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ON-LINE SURVEY REPORT

ERASMUS+ PROGRAMME: UPSKILLING PRESERVICE TEACHERS TO SUPPORT YOUNG CHILDREN WITH AUTISM SPECTRUM DISORDER THROUGH DIGITAL SOCIAL STORIES

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TABLE OF CONTENTS

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INTRODUCTION

The increasing prevalence of Autism Spectrum Disorder (ASD) has underscored the critical need for effective training of educators and future professionals to address the diverse social and emotional needs of children with ASD. Early intervention is crucial for better outcomes, but many children start intervention late or never receive specialized support (Colombi, 2017). Inclusive education remains difficult to implement widely due to systemic fragmentation, late diagnosis, diverse support needs, and parental concerns (Siller et al., 2021). The complexities inherent in ASD—ranging from communication difficulties to social interaction challenges—require educators to possess specialized competencies and a deep understanding of individual differences.

Despite growing awareness and research into evidence-based intervention strategies, there remains considerable variability in how these competencies are taught and acquired across different countries. Teacher and student preparedness is influenced by both the theoretical and practical components of training programs. However, discrepancies in curriculum design, availability of resources, and institutional support contribute to significant differences in training quality and outcomes. While some educational systems emphasize extensive hands-on training and in-service professional development, others rely more heavily on pre-service coursework, which may not fully address the complexities of working with children with ASD.

Early childhood education for children with Autism Spectrum Disorder (ASD) faces numerous challenges. Educators struggle with understanding and managing behavior, creating inclusive environments, and overcoming socio-structural barriers like lack of training and resources (Lindsay et al., 2013; Raudeliūnaitė & Steponėnienė, 2020). Among the challenges faced by early childhood educators working with children with ASD are:

- Lack of Training and Resources: One of the primary challenges identified from educators' perspectives is the insufficient specialized training for supporting students with ASD. Many educators do not receive explicit training in ASD during their initial education, instead encountering the demands only when they become part of the daily caseload in their classrooms (Crain et al., 2022). Educators often report insufficient training in evidence-based practices for teaching children with ASD, which is crucial for successful inclusion in mainstream classrooms (D'Agostino & Douglas, 2020; Lindsay et al., 2014; Lindsay et al., 2013; Aylward & Neilsen-Hewett, 2021). There is a need for targeted professional development programs to equip teachers with the necessary skills and strategies (Aylward & Neilsen-Hewett, 2021).
- Behavioral Management: Managing challenging behaviors is a significant source of stress for teachers. Misinterpretation of behaviors can lead to missed opportunities for effective intervention (Hart & Whalon, 2013; Simó-Pinatella et al., 2021). Teachers need support in understanding the communicative functions of behaviors and in embedding social communication opportunities in classroom settings (Hart & Whalon, 2013).
- Creating an Inclusive Environment: Promoting inclusion for children with ASD in early childhood settings presents educators with significant pedagogical challenges. Building a climate of acceptance and understanding within the classroom is essential. This involves disability awareness, education, and sensitivity training for all students and staff (Lindsay et al., 2014; Lindsay et al., 2013). Teachers also emphasize the importance of teamwork within the school and building rapport with parents and students (Lindsay et al., 2014). Research indicates that, despite the positive effects of inclusive environments on the development of children with ASD, educators often struggle with adapting curriculum content and classroom interactions to address diverse learning needs (Silva & Bastos, 2025; , Silva et al., 2024)
- Self-Efficacy and Preparedness: Teachers often report high self-efficacy in general teaching practices but feel underprepared to address the specific needs of students with ASD. This gap highlights the necessity for ASD-specific professional development and

practical experience with ASD students during teacher training (Shelton, 2013; Corona et al., 2017).

- Systemic and Organizational Constraints: Beyond individual preparedness, systemic factors and organizational constraints are major impediments to effective inclusion. In many educational systems, educators report that the infrastructural and resource-based support required to implement inclusive practices is often lacking (Caeiro & Franco), 2021. Many educators express frustration with fragmented support networks and a lack of continuous collaboration with specialized professionals, which hampers comprehensive early intervention efforts (Boquist et al., 2025). These challenges are further exacerbated by bureaucratic procedures that limit the flexibility of educators to adapt teaching strategies to individual needs (Boquist et al., 2025). Teachers face socio-structural challenges such as inadequate school policies, lack of resources, and insufficient support from school administration (Lindsay et al., 2013; Raudeliūnaitė & Steponėnienė, 2020). Collaboration with other educators and parents is often difficult, further complicating the inclusion process (Raudeliūnaitė & Steponėnienė, 2020).
- Cultural and Attitudinal Barriers
  Educators' beliefs and attitudes have a substantial influence on the inclusion process. Empirical studies have revealed that when teachers adhere to a social relational model of disability, the inclusion of children with ASD improves markedly in terms of classroom dynamics and learning outcomes (Mackenzie et al., 2016). Conversely, adherence to the medical model without recognition of the individual's social context can lead to stigmatization and suboptimal educational practices. Educators must continually navigate their own biases while striving to implement culturally responsive and inclusive pedagogical practices (Boquist et al., 2025). The dual challenge of reconciling curricular expectations with a compassionate, individualized approach to teaching underscores the need for ongoing reflective practice and institutional support (Boquist et al., 2025).

These challenges stem from a need for specialized training, resources, and support to create inclusive and supportive learning environments. Targeted professional development programs

and evidence-based interventions could improve educators' competence and children's outcomes (Aylward & Neilsen-Hewett, 2021; Martinez et al., 2016).

Also pre-service teachers face several challenges in learning about autism, which impacts their ability to effectively support students with Autism Spectrum Disorder (ASD). Early childhood teacher preparation programs are a critical gateway for ensuring that future educators possess the necessary knowledge, attitudes, and skills to support children with ASD. Despite the recognized importance of including comprehensive ASD content in teacher education, several studies have reported persistent challenges in pre-service training.

Research indicates that pre-service teachers often lack sufficient theoretical and practical knowledge concerning ASD and frequently harbor misconceptions that may hinder their ability to implement inclusive pedagogical practices effectively (Sanz-Cervera et al., 2017; Al-Hiary & Migdady, 2019). Fourth-year students show improved knowledge compared to first-year students, but misconceptions remain prevalent, especially among those not specializing in special education (Sanz-Cervera et al., 2017). Moreover, factors such as limited opportunities for field experience and inadequate exposure to direct interactions with children with autism exacerbate these challenges (Rusli et al., 2023; Rakap et al., 2016). The direct experience not only clarifies the observable characteristics of ASD but also provides pre-service educators with opportunities to apply theoretical knowledge in practice. However, many teacher education programs do not consistently offer such immersive experiences, which contributes to a gap between theoretical understanding and practical applicability (Rusli et al., 2023; Rakap et al., 2016). In addition, the transition from theory to practice remains challenging when pre-service teachers are not provided with sustained, guided experiences that foster in-depth understanding of the unique needs of autistic children (Rakap et al., 2016). Specific training and experience significantly improve knowledge and reduce gaps, but they do not necessarily decrease misconceptions. This suggests that current university preparation may not fully equip future teachers to handle ASD effectively (Sanz-Cervera et al., 2017).

Pre-service teachers' attitudes towards the inclusion of children with ASD are influenced by their coursework, field experiences, and the perspectives of mentor teachers and administrators. Positive attitudes are crucial for successful inclusion, but these are not always adequately developed during pre-service training (D'Agostino & Douglas, 2020). Furthermore, studies

have shown that pre-service teachers in general education programs tend to have less positive attitudes towards children with autism compared to those in special education programs, possibly due to reduced exposure and inadequate training specific to ASD Park et al., 2010). Barrio et al. (Barrio et al., 2019; suggest that incorporating narrative fiction and reflective reading assignments into teacher education can subtly challenge preconceptions and contribute to a more empathetic understanding of autism. These interventions promote a shift from a deficit-based view to one that acknowledges the diverse potentials of children with ASD (Barrio et al., 2019). While explicit attitudes towards ASD can improve with short-term training, implicit attitudes are more resistant to change. This indicates a need for comprehensive training approaches that address both explicit and implicit biases (Lacruz-Pérez et al., 2023). Educators often start with heightened stigma towards autism, which can be reduced through participatory training that includes voices of autistic individuals. Such training also enhances understanding of universal design, benefiting diverse student populations (Waisman et al., 2022).

Pre-service teachers face challenges in acquiring adequate knowledge and developing positive attitudes towards autism. While training can improve explicit attitudes and knowledge, misconceptions and implicit biases remain challenging. Effective pre-service education should include comprehensive training, practical experience, and mentorship to better prepare teachers for inclusive education settings. By reforming teacher education to include robust and interdisciplinary ASD training modules, institutions can significantly improve pre-service teachers' preparedness and ultimately enhance educational outcomes for children with autism.

METHODOLOGY

A web-based questionnaire survey was conducted to collect data across multiple countries. The development process of the survey instrument involved several iterative stages. Initially, a preliminary draft of the questionnaire was prepared during a meeting with all project partners in Poland. During this meeting, a comprehensive plan was established to guide the survey's development. Each partner team subsequently proposed a set of questions, which were then collectively reviewed and revised during a follow-up meeting. At this stage, the final set of target questions was selected, and a standardized response format was adopted to ensure consistency across the instrument. The teacher survey consisted of 42 items, including 7 open-

ended questions, while the student survey comprised 34 items, including 5 open-ended questions.

The questionnaire was initially developed in English using Google Forms. Following its creation, the instrument was translated into the native languages of the participating regions—namely Polish, Romanian, Spanish, and Turkish—by the respective research teams. The survey links were distributed via email to the target populations. Educational institutions received a cover letter requesting that the survey be made available to teachers, while universities were asked to disseminate the link among students.

Prior to participation, respondents were provided with detailed information about the study, including the project title, the objectives of the research, and the assurance of anonymity. Participants were informed that their involvement was voluntary and that they could withdraw from the survey at any time without penalty. No incentives or remuneration were provided for participation in the study.

SAMPLE CHARACTERISTICS

An online questionnaire survey was conducted across four countries—Turkey, Spain, Poland, and Romania—with a total of 326 participants. A convenience sampling method was employed. The sample comprised both teachers and students, with teachers accounting for 59.5% and students 40.5% of respondents. Detailed demographic information, including age and gender, was collected (see Table 1). For example, the overall gender distribution showed that 73% of respondents were female, 9.5% male, and 1.2% identified as other, with 16.3% missing data.

Teachers' ages were reported as follows: in Turkey (M = 34.65, SD = 8.13; range 24–50 years), Spain (M = 42.59, SD = 8.49; range 26–59 years), Poland (M = 43.74, SD = 9.37; range 27–61 years), and Romania (M = 35.22, SD = 7.50; range 26–56 years). Among students, the majority (81.4%) were aged between 18 and 22 years, with smaller proportions in the 22–27 and above 28 age groups.

Further academic profiles were obtained from the student sample (see Table 2). Students were categorized by their field of study, with 46.9% specializing in special education, 24.7% in

primary education, and 16% in other fields. Nearly all student respondents were enrolled in bachelor's degree programs (91.2%), with a smaller proportion pursuing master's or second degree studies.

Teacher profiles were also detailed (see Table 3). Professional roles among teachers included preschool teachers (40.9%), special education teachers (37.9%), and elementary school teachers (8.3%). In addition, data on the types of educational settings and the specific age groups of children served were collected. The reported age groups of children served ranged from 3 to 7 years, reflecting the intended scope of the project.

