality.

### **Conflict of Interest Statement**

The author declares no conflicts of interest.

### **About the Author**

Hristina R. Fidosieva is a Senior Lecturer PhD at the Faculty of Education, specializing in the field of special pedagogy. Her academic focus includes the education and support of children with special educational needs, with particular emphasis on neurodevelopmental disorders such as Autism Spectrum Disorder (ASD) and Attention Deficit Hyperactivity Disorder (ADHD). Fidosieva's research interests span inclusive education practices, development and implementation of individualized education plans (IEPs), teacher training, and the integration of assistive technologies to enhance learning outcomes for students with diverse abilities. She has published extensively in academic journals and presented at international conferences on topics related to special pedagogy and innovative educational strategies for students with special educational needs. Fidosieva is committed to advancing the understanding and application of evidence-based practices in the education of students with disabilities, ensuring equal access to quality education, and fostering collaboration among educators, families, and communities.

### **Notes**

<sup>1</sup> ATEC, <http://atec.barokamera.bg/>

<sup>2</sup> Autism Research Institute, <https://autism.org/>

<sup>3</sup> Ministry of Education and Science. (2016). Preschool and School Education Act. Available at: <https://www.mon.bg/regulation/zakon-za-preduchilishthnoto-i-uchilishthnoto-obrazovanie/>

<sup>4</sup> Ministry of Education and Science. (2017). Regulation on Inclusive Education. Available at: [https://www.mon.bg/nfs/2024/06/naredba-priobshtavashto\\_06082024.pdf](https://www.mon.bg/nfs/2024/06/naredba-priobshtavashto_06082024.pdf)

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