Table 1.Number of participants, age and gender

	Turkiye	Spain	Poland	Romania	Whole sample
Number of participants					
-All	75	53	118	80	326
-Teachers	32 (42,7%)	28 (52,8%)	50 (42,4%)	22 (27,5%)	132(59,5%)
-Students	43 (57,3%)	25 (47,2%)	68 (57,6%)	58 (72,5%)	194(40,5%)
Gender - All					
-Male	23 (30,7%)	3 (5,6%)	6 (5,1%)	2 (2,5%)	34 (10,4%)
-Female	52 (69,3%)	22 (41,5%)	108 (91,5%)	78 (97,5%)	260(79,7%)
-Other	0	0	4 (3,4%)	0	4 (1,2%)
-No data	0	28 (52,8%)	0	0	28 (8,5%)
Gender – Teachers					
-Male	6 (18,8%)	0	0	0	6 (4,5%)
-Female	26 (81,3%)	0	49 (98%)	22 (100%)	97 (73,5%)
-Other	0	0	1 (2%)	0	1 (0,8%)
-No data	0	28 (100%)	0	0	28 (21,2%)
Gender - Students					
-Male	17 (39,5%)	3 (12%)	6 (8,8%)	2 (3,4%)	28 (14,4%)
-Female	26 (60,5%)	22 (88%)	59 (86,8%)	56 (96,6%)	163 (84%)
-Other	0	0	3 (4,4%)	0	3 (1,5%)
-No data	0	0	0	0	0
Age					
-Teachers					
--M	M = 34,65	M = 42,59	M=43,74	M = 35,22	M = 39,85
--SD	SD = 8,13	SD = 8,49	SD= 9,37	SD = 7,50	SD = 9,49
--Min-Max	24-50	26 - 59	27 - 61	26-56	24-61
-Students					
-- 18-22y.o.	31 (72,1%)	17 (68%)	52 (79,4%)	56 (96,6%)	158 (81,4%)
-- 22-27y.o.	7 (16,3%)	7 (28%)	11 (16,2%)	0	25 (12,9%)
-- More then 28 y.o.	5 (11,6%)	1 (4%)	3 (4,4%)	2 (2,5%)	11 (5,7%)

Table 2. Students profile

	Turkiye	Spain	Poland	Romania	Whole sample
Field of study					
-Primary education	2 (4,7%)	23 (92%)	13 (19,1%)	13 (22,4%)	51 (23,6%)
-General pedagogy	0	0	24 (35,3%)	0	24 (12,4%)
-Special education	41 (95,3%)	2 (8%)	3 (4,4%)	45 (77,6%)	91 (46,9%)
-Other	0	0	28 (41,3%)	0	28 (14,4%)
Type of study					
-Bechelor's degree studies	43 (100%)	20 (80%)	53 (77,9%)	58 (100%)	174 (89,7%)
-Master's degree studies	0	2 (8%)	14 (20,6%)	0	16 (8,2%)
-Second degree studies	0	3 (12%)	1 (1,5%)	0	4 (2,1%)

Table 3. Teachers profile

	Turkiye	Spain	Poland	Romania	Whole sample
Professional role					
-Preschool Teacher	4 (12,5%)	20 (71,4%)	20 (40%)	10 (45,5%)	54 (40,9%)
-Special Education Teacher	17 (53,1%)	6 (21,4%)	15 (30%)	12 (54,5%)	50 (37,9%)
-Elementry School Teacher	0	0	11 (22%)	0	11 (8,3%)
-Other	11 (34,4%)	2 (7,2%)	4 (8%)	0	17 (5,2%)
Type of setting (multiple choice)					
-Public preschool	5	5	7	10	27
-Private preschool	2	1	1	4	8
-Therapeutic preschool	0	0	1	0	1
-Inclusive preschool	0	1	18	0	19
-Public Early Intervention Centre	0	0	0	0	0
-Private Early Intervention Centre	8	1	1	0	10
-Specjal Education Centre	18	0	3	0	21
-Public/Private School	3	26	10	4	43
-Inclusive School	0	1	10	2	13
-Special Education School	10	1	3	4	18
Type of class					
-General	4	17	37	8	66
-Inclusive	1	10	10	8	29
-Special/Therapeutic	27	3	3	6	39
Children's age group served (multiple choice)					
-3 y.o.	25	24	32	10	91
-4 y.o.	28	24	32	16	100
-5 y.o.	27	27	38	16	108
-6 y.o.	28	14	38	20	100
-7 y.o.	29	8	35	8	80

SURVEY RESULTS

TEACHER EXPERIENCE

For the four aspects of participants experience, non-parametric Kruskal–Wallis tests were conducted to examine differences across the four countries. Significant differences were observed for the three of four aspects. A Kruskal–Wallis test indicated a statistically significant difference in the number of children with ASD currently being worked with across countries, $H_{(3)} = 18.622$, $p < 0.001$, $\eta 2 = 0.12$. Post-hoc pairwise comparisons revealed that the values reported in Spain differed significantly from those in Romania and Turkey. No other significant differences were found between the remaining country pairs. The Kruskal–Wallis test for the total number of children with ASD worked with throughout professional careers was also significant, $H_{(3)} = 13.026$, $p < 0.01$, $\eta 2 = 0.08$. Subsequent pairwise analyses demonstrated that the responses from Spain were significantly lower (or higher, as the data indicate) than those from Poland and Romania. No additional significant differences emerged from the pairwise comparisons. Similarly, a significant difference was observed in the number of years of

teaching experience, $H_{(3)} = 12.961$, $p < 0.01$, $\eta 2 = 0.08$. Post-hoc comparisons showed that responses from Turkey significantly differed from those provided by Poland and Spain. No other statistically significant differences were detected among the remaining comparisons.

Table 4. Teachers experience

	Poland	Spain	Romania	Turkiye	Whole sample
How many children with ASD are you currently working with?	M = 4.50 (SD = 5.31) ; Avarage rank = 65.53	M = 1.93 (SD = 2.19) ; Avarage rank = 42.18	M = 5.36 (SD = 6.04); Avarage rank = 77.41	M = 4.19 (SD = 2.25); Avarage rank = 81.80	M = 4.02 (SD = 4.46)
How many children with ASD have you worked with throughout your professional career?	M = 33.60 (SD = 34.60); Avarage rank = 74.86	M = 10.25 (SD = 9.67); Avarage rank = 44.55	M = 31.77 (SD = 32.73); Avarage rank = 75.82	M = 14.72 (SD = 10.71) ; Avarage rank = 66.23	M = 23.77 (SD = 27.80)
How many years of experience do you have teaching (as a teacher or special educator)?	M = 16.52 (SD = 11.19) ; Avarage rank = 72.46	M = 17.43 (SD = 8.75) ; Avarage rank = 80.57	M = 13.36 (SD = 9.07); Avarage rank = 62.27	M = 9.84 (SD = 7.60); Avarage rank = 47.78	M = 14.57 (SD = 9.92)
How many years of experience do you have working with children with Autism Spectrum Disorder (ASD)?	M = 9.72 (SD = 6.29); Avarage rank =72.19	M = 8.96 (SD = 6.89); Avarage rank = 64.68	M = 9.95 (SD = 6.20); Avarage rank =71.95	M = 7.31 (SD = 5.64); Avarage rank = 55.45	M = 9.02 (SD = 6.27)

PARTICIPANTS TRAINING IN ASD AND INTERVENTION STRATEGIES

TEACHERS TRAINING

The data reveal substantial variability in teacher training related to ASD across the surveyed countries. Teachers in Turkiye consistently reported higher levels of training (especially in combined pre- and in-service, diagnostic, and behavioral therapy training), while teachers in Romania generally reported lower levels of training across several domains. These differences suggest that teacher preparedness for working with children with ASD may be considerably higher in Turkiye relative to Poland, Spain, and especially Romania.

- Relatively low proportion of teachers in Poland (12%) and Spain (7.1%) reported receiving pre-service ASD training, whereas 45.5% of Romanian teachers did.

- In-service training was more common overall (38.6%), though it was less frequent in Romania (18.2%).
- Notably, a substantial percentage of teachers in Turkiye (43.8%) received training in both pre- and in-service formats, and only 6.3% reported having no training, compared to 36.4% in Romania.
- The majority of teachers in Poland (74%), Spain (71.4%), and Turkiye (68.8%) reported receiving training on the social and emotional development of children with ASD.
- In contrast, only 45.5% of teachers in Romania reported such training, with an overall rate of 67.4%.
- Teachers in Turkiye reported the highest rate of diagnostic training (68.8%), while those in Romania reported the lowest (27.3%).
- Poland and Spain fell in between, with 50% and 39.3% respectively, resulting in an overall rate of 48.5%.
- Training in behavioral therapy was reported by 62.5% of teachers in Turkiye, compared to 42.9% in Spain, 34% in Poland, and only 27.3% in Romania—yielding an overall rate of 41.7%.

Table 5. Have you ever received any training related to Autism Spectrum Disorder (ASD)?

	Poland	Spain	Romania	Turkiye	All
Yes, during pre-service training	6 (12%)	2 (7,1%)	10 (45,5%)	5 (15,6%)	23 (17,4%)
Yes, during in-service training	24 (38%)	12 (42,9%)	4 (18,2%)	11 (34,4%)	51 (38,6%)
Both in-service and pre-service	9 (18%)	9 (32,1%)	0 (0%)	14 (43,8%)	32 (24,2%)
No	11 (22%)	5 (17,9%)	8 (36,4%)	2 (6,3%)	26 (19,7%)

Table 6. Did you receive any training regarding social and emotional development of children with ASD?

	Poland	Spain	Romania	Turkiye	All
Yes	37 (74%)	20 (71,4%)	10 (45,5%)	22 (68,8%)	89 (67,4%)
No	13 (26%)	8 (28,6%)	12 (54,5%)	10 (31,3%)	43 (32,6%)

Table 7. Did you receive any training regarding diagnosing ASD?

	Poland	Spain	Romania	Turkiye	All
Yes	25 (50%)	11 (39,3%)	6 (27,3%)	22 (68,8%)	64 (48,5%)
No	25 (50%)	17 (60,7%)	10 (31,3%)	10 (31,3%)	68 (51,5%)

Table 8. Did you receive any training regarding behavioral therapy?

	Poland	Spain	Romania	Turkiye	All

Yes	17 (34%)	12 (42,9%)	6 (27,3%)	20 (62,5%)	55 (41,7%)
No	33 (66%)	16 (57,1%)	16 (72,7%)	12 (37,5%)	77 (58,3%)

STUDENTS TRAINING

There is considerable heterogeneity across countries in terms of both the type and extent of training received. When considering opportunities to gain both practical and theoretical experience during their studies, Romanian students reported the highest exposure (approximately 69%), whereas only 16.2% of Polish students indicated such comprehensive exposure. In addition, a substantial proportion of Polish students completed fewer than 10 hours of practical training, whereas Romanian students more frequently reported between 10 and 50 hours, suggesting significant differences in hands-on experience across countries.

Furthermore, participation in ASD-related courses also varied considerably. Although over 40% of students overall engaged in courses as part of their studies, the percentage of those who took additional courses was markedly higher in Turkiye compared to Poland and Romania. Similarly, in the area of social and emotional development, nearly 40% of students received this training as an integral part of their curriculum; however, the rate of supplemental training was notably higher in Turkiye, indicating a more robust and comprehensive training framework in that region.

Training on diagnostic procedures for ASD also displayed marked variation, with Turkiye exhibiting the highest rate of training, while more than half of the respondents from Poland and Spain reported not having received diagnostic training. Moreover, when it comes to learning strategies for developing social and emotional skills in children with ASD, a majority of students (approximately 75% overall) reported that they had not had this opportunity—particularly in Poland and Spain.

Finally, exposure to early intervention strategies was unevenly distributed. For example, a high proportion of students from Romania (86.2%) and Turkiye (93.0%) reported learning about Applied Behavior Analysis (ABA), compared to a much lower percentage in Poland and Spain. Similar trends were observed for other intervention strategies such as Sensory Integration Techniques.

The results indicate that students' training experiences in ASD vary significantly across countries, with students in Turkiye and Romania generally receiving more extensive and comprehensive training compared to their counterparts in Poland and Spain.

Table 9. Have you had the opportunity to gain knowledge and experience in working with children with ASD during your studies?

	Poland	Spain	Romania	Turkiye	All
Yes(practical+theoretical)	11 (16,2%)	9 (36%)	40 (69%)	21 (48,8%)	81 (41,8%)
Yes(theoretical)	29 (42,6%)	3 (12%)	9 (15,5%)	16 (37,2%)	57 (29,4%)
Yes, only practical	5 (7,4%)	7 (28%)	7 (12%)	6 (14%)	25 (12,9%)
No	23 (33,8%)	6 (24%)	2 (3,4%)	0 (0%)	31 (16%)

Table 10. How many hours of practical training (or work) with children with ASD have you completed so far?

	Poland	Spain	Romania	Turkiye	All
Less then 10	52 (76,5%)	9 (36%)	10 (17,2%)	23 (53,5%)	94 (48,5%)
10 to 50h	10 (14,7%)	8 (32%)	33 (56,9%)	18 (41,9%)	69 (35,6%)
50 to 100h	1 (1,5%)	6 (24%)	5 (8,6%)	2 (4,7%)	14 (7,2%)
More then 100h	5 (7,4%)	2 (8%)	10 (17,2%)	0 (0%)	17 (8,8%)

Table 11. Have you participated in courses on working with children with ASD?

	Poland	Spain	Romania	Turkiye	All
Yes, as a part of my studies	37 (54,4%)	11 (44%)	27 (46,6%)	6 (14%)	81 (41,8%)
Yes - studies and courses	4 (5,9%)	5 (20%)	7 (12,1%)	33 (76,7%)	49 (23,5%)
Yes - additional courses	2 (2,9%)	1 (4%)	20 (34,5%)	4 (6,9%)	27 (13,9%)
No	25 (36,8%)	8 (32%)	4 (6,9%)	0 (0%)	37 (19,1%)

Table 12. Have you attended courses on the social and emotional development of children with ASD?

	Poland	Spain	Romania	Turkiye	All
Yes, as a part of my studies	40 (58,8%)	8 (32%)	26 (44,8%)	4 (9,3%)	78 (40,2%)
Yes - studies and courses	3 (,4%)	5 (20%)	6 (10,3%)	38 (88,4%)	52 (26,8%)
Yes - additional courses	1 (1,5%)	0 (0%)	16 (27,6%)	1 (2,3%)	18 (9,3%)
No	24 (35,3%)	12 (48%)	10 (17,2%)	0 (0%)	46 (23,7%)

Table 13. Have you attended courses on diagnosing ASD?

	Poland	Spain	Romania	Turkiye	All
Yes, as a part of my studies	23 (33,8%)	9 (36%)	31 (53,4%)	22 (51,2%)	85 (43,8%)
Yes - studies and courses	2 (2,9%)	2 (8%)	5 (8,6%)	18 (41,9%)	27 (13,9%)
Yes - additional courses	0 (0%)	0 (0%)	11 (19%)	3 (7%)	14 (7,2%)
No	43 (63,2%)	14 (56%)	11 (19%)	0 (0%)	68 (35,1%)

Table 14. Have you had the opportunity to learn about strategies for developing the social and emotional skills of children with ASD?

	Poland	Spain	Romania	Turkiye	All

Yes	10 (14,7%)	2 (8%)	20 (34,5%)	16 (37,2%)	48 (24,7%)
No	58 (85,3%)	23 (92%)	38 (65,5%)	27 (62,8%)	146 (75,3%)

Table 15. Which early intervention strategies have you learned about in practice or theory?

	Poland	Spain	Romania	Turkiye	All
Applied Behavior Analysis (ABA) - Yes/No	14 (20,6%)/54 (79,4%)	5 (20,0%)/20 (80,0%)	50 (86,2%)/8 (13,8%)	40 (93,0%)/3 (7,0%)	109 (56,2%)/85 (43,8%)
Speech and Language Therapy - Yes/No	26 (38,2%)/42 (61,8%)	10 (40,0%)/15 (60,0%)	52 (89,7%)/6 (10,3%)	20 (46,5%)/23 (53,5%)	108 (55,7%)/86 (44,3%)
Occupational Therapy (OT) - Yes/No	40 (58,8%)/28 (41,2%)	13 (52,0%)/12 (48,0%)	34 (58,6%)/24 (41,4%)	34 (79,1%)/9 (20,9%)	121 (62,4%)/73 (37,6%)
Social Skills Training - Yes/No	20 (29,4%)/48 (70,6%)	22 (88,0%)/3 (12,0%)	42 (72,4%)/16 (27,6%)	38 (88,4%)/5 (11,6%)	122 (62,9%)/72 (37,1%)
Visual Supports - Yes/No	25 (36,8%)/43 (63,2%)	8 (32,0%)/17 (68,0%)	40 (69,0%)/18 (31,0%)	35 (81,4%)/8 (18,6%)	108 (55,7%)/86 (44,3%)
Assistive Technologies - Yes/No	37 (54,4%)/31 (45,6%)	12 (48,0%)/13 (52,0%)	34 (58,6%)/24 (41,4%)	22 (51,2%)/21 (48,8%)	105 (54,1%)/89 (45,9%)
Sensory Integration Techniques - Yes/No	47 (69,1%)/21 (30,9%)	14 (56,0%)/11 (44,0%)	51 (87,9%)/7 (12,1%)	34 (79,1%)/9 (20,9%)	146 (75,3%)/48 (24,7%)
Play-Based Therapy - Yes/No	36 (52,9%)/32 (47,1%)	17 (68,0%)/8 (32,0%)	26 (44,8%)/32 (55,2%)	19 (44,2%)/24 (55,8%)	98 (50,5%)/96 (49,5%)
Behavioral Support Plans (BSP) - Yes/No	14 (20,6%)/54 (79,4%)	5 (20,0%)/20 (80,0%)	50 (86,2%)/8 (13,8%)	40 (93,0%)/3 (7,0%)	109 (56,2%)/85 (43,8%)
Emotional Regulation Strategies - Yes/No	26 (38,2%)/42 (61,8%)	10 (40,0%)/15 (60,0%)	52 (89,7%)/6 (10,3%)	20 (46,5%)/23 (53,5%)	108 (55,7%)/86 (44,3%)

WORKING WITH ASD / PRACTICE

TEACHERS

The data reveal notable cross-country variations in both the implementation of specific intervention methods and the challenges encountered in developing social–emotional skills in children with ASD. According to the findings, there is significant variability in the use of early intervention strategies. For instance, Applied Behavior Analysis (ABA) is employed by a considerably higher percentage of teachers in Turkiye compared to those in Poland, Spain, and Romania. Similarly, Social Skills Training and Visual Supports are widely implemented across all regions, though the affirmative responses are highest in Turkiye and Romania. In contrast, the use of Assistive Technologies shows marked discrepancies, with very low usage reported in Spain compared to substantially higher rates in Turkiye.

Qualitative responses regarding strategies to develop social–emotional skills indicate that teachers generally prioritize emotion regulation techniques, behavioral modeling, role-playing, and the use of visual supports and social stories. While similar approaches are noted across countries, the emphasis varies; for example, Spanish educators highlight role-playing and audiovisual modeling, whereas Polish and Romanian educators tend to focus on traditional modeling methods and didactic games.

Institutional support for ASD-related interventions also varies. Polish institutions tend to provide extensive speech therapy and individual psychological support, while Spanish settings are characterized by structured support through specialized TEA classrooms and consistent in-class assistance. Romanian schools appear to offer more limited support, particularly in areas such as occupational therapy and the provision of teaching aids. In Turkiye, in-service training, supervision, and the availability of tangible materials are reported at higher levels, suggesting a robust support framework.

When assessing the importance of social–emotional skills, teachers across all regions consistently rate competencies such as eye contact, social cue recognition, and initiating interactions as highly important, with mean ratings generally ranging between 4.0 and 4.5 on a 5-point scale. In terms of prioritization, key skills include emotion recognition and effective social communication, although aspects like cognitive flexibility and conflict resolution receive varied attention.

Teachers identify several challenges in developing social–emotional skills during their work. Common obstacles include adapting lessons to diverse learning styles, maintaining engagement and focus, managing meltdowns or heightened emotional reactions, and teaching abstract concepts such as empathy. Average challenge ratings suggest moderate difficulties overall, with some countries reporting higher levels of challenge in specific areas.

The data suggest that teachers in Turkiye and Romania generally report more extensive use of intervention methods and institutional support compared to their counterparts in Poland and Spain, highlighting the influence of regional differences on the preparedness and approaches in ASD therapy.

Table 16. What kind of early intervention strategies do you use when addressing the needs of children with ASD?

	Poland	Spain	Romania	Turkiye	All

Applied Behavior Analysis (ABA) - Yes/No	18 (36,0%) / 32 (64,0%)	4 (14,3%) / 24 (85,7%)	8 (36,4%) / 14 (63,6%)	27 (84,4%) / 5 (15,6%)	57 (43,2%) / 75 (56,8%)
Speech and Language Therapy - Yes/No	18 (36,0%) / 32 (64,0%)	14 (50,0%) / 14 (50,0%)	12 (54,5%) / 10 (45,5%)	16 (50,0%) / 16 (50,0%)	60 (45,5%) / 72 (54,5%)
Occupational Therapy (OT) - Yes/No	31 (62,0%) / 19 (38,0%)	7 (25,0%) / 21 (75,0%)	6 (27,3%) / 16 (72,7%)	16 (50,0%) / 16 (50,0%)	60 (45,5%) / 72 (54,5%)
Social Skills Training - Yes/No	38 (76,0%) / 12 (24,0%)	21 (75,0%) / 7 (25,0%)	20 (90,9%) / 2 (9,1%)	32 (100,0%) / 0 (0,0%)	111 (84,1%) / 21 (15,9%)
Visual Supports - Yes/No	38 (76,0%) / 12 (24,0%)	28 (100,0%) / 0 (0,0%)	20 (90,9%) / 2 (9,1%)	32 (100,0%) / 0 (0,0%)	118 (89,4%) / 14 (10,6%)
Assistive Technologies - Yes/No	31 (62,0%) / 19 (38,0%)	5 (17,9%) / 23 (82,1%)	4 (18,2%) / 18 (81,8%)	27 (84,4%) / 5 (15,6%)	67 (50,8%) / 65 (49,2%)
Sensory Integration Techniques - Yes/No	47 (94,0%) / 3 (6,0%)	26 (92,9%) / 2 (7,1%)	18 (81,8%) / 4 (18,2%)	31 (96,9%) / 1 (3,1%)	122 (92,4%) / 10 (7,6%)
Play-Based Therapy - Yes/No	20 (40,0%) / 30 (60,0%)	20 (71,4%) / 8 (28,6%)	10 (45,5%) / 12 (54,5%)	30 (93,8%) / 2 (6,3%)	80 (60,6%) / 52 (39,4%)
Behavioral Support Plans (BSP) - Yes/No	42 (84,0%) / 8 (16,0%)	24 (85,7%) / 4 (14,3%)	12 (54,5%) / 10 (45,5%)	28 (87,5%) / 4 (12,5%)	106 (80,3%) / 26 (19,7%)
Emotional Regulation Strategies - Yes/No	18 (36,0%) / 32 (64,0%)	4 (14,3%) / 24 (85,7%)	8 (36,4%) / 14 (63,6%)	27 (84,4%) / 5 (15,6%)	57 (43,2%) / 75 (56,8%)

Table 17. What kind of strategies do you use to develop social and emotional skills of children with ASD?

Support Category	Poland	Spain	Romania	Turkey
1. Emotion Regulation Strategies	• Using emotional thermometers • Teaching self-regulation (e.g., breathing techniques) • Drama play to develop emotional skills	– (No explicit responses)	• Simple breathing techniques • Emotion regulation exercises	– (Not explicitly mentioned)
2. Behavioral Modeling / Strategies	• Social/behavioral modeling and discussion of strategies	• ABC Method • Modeling behaviors through image analysis	• Modeling and practicing appropriate behaviors	• Applied Behavior Analysis • Behavior analysis and positive behavior supports
3. Social Skills Training & Role-Playing	• Social skills training sessions • Role-playing and drama exercises • Board games to practice social interaction	• Role-playing games • Audiovisual modeling and activities to foster play and visual contact	• Role-playing and storytelling • Didactic games	• Play therapy with peer-supported role modeling

4. Visual Supports & Social Stories	• Use of pictograms, images, and predictable routines	• Social stories • Pictograms and "calm corner" with stories	• Visual supports (images, pictograms, diagrams)	• Social stories • Visual materials and play-based visual supports
5. Group Work / Peer Interaction	• Small group work and peer tutoring • Group activities	• Small-group workshops and peer integration activities	• Group integration games • Structured social interaction activities	• Group work and peer-supported strategies • Group lessons
6. Direct Instruction / Role-Modeling	• Simple, direct instructions and modeling	• Direct instructions with attention-centering techniques	– (Not explicitly mentioned)	• Direct instruction • Role modeling using natural, play-based teaching strategies

Table 18. What types of support does your institution offer?

	Poland	Spain	Romania	Turkiye	All
Speech Therapy – Yes/No	47 (94.0%)/3 (6.0%)	18 (64.3%)/10 (35.7%)	10 (45.5%)/12 (54.5%)	19 (59.4%)/13 (40.6%)	94 (71.2%)/38 (28.8%)
Occupational Therapy – Yes/No	28 (56.0%)/22 (44.0%)	3 (10.7%)/25 (89.3%)	10 (45.5%)/12 (54.5%)	15 (46.9%)/17 (53.1%)	56 (42.4%)/76 (57.6%)
Social Skills Training Programs – Yes/No	39 (78.0%)/11 (22.0%)	10 (35.7%)/18 (64.3%)	10 (45.5%)/12 (54.5%)	28 (87.5%)/4 (12.5%)	87 (65.9%)/45 (34.1%)
Individual Psychological Support – Yes/No	48 (96.0%)/2 (4.0%)	9 (32.1%)/19 (67.9%)	14 (63.6%)/8 (36.4%)	24 (75.0%)/8 (25.0%)	95 (72.0%)/37 (28.0%)
Sensory Integration – Yes/No	36 (72.0%)/14 (28.0%)	9 (32.1%)/19 (67.9%)	12 (54.5%)/10 (45.5%)	24 (75.0%)/8 (25.0%)	81 (61.4%)/51 (38.6%)
Behavioral Therapy – Yes/No	16 (32.0%)/34 (68.0%)	9 (32.1%)/19 (67.9%)	8 (36.4%)/14 (63.6%)	26 (81.3%)/6 (18.8%)	59 (44.7%)/73 (55.3%)
Auditory Trainings – Yes/No	12 (24.0%)/38 (76.0%)	8 (28.6%)/20 (71.4%)	0 (0.0%)/22 (100.0%)	10 (31.3%)/22 (68.8%)	30 (22.7%)/102 (77.3%)

Table 19. How does your school/preschool support the teacher when working with ASD?

Support Category	Poland	Spain	Romania	Turkey
1. Training & Workshops / Encouragement	• Encourages training • Organizes trainings, courses, and workshops	• Referral to specialist teacher (PT) • (Indirectly, structured support through TEA classrooms)	– (No distinct training items reported)	• Provides in-service training • Offers supervision and individual coaching • Facilitates external training opportunities

2. Materials & Tools	• Provides didactic materials and visual aids • Purchases/provides necessary tools and aids • Uses pictograms, images, routines, and diagrams	– (No specific mention of materials)	– (No specific mention of materials)	• Provides tangible materials and educational resources • Procures various materials to support instruction
3. Specialist & Consultation Support	• Access to specialists (e.g., psychologists, special educators) • Individual consultations and support in creating IEPs • Collaboration with parents and specialist care	• Support figure and specialized TEA classroom • Assistance from guidance department and scheduled support sessions	• Availability of a school psychologist • Presence of a special education teacher, support teacher, and school counselor	– (Not explicitly mentioned in the Turkish responses)
4. In-Class & Extracurricular Support	• Support during lessons and extracurricular activities	• Direct in-class support with orientation and guidance	– (No clear mention)	– (Support is delivered more through training and material provisions)
5. Organizational/Structural Support	• Organizes team meetings, projects, and training offers • Provides overall support through institutional initiatives	• Maintains specialized support structures (e.g., TEA classrooms, enclave classroom) • Regular support schedules (e.g., three sessions per week)	• Provides personalized space in school	• Offers various facilities and opportunities, contributing to an overall supportive organizational environment
6. Additional/Other Support	• Role modeling by special educators supporting teachers	– (No additional items)	– (No additional items)	• Provides verbal guidance and maintains ongoing communication • Demonstrates high positive motivation with feedback

Table 20. From your experience, how important are those skills in ASD therapy?

	Poland	Spain	Romania	Turkiye	All
Eye contact	M = 4.24 (SD = 0.98)	M = 3.96 (SD = 1.29)	M = 4.45 (SD = 0.80)	M = 4.53 (SD = 0.67)	M = 4.29 (SD = 0.98)

Turn-taking	M = 4.22 (SD = 0.95)	M = 3.89 (SD = 0.96)	M = 4.00 (SD = 0.76)	M = 4.22 (SD = 0.66)	M = 4.11 (SD = 0.86)
Sharing	M = 4.22 (SD = 1.00)	M = 4.07 (SD = 0.86)	M = 4.00 (SD = 0.62)	M = 4.19 (SD = 0.69)	M = 4.14 (SD = 0.84)
Joining activities	M = 4.46 (SD = 0.89)	M = 4.18 (SD = 0.94)	M = 4.36 (SD = 0.66)	M = 4.28 (SD = 0.68)	M = 4.34 (SD = 0.82)
Understanding social cues	M = 4.50 (SD = 0.81)	M = 4.29 (SD = 0.85)	M = 4.27 (SD = 0.77)	M = 4.34 (SD = 0.65)	M = 4.38 (SD = 0.78)
Initiating interactions	M = 4.52 (SD = 0.79)	M = 4.18 (SD = 0.98)	M = 4.36 (SD = 0.49)	M = 4.34 (SD = 0.70)	M = 4.38 (SD = 0.78)
Following group rules	M = 4.48 (SD = 0.84)	M = 4.29 (SD = 0.71)	M = 4.27 (SD = 0.63)	M = 4.34 (SD = 0.75)	M = 4.37 (SD = 0.76)
Recognizing emotions	M = 4.54 (SD = 0.86)	M = 4.57 (SD = 0.50)	M = 4.45 (SD = 0.51)	M = 4.41 (SD = 0.71)	M = 4.50 (SD = 0.70)
Labeling emotions	M = 4.42 (SD = 0.88)	M = 4.14 (SD = 0.76)	M = 4.09 (SD = 0.68)	M = 4.16 (SD = 0.85)	M = 4.24 (SD = 0.82)
Empathy	M = 4.48 (SD = 0.93)	M = 4.14 (SD = 0.89)	M = 4.09 (SD = 0.68)	M = 4.13 (SD = 0.94)	M = 4.26 (SD = 0.90)
Coping with changes	M = 4.50 (SD = 0.97)	M = 4.61 (SD = 0.50)	M = 4.09 (SD = 0.53)	M = 4.41 (SD = 0.67)	M = 4.43 (SD = 0.76)
Delayed gratification	M = 4.06 (SD = 1.06)	M = 3.75 (SD = 0.84)	M = 3.91 (SD = 0.68)	M = 4.00 (SD = 0.88)	M = 3.95 (SD = 0.92)
Expressing emotions appropriately	M = 4.40 (SD = 0.93)	M = 4.25 (SD = 0.80)	M = 4.18 (SD = 0.59)	M = 4.34 (SD = 0.79)	M = 4.32 (SD = 0.81)
Imaginative play	M = 4.02 (SD = 1.04)	M = 3.86 (SD = 0.93)	M = 4.27 (SD = 0.63)	M = 4.13 (SD = 0.87)	M = 4.05 (SD = 0.92)
Parallel play	M = 3.90 (SD = 1.02)	M = 3.89 (SD = 0.88)	M = 3.82 (SD = 0.59)	M = 4.22 (SD = 0.71)	M = 3.96 (SD = 0.86)
Cooperative play	M = 4.32 (SD = 0.91)	M = 4.21 (SD = 0.83)	M = 4.27 (SD = 0.63)	M = 4.41 (SD = 0.67)	M = 4.31 (SD = 0.79)
Role-playing	M = 4.16 (SD = 1.04)	M = 3.82 (SD = 1.12)	M = 4.27 (SD = 0.88)	M = 4.31 (SD = 0.69)	M = 4.14 (SD = 0.97)
Using social greetings	M = 4.30 (SD = 0.91)	M = 4.39 (SD = 0.57)	M = 4.27 (SD = 0.46)	M = 4.47 (SD = 0.57)	M = 4.36 (SD = 0.70)
Responding to names	M = 4.30 (SD = 0.97)	M = 4.39 (SD = 0.57)	M = 4.45 (SD = 0.51)	M = 4.53 (SD = 0.62)	M = 4.40 (SD = 0.75)
Asking for help	M = 4.46 (SD = 0.99)	M = 4.79 (SD = 0.42)	M = 4.45 (SD = 0.51)	M = 4.50 (SD = 0.67)	M = 4.54 (SD = 0.76)
Answering questions	M = 4.28 (SD = 0.95)	M = 4.25 (SD = 0.84)	M = 4.36 (SD = 0.49)	M = 4.56 (SD = 0.56)	M = 4.36 (SD = 0.78)
Simple negotiating	M = 4.12 (SD = 1.02)	M = 4.14 (SD = 0.89)	M = 4.00 (SD = 0.76)	M = 3.94 (SD = 0.84)	M = 4.06 (SD = 0.91)
Identifying problems	M = 4.14 (SD = 1.09)	M = 4.25 (SD = 0.89)	M = 4.18 (SD = 0.59)	M = 4.25 (SD = 0.76)	M = 4.20 (SD = 0.89)
Seeking support	M = 4.46 (SD = 1.01)	M = 4.54 (SD = 0.58)	M = 4.18 (SD = 0.59)	M = 4.50 (SD = 0.67)	M = 4.44 (SD = 0.79)

Note: Assessed on a 5-point Likert scale, ranging from 1 („Not important") to 5 („Extremely important").

Table 21. Based on your experience, which social and emotional skills should be the highest priority?

Category	Poland	Spain	Romania	Turkey

1. Emotional Regulation & Self-Regulation	• Emotional self-regulation • Coping with stress • Managing frustration	• Emotional regulation and awareness • Frustration management and tolerance	• Emotional self-regulation and frustration management	*(Not explicitly mentioned)*
2. Emotion Recognition, Expression & Labeling	• Recognizing and expressing emotions • Labeling emotions • Understanding others' emotions	• Recognition of emotions • Emphasis on empathy	• Understanding and expressing emotions • Recognition of one's own and others' emotions	• Understanding and describing emotions • Expressing emotions appropriately
3. Social Communication & Relationship Building	• Social communication (initiating contacts) • Expressing one's needs and understanding others' needs • Building joint attention • Reading others minds	• Listening, using greetings, and initiating communication • Help-seeking and expressing problems	• Expressing needs through functional communication • Optimal interaction with peers	• Expressing needs • Communication with peers • Social responsiveness (e.g., responding to one's name, following instructions)
4. Group Functioning & Cooperation	• Functioning in groups (cooperation, waiting one's turn)	• Cooperative work and social integration	• Group games and cooperative play • Peer interaction	• Cooperative and parallel play • Joint attention (eye contact and shared interest)
5. Cognitive Flexibility & Adaptability	• Flexibility of thinking (acceptance of change)	• Acceptance of changes	• Cognitive flexibility to cope with change	*(Not explicitly mentioned)*
6. Conflict Resolution & Problem-Solving	• Identifying problems	• Conflict resolution through dialogue • Social codes	• Problem-solving skills • Identifying problems	*(Not explicitly mentioned)*
7. Active Participation & Social Integration	• Mediation and integration • Collaboration within groups	• Active participation in activities	• Active participation and social integration	• Active participation and sharing in activities
8. Self-Awareness	*(Not explicitly mentioned)*	*(Not explicitly mentioned)*	*(Not explicitly mentioned)*	• Self-awareness (knowing oneself and one's family)

Table 22. What kind of challenges do you face in developing social-emotional skills in children with ASD during your work?

	Poland	Spain	Romania	Turkiye	All
1. Adapting lessons to diverse learning styles and needs of each child	M = 3.68 (SD = 0.98)	M = 4.07 (SD = 1.02)	M = 3.20 (SD = 0.79)	M = 3.06 (SD = 1.13)	M = 3.57 (SD = 1.07)
2. Maintaining engagement and focus during lessons	M = 3.80 (SD = 0.86)	M = 4.25 (SD = 0.75)	M = 3.80 (SD = 0.42)	M = 3.56 (SD = 0.98)	M = 3.84 (SD = 0.87)
3. Managing meltdowns or heightened emotional reactions during activities	M = 3.84 (SD = 0.82)	M = 4.07 (SD = 1.05)	M = 4.00 (SD = 0.67)	M = 3.34 (SD = 1.04)	M = 3.78 (SD = 0.96)
4. Teaching abstract ideas (e.g., empathy, perspective-taking)	M = 3.76 (SD = 0.85)	M = 4.04 (SD = 1.00)	M = 4.00 (SD = 0.67)	M = 3.38 (SD = 1.04)	M = 3.74 (SD = 0.95)
5. Balancing social–emotional learning with academic teaching requirements	M = 3.80 (SD = 0.97)	M = 4.04 (SD = 0.84)	M = 3.80 (SD = 0.79)	M = 3.34 (SD = 1.12)	M = 3.73 (SD = 0.99)
6. Limited knowledge about how to develop social and emotional skills in ASD	M = 3.26 (SD = 1.03)	M = 3.61 (SD = 1.03)	M = 4.00 (SD = 0.67)	M = 2.88 (SD = 1.10)	M = 3.30 (SD = 1.07)
7. Ensuring consistent reinforcement of skills outside the classroom	M = 3.62 (SD = 0.90)	M = 3.64 (SD = 0.87)	M = 3.80 (SD = 0.79)	M = 3.47 (SD = 0.95)	M = 3.60 (SD = 0.89)
8. Limited availability of teaching aids and resources	M = 2.94 (SD = 1.02)	M = 3.46 (SD = 1.10)	M = 3.80 (SD = 0.79)	M = 3.19 (SD = 1.20)	M = 3.20 (SD = 1.10)
9. Lack of diverse materials tailored to different skill levels and needs	M = 3.02 (SD = 1.02)	M = 3.43 (SD = 1.14)	M = 3.80 (SD = 0.79)	M = 3.34 (SD = 1.15)	M = 3.27 (SD = 1.08)

Note: Assessed on a 5-point Likert scale, ranging from 1 („Never") to 5 („Very often").

STUDENTS

Overall, students rated the importance of core social–emotional skills very highly. Subtle cross-national differences emerged: for instance, eye contact was deemed relatively less critical in Poland, whereas emotion recognition received the strongest endorsement in Spain. Overall, every skill achieved mean ratings near the top of the scale, indicating widespread agreement on their relevance to effective intervention. Variability across skills was most pronounced for delayed gratification, suggesting that practitioners differ in how they prioritize and implement strategies to foster this capacity. In contrast, adherence to group rules exhibited minimal dispersion, reflecting a shared consensus on its foundational role in therapeutic settings.

In contrast, when asked about the challenges they face in developing social–emotional skills, students reported moderate levels of difficulty. Notably, challenges related to adapting lessons to diverse learning styles and maintaining engagement during lessons were perceived as

particularly demanding in Spain, where the mean scores were higher than those reported in Poland and Romania. Additionally, while managing meltdowns and teaching abstract concepts such as empathy were also identified as challenges, these issues tended to be rated relatively similarly across the surveyed countries. Overall, these findings highlight that although students recognize the high importance of various social–emotional skills in ASD therapy, they also face considerable challenges in effectively developing these skills during their practical experiences, with certain challenges being more pronounced in specific national contexts.

Table 23. From your experience, how important are those skills in ASD therapy?

	Poland	Spain	Romania	Turkiye	All
Eye contact	M = 3.79 (SD = 1.08)	M = 4.52 (SD = 0.65)	M = 4.40 (SD = 0.84)	M = 4.12 (SD = 0.82)	M = 4.14 (SD = 0.95)
Turn-taking	M = 4.04 (SD = 0.83)	M = 4.48 (SD = 0.65)	M = 4.33 (SD = 0.71)	M = 4.02 (SD = 0.89)	M = 4.18 (SD = 0.80)
Sharing	M = 4.14 (SD = 0.77)	M = 4.56 (SD = 0.65)	M = 4.34 (SD = 0.74)	M = 3.98 (SD = 0.80)	M = 4.22 (SD = 0.77)
Joining activities	M = 4.11 (SD = 0.85)	M = 4.60 (SD = 0.65)	M = 4.57 (SD = 0.65)	M = 4.02 (SD = 0.91)	M = 4.29 (SD = 0.82)
Understanding social cues	M = 4.25 (SD = 0.76)	M = 4.44 (SD = 0.71)	M = 4.45 (SD = 0.71)	M = 4.26 (SD = 0.85)	M = 4.34 (SD = 0.76)
Initiating interactions	M = 4.07 (SD = 0.71)	M = 4.40 (SD = 0.71)	M = 4.34 (SD = 0.81)	M = 4.21 (SD = 0.89)	M = 4.23 (SD = 0.79)
Following group rules	M = 4.41 (SD = 0.73)	M = 4.68 (SD = 0.56)	M = 4.52 (SD = 0.57)	M = 4.09 (SD = 0.84)	M = 4.41 (SD = 0.72)
Recognizing emotions	M = 4.42 (SD = 0.71)	M = 4.80 (SD = 0.50)	M = 4.67 (SD = 0.57)	M = 4.21 (SD = 0.80)	M = 4.50 (SD = 0.70)
Labeling emotions	M = 4.45 (SD = 0.70)	M = 4.36 (SD = 0.76)	M = 4.50 (SD = 0.63)	M = 4.07 (SD = 0.86)	M = 4.37 (SD = 0.74)
Empathy	M = 4.55 (SD = 0.69)	M = 4.68 (SD = 0.56)	M = 4.57 (SD = 0.65)	M = 4.16 (SD = 0.90)	M = 4.41 (SD = 0.76)
Coping with changes	M = 4.39 (SD = 0.75)	M = 4.56 (SD = 0.58)	M = 4.57 (SD = 0.65)	M = 4.16 (SD = 0.81)	M = 4.47 (SD = 0.71)
Delayed gratification	M = 3.85 SD = 0.83)	M = 4.76 (SD = 0.52)	M = 4.66 (SD = 0.61)	M = 3.91 (SD = 0.89)	M = 4.42 (SD = 0.79)
Expressing emotions appropriately	M = 4.55 (SD = 0.68)	M = 4.48 (SD = 0.59)	M = 4.52 (SD = 0.66)	M = 4.26 (SD = 0.82)	M = 4.41 (SD = 0.72)
Imaginative play	M = 3.92(SD = 0.79)	M = 4.28 (SD = 0.74)	M = 4.00 (SD = 1.01)	M = 3.98 (SD = 0.91)	M = 3.98 (SD = 0.90)
Parallel play	M = 3.85(SD = 0.77)	M = 4.32 (SD = 0.75)	M = 4.50 (SD = 0.76)	M = 4.23 (SD = 0.87)	M = 4.42 (SD = 0.76)
Cooperative play	M = 4.19 (SD = 0.75)	M = 4.36 (SD = 0.64)	M = 4.31 (SD = 0.75)	M = 4.09 (SD = 0.87)	M = 4.13 (SD = 0.80)
Role-playing	M = 3.91 SD = 0.87)	M = 3.96 (SD = 0.73)	M = 4.12 (SD = 0.75)	M = 3.98 (SD = 0.89)	M = 3.97 (SD = 0.79)
Using social greetings	M = 4.05 (SD = 0.82)	M = 4.48 (SD = 0.77)	M = 4.38 (SD = 0.67)	M = 4.14 (SD = 0.77)	M = 4.27 (SD = 0.74)
Responding to names	M = 4.27 (SD = 0.72)	M = 4.36 (SD = 0.64)	M = 4.16 (SD = 0.77)	M = 4.07 (SD = 0.80)	M = 4.08 (SD = 0.81)
Asking for help	M = 4.45 (SD = 0.78)	M = 4.32 (SD = 0.80)	M = 4.41 (SD = 0.84)	M = 4.19 (SD = 0.82)	M = 4.23 (SD = 0.83)

Answering questions	M = 4.10 (SD = 0.79)	M = 4.32 (SD = 0.75)	M = 4.60 (SD = 0.59)	M = 4.09 (SD = 0.92)	M = 4.34 (SD = 0.76)
Simple negotiating	M = 4.08 (SD = 0.85)	M = 4.64 (SD = 0.57)	M = 4.62 (SD = 0.64)	M = 4.16 (SD = 0.75)	M = 4.46 (SD = 0.73)
Identifying problems	M = 4.27 (SD = 0.78)	M = 4.44 (SD = 0.58)	M = 4.53 (SD = 0.71)	M = 4.07 (SD = 0.91)	M = 4.27 (SD = 0.80)
Seeking support	M = 4.41 (SD = 0.75)	M = 4.28 (SD = 0.84)	M = 4.19 (SD = 0.87)	M = 3.79 (SD = 0.91)	M = 4.08 (SD = 0.88)

Note: Assessed on a 5-point Likert scale, ranging from 1 („Not important") to 5 („Extremely important").

Table 24. What kind of challenges do you face in developing social-emotional skills in children with ASD during your intership work?

	Poland	Spain	Romania	Turkiye	All
1. Adapting lessons to diverse learning styles and needs of each child	M = 3.38 (SD = 1.22)	M = 4.36 (SD = 0.81)	M = 3.22 (SD = 0.84)	M = 3.79 (SD = 0.86)	M = 3.55 (SD = 1.05)
2. Maintaining engagement and focus during lessons	M = 3.49 (SD = 1.20)	M = 4.00 (SD = 0.82)	M = 3.64 (SD = 1.00)	M = 3.86 (SD = 0.83)	M = 3.68 (SD = 1.03)
3. Managing meltdowns or heightened emotional reactions during activities	M = 3.34 (SD = 1.23)	M = 4.00 (SD = 0.82)	M = 3.52 (SD = 1.10)	M = 3.84 (SD = 0.78)	M = 3.59 (SD = 1.07)
4. Teaching abstract ideas (e.g., empathy, perspective-taking)	M = 3.28 (SD = 1.18)	M = 4.00 (SD = 1.00)	M = 3.57 (SD = 1.14)	M = 3.79 (SD = 0.86)	M = 3.57 (SD = 1.10)
5. Balancing social–emotional learning with academic teaching requirements	M = 3.35 (SD = 1.09)	M = 4.12 (SD = 0.83)	M = 3.40 (SD = 1.17)	M = 3.81 (SD = 0.82)	M = 3.73 (SD = 0.99)
6. Limited knowledge about how to develop social and emotional skills in ASD	M = 3.16 (SD = 1.18)	M = 4.12 (SD = 0.78)	M = 3.14 (SD = 1.07)	M = 3.65 (SD = 0.87)	M = 3.39 (SD = 1.09)
7. Ensuring consistent reinforcement of skills outside the classroom	M = 3.22 (SD = 1.10)	M = 3.92 (SD = 0.95)	M = 3.34 (SD = 1.19)	M = 3.84 (SD = 0.78)	M = 3.48 (SD = 1.08)
8. Limited availability of teaching aids and resources	M = 3.26 (SD = 1.10)	M = 4.04 (SD = 0.68)	M = 3.26 (SD = 1.16)	M = 3.65 (SD = 1.20)	M = 3.45 (SD = 1.06)
9. Lack of diverse materials tailored to different skill levels and needs	M = 3.22 (SD = 1.05)	M = 4.12 (SD = 0.78)	M = 3.17 (SD = 1.20)	M = 3.86 (SD = 0.91)	M = 3.46 (SD = 1.10)

Note: Assessed on a 5-point Likert scale, ranging from 1 („Never") to 5 („Very often").

PARTICIPANTS PREPAREDNESS

TEACHERS

Participants rated their level of preparedness for working with children with ASD on a 5-point Likert scale ranging from "Very Poor" to "Excellent." Higher scores indicated a higher perceived preparedness. The responses were collected across several domains (e.g., understanding ASD characteristics, learning communication skills, behavioral interventions,

etc.) and compared across countries using the Kruskal–Wallis test. Significant differences were observed for domains 1, 3, 4, 5, 6, 7, 8, 10, 11, 12 and 13 (see Table 25).

An overall preparedness indicator (position 14) was also computed based on the average score across all domains; the Kruskal–Wallis analysis for this overall indicator was significant ($p < .001$), with Turkiye showing significantly higher average ranks than Spain and Romania, and Poland showing significantly higher avarage ranks than Spain.

Table 25. How do you rate your preparation to work with children with ASD in those domains?

	Poland (1)	Spain (2)	Romania (3)	Turkiye (4)	All	Kruskall-Waliis test
1. Working with children with ASD in general	M = 2.63 (SD = 1.15); Average rank = 66.33	M = 2.70 (SD = 0.85); Average rank = 55.11	M = 2.78 (SD = 0.99); Average rank = 48.41	M = 3.24 (SD = 0.90); Average rank = 89.17	M = 2.82 (SD = 1.03)	$H_{(3)}$=20.43; p<.001 ; η^2=0.14; 1,2,3<4
2. Understanding ASD characteristics	M = 3.50 (SD = 1.25); Average rank = 74.29	M = 3.64 (SD = 1.16); Average rank = 66.41	M = 3.64 (SD = 0.96); Average rank = 48.32	M = 3.72 (SD = 0.73); Average rank = 66.91	M = 3.61 (SD = 1.06)	$H_{(3)}$= 7.69; p=.053
3. Understanding sensory processing	M = 3.20 (SD = 1.30); Average rank = 78.33	M = 3.00 (SD = 1.14); Average rank = 49.07	M = 3.23 (SD = 0.93); Average rank = 52.95	M = 3.39 (SD = 0.85); Average rank = 72.58	M = 3.22 (SD = 1.10)	$H_{(3)}$= 15.36; p<.05 ; η^2=0.10 2,3 <1
4. Learning communication skills	M = 3.27 (SD = 1.26); Average rank = 75.61	M = 2.79 (SD = 0.93); Average rank = 37.04	M = 3.64 (SD = 0.93); Average rank = 66.91	M = 3.69 (SD = 0.82); Average rank = 77.77	M = 3.38 (SD = 1.08)	$H_{(3)}$= 24.29; p<.001; η^2=0.17; 2<1,3,4
5. Behavioral interventions	M = 2.69 (SD = 1.19); Average rank = 63.87	M = 2.83 (SD = 1.09); Average rank = 56.02	M = 3.13 (SD = 1.13); Average rank = 51.18	M = 3.48 (SD = 0.92); Average rank = 90.31	M = 3.00 (SD = 1.14)	$H_{(3)}$= 19.45; p<.001; η^2=0.13; 1,2,3<4
6. Assistive technologies	M = 2.37 (SD = 1.14); Average rank = 73.32	M = 2.06 (SD = 0.86); Average rank = 44.46	M = 2.54 (SD = 1.15); Average rank = 45.09	M = 3.09 (SD = 0.95); Average rank = 89.84	M = 2.53 (SD = 1.11)	$H_{(3)}$= 31.40; p<.001; η^2=0.22; 2,3<1,4 ;
7. Preparing individualized education plans	M = 2.86 (SD = 1.34); Average rank = 69.22	M = 2.87 (SD = 1.06); Average rank = 42.95	M = 3.20 (SD = 1.16); Average rank = 67.64	M = 3.61 (SD = 0.97); Average rank = 82.08	M = 3.12 (SD = 1.21)	$H_{(3)}$= 17.62; p<.001; η^2=0.11; 2<1,4
8. Social skills training	M = 3.04 (SD = 1.37); Average rank = 74.63	M = 2.85 (SD = 1.06); Average rank = 45.61	M = 3.36 (SD = 1.08); Average rank = 61.32	M = 3.77 (SD = 0.76); Average rank = 75.64	M = 3.26 (SD = 1.18)	$H_{(3)}$= 14.09; p<.01; η^2=0.09; 2<1,4
9. Inclusive practices	M = 2.35 (SD = 1.24); Average rank = 62.42	M = 3.15 (SD = 1.08); Average rank = 61.21	M = 3.38 (SD = 1.13); Average rank = 67.05	M = 3.59 (SD = 0.89); Average rank = 77.13	M = 3.02 (SD = 1.22)	$H_{(3)}$= 3.85; p=.277
10. Crisis management (meltdowns, sensory overload)	M = 2.60 (SD = 1.24); Average rank = 66.03	M = 2.66 (SD = 1.13); Average rank = 48.18	M = 3.13 (SD = 1.10); Average rank = 65.36	M = 3.39 (SD = 1.01); Average rank = 84.05	M = 2.92 (SD = 1.18)	$H_{(3)}$= 14.08; p<.01 ; η^2=0.09; 2<4
11. Collaboration with families	M = 3.08 (SD = 1.34); Average rank = 72.57	M = 3.28 (SD = 1.20); Average rank = 58.88	M = 3.53 (SD = 1.03); Average rank = 48.82	M = 3.80 (SD = 0.81); Average rank = 75.84	M = 3.39 (SD = 1.17)	$H_{(3)}$= 9.87; p<.05; η^2=0.05; 3<1,4
12. Use of digital tools/technologies in general	M = 3.11 (SD = 1.25);	M = 2.77 (SD = 1.23);	M = 3.08 (SD = 1.26);	M = 3.21 (SD = 0.96);	M = 3.07 (SD = 1.19)	$H_{(3)}$= 13.36; p<.01; η^2=0.08;

	Average rank = 78.04	Average rank = 56.02	Average rank = 47.27	Average rank = 70.86		3<1
13. Use of digital tools to support social & emotional development of children with ASD	M = 2.48 (SD = 1.13); Average rank = 69.05	M = 2.32 (SD = 1.05); Average rank = 52.09	M = 2.80 (SD = 1.19); Average rank = 51.09	M = 3.43 (SD = 0.92); Average rank = 85.72	M = 2.75 (SD = 1.16)	$H_{(3)}$= 16.87; p<.001; η^2=0.11; 2,3<4
14. OVERALL	M = 3.53 (SD = 0.81); Average rank = 71.89	M = 2.93 (SD = 0.90); Average rank = 47.21	M = 3.02 (SD = 0.95); Average rank = 50.32	M = 3.81 (SD = 0.67); Average rank = 86.08	M = 3.39 (SD = 0.88)	$H_{(3)}$= 20.45; p<.001; η^2=0.14; 2<1,4 ; 3<4

Note: Assessed on a 5-point Likert scale, ranging from 1 („Very Poor") to 5 („Excellent").

STUDENTS

Each domain was assessed separately and an overall preparedness indicator was derived by averaging scores across domains. Groups were compared using the Kruskal–Wallis test. Significant differences emerged in several domains such as Learning communication skills, Behavioral interventions, Assistive technologies, Preparing individualized education plans, Social skills training, Inclusive practices, Crisis management, and the overall preparedness indicator—where the post-hoc comparisons generally showed that students from Poland (and sometimes Spain) rated their preparedness lower than those from Romania and Turkiye. Detailed results are presented in Table 26.

Table 26. How do you rate your preparation to work with children with ASD in those domains?

	Poland (1)	**Spain (2)**	**Romania (3)**	**Turkiye (4)**	**All**	**Kruskall-Waliis test**
1. Working with children with ASD in general	M = 2.16 (SD = 0.94); Average rank = 74.32	M = 2.36 (SD = 0.57); Average rank = 86.98	M = 2.86 (SD = 0.83); Average rank = 116.85	M = 2.77 (SD = 0.68); Average rank = 114.16	M = 2.53 (SD = 0.86)	$H_{(3)}$= 26.37; p < .001; η^2=0.12; 1 <3, 4
2. Understanding ASD characteristics	M = 3.10 (SD = 1.24); Average rank = 80.68	M = 3.52 (SD = 1.00); Average rank = 98.88	M = 3.78 (SD = 0.84); Average rank = 113.79	M = 3.56 (SD = 0.73); Average rank = 101.33	M = 3.46 (SD = 1.03)	$H_{(3)}$= 12.53; p < .01 ; η^2=0.05; 1 <3
3. Understanding sensory processing	M = 2.69 (SD = 1.25); Average rank = 83.83	M = 3.00 (SD = 1.19); Average rank = 96.52	M = 3.24 (SD = 0.84); Average rank = 110.02	M = 3.12 (SD = 0.79); Average rank = 102.80	M = 2.99 (SD = 1.06)	$H_{(3)}$= 7.89; p < .05 ; η^2=0.03; 1<3
4. Learning communication skills	M = 2.76 (SD = 1.15); Average rank = 79.65	M = 2.72 (SD = 0.89); Average rank = 73.14	M = 3.60 (SD = 0.88); Average rank = 119.13	M = 3.42 (SD = 0.82); Average rank = 110.71	M = 3.15 (SD = 1.04)	$H_{(3)}$= 24.66; p < .001; η^2=0.11; 1,2 < 3,4
5. Behavioral interventions	M = 2.32 (SD = 1.04); Average rank = 73.11	M = 2.72 (SD = 0.94); Average rank = 91.08	M = 3.28 (SD = 1.02); Average rank = 119.32	M = 3.09 (SD = 0.75); Average rank = 110.37	M = 2.83 (SD = 1.04)	$H_{(3)}$= 26.47; p < .001; η^2=0.12; 1<3,4
6. Assistive technologies	M = 2.04 (SD = 1.01); Average rank = 75.39	M = 2.24 (SD = 0.93); Average rank = 82.96	M = 2.78 (SD = 1.04); Average rank = 112.21	M = 2.91 (SD = 0.84); Average rank = 121.08	M = 2.48 (SD = 1.04)	$H_{(3)}$= 25.68; p < .001; η^2=0.12; 1< 3,4 , 2<4
7. Preparing individualized education plans	M = 2.24 (SD = 1.09);	M = 2.84 (SD = 0.99);	M = 3.03 (SD = 1.09);	M = 3.23 (SD = 0.92);	M = 2.77 (SD = 1.12)	$H_{(3)}$= 26.84; p < .001;

	Average rank = 71.32	Average rank = 99.94	Average rank = 110.12	Average rank = 120.45		η^2=0.13; 1 <3, 4
8. Social skills training	M = 2.38 (SD = 1.15); Average rank = 70.90	M = 2.60 (SD = 0.87); Average rank = 78.58	M = 3.29 (SD = 1.01); Average rank = 112.94	M = 3.56 (SD = 0.73); Average rank = 129.74	M = 2.94 (SD = 1.10)	$H_{(3)}$= 39.48; p < .001; η^2=0.19; 1,2 < 3,4
9. Inclusive practices	M = 1.75 (SD = 0.89); Average rank = 49.40	M = 3.20 (SD = 0.91); Average rank = 112.28	M = 3.41 (SD = 1.06); Average rank = 122.84	M = 3.56 (SD = 0.73); Average rank = 130.79	M = 2.84 (SD = 1.21)	$H_{(3)}$= 83.96; p < .001; η^2=0.43; 1 < 2,3,4
10. Crisis management (meltdowns, sensory overload)	M = 2.06 (SD = 1.09); Average rank = 68.54	M = 2.60 (SD = 1.04); Average rank = 93.92	M = 3.07 (SD = 1.04); Average rank = 117.32	M = 3.07 (SD = 0.88); Average rank = 118.65	M = 2.65 (SD = 1.12)	$H_{(3)}$= 33.59; p < .001 ; η^2=0.16; 1<3,4
11. Collaboration with families	M = 2.43 (SD = 1.15); Average rank = 66.13	M = 2.96 (SD = 1.17); Average rank = 89.84	M = 3.62 (SD = 0.97); Average rank = 121.28	M = 3.56 (SD = 0.73); Average rank = 119.49	M = 3.10 (SD = 1.15)	$H_{(3)}$= 41.86; p < .001; η^2=0.20; 1<3,4
12. Use of digital tools/technologies in general	M = 2.71 (SD = 1.26); Average rank = 87.10	M = 2.64 (SD = 1.08); Average rank = 82.08	M = 3.28 (SD = 1.15); Average rank = 112.25	M = 3.07 (SD = 0.88); Average rank = 103.02	M = 2.95 (SD = 1.15)	$H_{(3)}$= 9.25; p < .05; η^2=0.03;
13. Use of digital tools to support social & emotional development of children with ASD	M = 2.13 (SD = 1.06); Average rank = 72.44	M = 2.24 (SD = 0.93); Average rank = 76.74	M = 2.97 (SD = 1.17); Average rank = 109.86	M = 3.40 (SD = 0.88); Average rank = 132.52	M = 2.68 (SD = 1.15)	$H_{(3)}$= 38.91; p < .001; η^2=0.19; 1 < 3,4 ; 2<4
14. OVERALL	M = 2.37 (SD = 0.82); Average rank = 65.23	M = 2.74 (SD = 0.71); Average rank = 85.84	M = 3.25 (SD = 0.75); Average rank = 120.96	M = 3.25 (SD = 0.67); Average rank = 123.67	M = 2.87 (SD = 0.85)	$H_{(3)}$= 43.07; p < .001; η^2=0.21; 1<3,4 ; 2<4

Note: Assessed on a 5-point Likert scale, ranging from 1 („Very Poor") to 5 („Excellent").

ASSISTIVE TECHNOLOGIES – EXPERIENCE, PRACTICE AND TRAINING

TEACHERS

The data reveal a varied landscape in the use and implementation of assistive technologies for early education among children with ASD across Poland, Spain, Romania, and Turkey. While nearly half (48.5%) of the respondents overall reported using assistive technologies, usage rates differ markedly by country – Turkey leads with 75.0%, whereas Romania lags at 27.3%. Table 28 indicates that a substantial proportion of educators, particularly in Spain (57.1%) and Romania (63.6%), never use these technologies to support social-emotional development, in contrast to only 9.4% of Turkish respondents reporting "Never."

Regarding digital competence, comfort levels with using digital technologies also vary. A notable proportion of Polish educators feel "Very comfortable" (24.0%), while Romanian respondents report higher discomfort, with 36.4% feeling "Very uncomfortable." This disparity

underscores the importance of targeted professional development to boost confidence and effective implementation, especially in regions where discomfort prevails.

Diversity of assistive technologies in use was also observer. Polish educators employ a broad spectrum—from devices like computers, tablets, and interactive whiteboards to specialized software applications and alternative communication tools—whereas Spanish, Romanian, and Turkish practices emphasize a mix of hardware (e.g., tablets and digital screens) and corresponding software applications tailored to language stimulation, social stories, or multimedia presentations.

Educators across all countries face issues such as poor internet connection, insufficient devices, and limited technical support. Notably, Romanian respondents report higher frequencies for challenges like poor internet connection and lack of technical support compared to their peers in other countries. These infrastructural barriers highlight a critical area for investment to enhance technology integration. Common themes across countries include a lack of training and knowledge, insufficient access to devices and software, time constraints for effective use, and communication difficulties with families. These findings suggest that improving training programs, investing in better infrastructure, and fostering stronger collaborative practices could significantly enhance the effectiveness of assistive technologies in early ASD education.

Table 27. Have you used assistive technologies in early education for children with ASD?

	Poland	Spain	Romania		Turkiye	All
Yes	23 (46.0%)	11 (39.3%)	6 (27.3%)		24 (75.0%)	64 (48.5%)
No	27 (54.0%)	17 (60.7%)	16 (72.7%)		8 (25.0%)	68 (51.5%)

Table 28. How often do you use assistive technologies in your classroom to support the social-emotional development of children with ASD?

	Poland	Spain	Romania	Turkiye	All
Never	21 (42.0%)	16 (57.1%)	14 (63.6%)	3 (9.4%)	54 (40.9%)
Rarely	7 (14.0%)	1 (3.6%)	2 (9.1%)	9 (28.1%)	19 (14.4%)
Sometimes	13 (26.0%)	6 (21.4%)	4 (18.2%)	14 (43.8%)	37 (28.0%)
Often	9 (18.0%)	3 (10.7%)	2 (9.1%)	6 (18.8%)	20 (15.2%)
Always	0 (0.0%)	2 (7.1%)	0 (0.0%)	0 (0.0%)	2 (1.5%)

Table 29. How comfortable do you feel using and implementing digital technologies and solutions in your work?

	Poland	Spain	Romania	Turkiye	All
Very uncomfortable	5 (10.0%)	0 (0.0%)	8 (36.4%)	0 (0.0%)	13 (9.8%)

Uncomfortable	9 (18.0%)	3 (10.7%)	2 (9.1%)	1 (3.1%)	15 (11.4%)
Neutral	15 (30.0%)	12 (42.9%)	6 (27.3%)	13 (40.6%)	46 (34.8%)
Comfortable	9 (18.0%)	11 (39.3%)	6 (27.3%)	12 (37.5%)	38 (28.8%)
Very comfortable	12 (24.0%)	2 (7.1%)	0 (0.0%)	6 (18.8%)	20 (15.2%)

Table 30. What kind of assistive technologies do you use?

Category	Poland	Spain	Romania	Turkey
Devices/Hardware	Computers, Tablets, Interactive carpet, Interactive whiteboards	Digital whiteboard, iPad, Tablet, Digital screen	Interactive board, Laptop	Tablet, Digital screen
Software/Applications	Educational robots, Virtual reality applications, Boardmaker, Clic, Proloquo2Go, Social Story, Wordwall, Autism & Autism Plus Package, Multimedia/E-Exercises, Kahoot, ARASAAC	Autismind app, High-tech communicator, Pictotraductor, Communicator for language stimulation	Soft educational, Emotionary, Touch and Learn – Emotions	Mobile applications and games, Interactive Story and Video Tools
Alternative Communication	Mówik, Go Talk, Let's Talk, Alternative communication	–	–	–
Multimedia/Presentation	Lessons based on presentations, YouTube	YouTube clips	–	YouTube short films
Other Support	Interactive toys, Internet, VR goggles	–	–	–

Table 31. How often do you face the following challenges regarding access to technology in your workplace?

	Poland	Spain	Romania	Turkiye	All
Lack of internet access	M = 2.26 (SD = 1.27)	M = 2.21 (SD = 1.34)	M = 3.09 (SD = 0.81)	M = 2.25 (SD = 1.27)	M = 2.39 (SD = 1.25)
Poor internet connection	M = 2.74 (SD = 1.32)	M = 2.71 (SD = 1.54)	M = 3.27 (SD = 0.98)	M = 2.63 (SD = 1.16)	M = 2.80 (SD = 1.29)

Insufficient number of devices (e.g., laptops, tablets, projectors)	M = 3.08 (SD = 1.54)	M = 2.75 (SD = 1.62)	M = 3.36 (SD = 1.18)	M = 2.94 (SD = 1.37)	M = 3.02 (SD = 1.46)
Lack of technical support or IT assistance	M = 3.18 (SD = 1.42)	M = 2.46 (SD = 1.40)	M = 4.18 (SD = 1.22)	M = 2.66 (SD = 1.41)	M = 3.07 (SD = 1.48)
Limited access to educational software or platforms	M = 3.26 (SD = 1.47)	M = 3.04 (SD = 1.43)	M = 3.91 (SD = 1.27)	M = 2.41 (SD = 1.36)	M = 3.11 (SD = 1.47)
Difficulty in obtaining funding for new technology	M = 3.70 (SD = 1.27)	M = 2.96 (SD = 1.35)	M = 4.27 (SD = 1.24)	M = 3.06 (SD = 1.46)	M = 3.48 (SD = 1.40)
Lack of training or knowledge to use available technology effectively	M = 3.40 (SD = 1.32)	M = 3.04 (SD = 1.23)	M = 3.64 (SD = 1.40)	M = 2.66 (SD = 1.23)	M = 3.18 (SD = 1.

Note: Assessed on a 5-point Likert scale, ranging from 1 („Never") to 5 („Very often").

Table 32. What kind of challenges do you face/see when you use assistive technologies to support the social and emotional needs of children with ASD?

Difficulty Category	Polish	Spanish	Romanian	Turkish
Professional Development / Training	• Lack of training.	• Lack of training. • Lack of knowledge	-	–
Access / Equipment	• Lack of access. • Lack of computer equipment.	-	–	• Lack of adequately prepared technology and software. • Limited technological devices. • Limited access to technology. • Lack of internet. • Internet access and information quality issues (information pollution). • Internet disconnections or weak connections. • Outdated devices.
Time Constraints	• Lack of time on an individual child. • Little time to search for tools and learn how to use them.	• Lack of time to organize the session. • Lack of time for preparation / program devices.	–	• Limited time for lesson implementation.

Collaboration & Communication	• Lack of positive response from the family home. • Difficulties in understanding during meetings with parents and acceptance of the situation. • Lack of willingness to cooperate.	-	• Lack of cooperation. • Mode of addressing / limited communication. • Misunderstanding. • Unjustified demands of the parents.	–
Behavioral / Social-Emotional / Integration Challenges	• Children want to use new technology too much. • The need to isolate the child during difficult moments. • Children's stimulation. • Short attention span and concentration. • Difficulties waiting for one's turn when using the interactive whiteboard.	• The many hours at home in front of screens hindering in-depth work on skills and behaviors. • Challenges with providing individualized attention.	• Repetitive and stereotyped behaviors. • Difficulties in maintaining engagement and acceptance of technology, and the risk of sensory overload. • Some technologies can be overwhelming (sounds, colors, complex interfaces).	• Screen dependency. • Problems with screen time. • Difficulties in generalizing learned skills among children. • Distracted attention.

STUDENTS

A majority of students overall (59.8%) reported that they had gained knowledge about assistive technologies during their studies; however, this knowledge is unevenly distributed, with Romanian (86.2%) and Turkish (67.4%) students reporting higher levels compared to their Polish (41.2%) and Spanish (36%) peers. In terms of formal training, nearly half (49%) of all students indicated that they had not attended any courses or workshops on the subject, although Turkish students notably reported 100% participation in some form of training, whether as part of their studies or through additional courses. Despite these training opportunities, most students still rated their own knowledge as either moderate (45.9%) or poor (36.1%), with only a small minority considering their expertise good or very good.

Observation of assistive technologies in real-world settings appears limited; only 28.4% of students had the opportunity to witness these technologies in practice, which may contribute to

the overall moderate confidence in their ability to implement them. Furthermore, when asked if they knew which specific technologies could be applied in working with children with ASD, only 28.9% answered affirmatively, indicating a substantial gap in practical knowledge despite the theoretical training received. The qualitative data reveal a variety of tools mentioned by students—from alternative communication devices and visual schedules to interactive boards and sensory toys—underscoring a diverse but uneven awareness of available resources.

Practical experience with these technologies is also scarce, as just 19.6% of students have ever used assistive technologies in their work with children with ASD. Among those who have used them, the majority (63.3%) remain neutral about the ease of use, while a notable fraction find them difficult to implement. Finally, the perceived availability of assistive technologies in internship or workplace settings is generally rated as fair by 44.6% of respondents, with a combined 46% considering the availability to be poor or very poor.

Overall, while a fair proportion of students have received theoretical training on assistive technologies, there remains a significant need for enhanced practical exposure, clearer identification of available tools, and improved integration of these resources in educational settings to better support children with ASD.

Table 33. During your studies, have you gained knowledge about assistive technologies used in working with children with ASD?

	Poland	Spain	Romania	Turkiye	All
Yes	28 (41,2%)	9 (36%)	50 (86,2%)	29 (67,4%	116 (59,8%)
No	40 (58,8%)	16 (64%)	8 (13,8)	14 (32,6%)	78 (40,2%)

Table 34. Have you attended courses or workshops on the use of assistive technologies in working with children with ASD?

	Poland	Spain	Romania	Turkiye	All
Yes, as a part of my studies	7 (10,3%)	2 (8%)	19 (32,8%)	6 (14%)	34 (17,5%)
Yes - studies and courses	2 (2,9%)	3 (12%)	6 (10,3%)	34 (79,1%)	45 (23,2%)
Yes - additional courses	4 (5,9%)	1 (4%)	12 (20,7%)	3 (7%)	20 (10,3%)
No	55 (80,9%)	19 (76%)	21 (36,2%)	0 (0%)	95 (49%)

Table 35. How would you assess your knowledge of assistive technologies for children with ASD?

	Poland	Spain	Romania	Turkiye	All
No knowledge	10 (14,7%)	5 (20,0%)	0 (0,0%)	2 (4,7%)	17 (8,8%)
Poor	35 (51,5%)	10 (40,0%)	18 (31,0%)	7 (16,3%)	70 (36,1%)
Moderate	21 (30,9%)	10 (40,0%)	27 (46,6%)	31 (72,1%)	89 (45,9%)

Good	2 (2,9%)	0 (0,0%)	12 (20,7%)	2 (4,7%)	16 (8,2%)
Very good	0 (0,0%)	0 (0,0%)	1 (1,7%)	1 (2,3%)	2 (1,0%)

Table 36. Have you had the opportunity to observe how assistive technologies are used in practice when working with children with ASD?

	Poland	Spain	Romania	Turkiye	All
Yes	10 (14,7%)	10 (40%)	23 (39,7%)	12 (27,9%)	55 (28,4%)
No	58 (85,3%)	15 (60%)	35 (60,3%)	31 (72,1%)	139 (71,6%)

Table 37. Do you know which assistive technologies can be used when working with children with ASD?

	Poland	Spain	Romania	Turkiye	All
Yes	10 (14,7%)	9 (36%)	24 (41,4%)	13 (30,2%)	56 (28,9%)
No	58 (85,3%)	16 (64%)	34 (58,6%)	30 (69,8%)	138 (71,1%)

Table 38. Do you know which assistive technologies can be used when working with children with ASD? If yes, please specify.

Country	Intervention Methods
Poland	• Devices/items supporting sleep modulation • Alternative communication (e.g., "Mówik" program) • Visual daily schedule • Play-based therapy • Tablets/pictograms for communication • Robot "Zosia" (interactive game)
Spain	• AACs through ICTs • Alternative communicators • Communicator (e.g., a tablet with a communicator) • Tablets • Communication facilitators (augmentative systems) • Visual support technologies (pictograms, regulatory elements)
Romania	• Smart board • CAA communication tablets/PECS devices (including specialized tablets) • Visual support systems (screen reader, Braille display, wheelchairs) • Educational applications and software (e.g., Autism iHelp) • Computers • Sensory toys and GoTalk • Tactile images and interactive maps • Zvibe for vibration stimulation • Visual tracking and communication devices • Technologies for augmentative communication

Turkey	• Technological equipment for motor development • Visual cards and eye contact training • Video modeling instruction • Video model AI • Video-, computer-, and robot-supported instruction • Visual supplements • Visual materials and low-level aids (e.g., blocks) • Activity schedule/visual chart/picture calendar

Table 39. Have you ever used assistive technologies when working with children with ASD?

	Poland	Spain	Romania	Turkiye	All
Yes	8 (11,8%)	6 (24,0%)	16 (27,6%)	8 (18,6%)	38 (19,6%)
No	60 (88,2%)	19 (76,0%)	42 (72,4%)	35 (81,4%)	156 (80,4%)

Table 40. If you used assistive technologies when working with children with ASD, how easy is it for you to use and implement digital technologies in your work?

	Poland	Spain	Romania	Turkiye	All
Very Easy	1 (1.5%)	0 (0.0%)	2 (6.7%)	1 (2.3%)	4 (2.4%)
Easy	8 (11.8%)	3 (12.0%)	1 (3.3%)	6 (14.0%)	18 (10.8%)
Neutral	43 (63.2%)	18 (72.0%)	16 (53.3%)	28 (65.1%)	105 (63.3%)
Difficult	6 (8.8%)	4 (16.0%)	8 (26.7%)	8 (18.6%)	26 (15.7%)
Very Difficult	10 (14.7%)	0 (0.0%)	3 (10.0%)	0 (0.0%)	13 (7.8%)

Table 41. How would you rate the availability of assistive technologies for children with ASD in the institutions where you have completed internships or worked?

	Poland	Spain	Romania	Turkiye	All
Very Poor	12 (17.6%)	4 (16%)	2 (3.4%)	10 (23.8%)	28 (14.5%)
Poor	15 (22.1%)	8 (32%)	16 (27.6%)	16 (38.1%)	55 (28.5%)
Fair	38 (55.9%)	12 (48%)	25 (43.1%)	11 (26.2%)	86 (44.6%)
Good	3 (4.4%)	1 (4%)	14 (24.1%)	5 (11.9%)	23 (11.9%)
Excellent	0 (0%)	0 (0.0%)	1 (1.7%)	0 (0.0%)	1 (0.5%)

NEEDS

TEACHERS

Teachers across all countries consider detailed training on ASD characteristics and ASD-specific teaching strategies extremely important. In Spain, educators rated both detailed training on ASD characteristics and ASD-specific teaching strategies as extremely important, and they also gave the highest ratings for visual support materials and ready-made paper-based materials.

In contrast, Turkish teachers assigned comparatively lower importance to detailed ASD training and especially to ready-made materials and digital tools, suggesting potential gaps in resource availability or differing priorities in that context. Polish educators reported high overall importance for both ASD-specific teaching strategies and visual support materials, as well as a strong emphasis on digital tools. Romanian teachers, while valuing detailed ASD training and teaching strategies, rated professional development workshops notably lower but placed the highest importance on ready-to-use lesson plans . Overall, across all countries, visual support materials and ASD-specific teaching strategies emerged as the most critical supports. Detailed training on ASD characteristics was also highly rated, while resources such as digital tools and ready-made lesson plans received somewhat lower, though still favorable, evaluations.

When evaluating the usefulness of different training formats, hands-on workshops and on-the-job training are rated as the most useful methods by educators. In contrast, online self-paced courses and live online training received lower ratings, indicating a preference for more interactive, practical training. Turkish educators exhibit a pronounced preference for accredited higher-education courses, emphasizing the value of structured, curriculum-based programs over more flexible formats. Spanish teachers, by contrast, demonstrate comparatively strong confidence in live online training, suggesting greater comfort with real-time virtual instruction as a component of professional development.

Qualitative responses indicate a strong demand for training that addresses crisis intervention, emotional management, and behavioral strategies. Teachers emphasized the need for aggression management and behavioral intervention strategies, crisis intervention and emotional regulation training, practical workshops, family engagement and inclusive education strategies. There is also a call for specialized training in alternative communication, supervision, and mentoring, with some country-specific suggestions for integrating digital tools and technology into classroom practices.

Teachers across countries predominantly emphasize the need to integrate more practical, hands-on training and internships into teacher education programs. Educators from all regions highlighted the importance of real-life practice—such as training workshops, vocational internships, and courses offering specific ASD tools (e.g., training in AAC and sensory integration)—to bridge the gap between theory and classroom application. Additionally, there

is a strong call for continuous professional development through ongoing training, active supervision, and mentoring, which would facilitate experience sharing and provide structured support from experienced colleagues. Overall, the data clearly show that future teacher training should be enriched with practical experiences and sustained professional support mechanisms to effectively prepare educators for working with children with ASD.

The overall need for specific assistive technologies is high, with interactive learning apps and social-emotional learning software being the most frequently endorsed. However, responses vary significantly by country. For instance, Romanian teachers unanimously indicated a need for communication devices. Similar discrepancies are evident in responses related to visual aids, sensory tools, and smartboards, suggesting that contextual factors and local educational practices strongly influence technology needs.

Table 42. How important do you think it is to have access to the following resources or supports for your work with children with Autism Spectrum Disorder (ASD)?

	Poland	Spain	Romania	Turkiye	All
Detailed training on ASD characteristics	M = 4.48 (SD = 0.93)	M = 4.75 (SD = 0.84)	M = 4.45 (SD = 0.67)	M = 4.28 (SD = 0.89)	M = 4.48 (SD = 0.87)
Training on ASD-specific teaching strategies	M = 4.66 (SD = 0.72)	M = 4.79 (SD = 0.69)	M = 4.45 (SD = 0.67)	M = 4.41 (SD = 0.61)	M = 4.59 (SD = 0.69)
Ready-made paper-based materials	M = 4.26 (SD = 0.94)	M = 4.54 (SD = 0.84)	M = 4.27 (SD = 0.77)	M = 3.53 (SD = 1.02)	M = 4.14 (SD = 0.97)
Peer support groups	M = 4.36 (SD = 0.80)	M = 4.57 (SD = 0.69)	M = 4.18 (SD = 0.96)	M = 4.31 (SD = 0.59)	M = 4.36 (SD = 0.76)
Digital tools	M = 4.42 (SD = 0.84)	M = 4.14 (SD = 1.01)	M = 4.00 (SD = 0.87)	M = 3.66 (SD = 1.10)	M = 4.11 (SD = 0.98)
Visual support materials	M = 4.60 (SD = 0.73)	M = 4.82 (SD = 0.48)	M = 4.45 (SD = 0.67)	M = 4.41 (SD = 0.61)	M = 4.58 (SD = 0.66)
Professional development workshops	M = 4.30 (SD = 1.04)	M = 4.39 (SD = 0.92)	M = 3.55 (SD = 1.34)	M = 4.31 (SD = 0.74)	M = 4.20 (SD = 1.04)
Ready to use lesson plans	M = 3.90 (SD = 1.22)	M = 4.18 (SD = 0.86)	M = 4.64 (SD = 0.66)	M = 3.94 (SD = 1.05)	M = 4.09 (SD = 1.05)

Note: Assessed on a 5-point Likert scale, ranging from 1 („Not imporatant") to 5 („Extremly important ").

Table 43. What kind of assisted technology training would be useful?

	Poland	Spain	Romania	Turkiye	All
Hands-on Workshops	M = 4.54 (SD = 0.73)	M = 4.71 (SD = 0.53)	M = 4.45 (SD = 0.51)	M = 4.28 (SD = 0.68)	M = 4.50 (SD = 0.66)
Online Self-Paced Courses	M = 3.74 (SD = 1.16)	M = 3.46 (SD = 1.14)	M = 3.82 (SD = 1.30)	M = 3.72 (SD = 0.89)	M = 3.69 (SD = 1.11)
Live Online Training	M = 3.92 (SD = 1.05)	M = 4.04 (SD = 0.96)	M = 3.82 (SD = 1.30)	M = 3.81 (SD = 0.86)	M = 3.90 (SD = 1.03)
Higher Education Courses	M = 3.82 (SD = 1.19)	M = 3.50 (SD = 1.00)	M = 3.82 (SD = 0.85)	M = 4.19 (SD = 0.82)	M = 3.84 (SD = 1.03)
Resource-Based Learning (guides, manuals)	M = 3.86 (SD = 1.01)	M = 4.07 (SD = 0.86)	M = 4.09 (SD = 0.81)	M = 3.94 (SD = 0.91)	M = 3.96 (SD = 0.92)

On-the-Job Training	M = 4.54 (SD = 0.76)	M = 4.68 (SD = 0.55)	M = 4.55 (SD = 0.67)	M = 4.41 (SD = 0.67)	M = 4.54 (SD = 0.68)

Note: Assessed on a 5-point Likert scale, ranging from 1 („Nont useful at all") to 5 („Extremly useful").

Table 44. What other training or strategies do you think are needed / What training would be most useful for you in your daily work with children with ASD?

Category	Poland	Spain	Romania	Turkey
1. Aggression Management Training	• Aggression and self-aggression management – how to deal with them • Aggression replacement training	• Strategies to cope with tantrums and disruptive behaviors in the large group	–	• Suppressing behavior and intervening in crying crises
2. Behavioral Strategies Training	• Systematizing knowledge on behavioral therapy • Behavioral strategies • Bilateral therapy	• Behavioral techniques to implement in the classroom	-	• Functional behavior analysis • Positive behavior supports • Problem behavior training / Behavior management • Behavior-based training
3. Crisis Intervention, Emotional Management Training & Problem Behavior	• Crisis intervention • Releasing anger and emotions • Outbursts of anger and aggression in class • Understanding difficult behaviors – strategies for prevention and positive intervention	• Crisis and emotional management • Emotional management, executive functions and theory of mind • Methodology and strategies • Solve behavior problems	• Management of behavioral crises • Management of problematic situations with ASD children	• Emotional load training
4. Workshops / Practical Training	• Preparation of educational programs and materials • Practical workshops • Workshops on specific methods • General practical training • Postgraduate studies • Studies in support and education • Training on socio-therapeutic classes	• Practical training • Applied workshops • Specific training in diagnosis and intervention	• Practical training • Assistance from a special education specialist	• Applied workshops • In-service training • Training with experts

	• Specific training in diagnosis and work			
6. Family Engagement / Parent Training	•Working with parents	• Family engagement training • Dealing with families • Parent workshops and resources	• Effective communication with parents of ASD students	• Parent training
7. Inclusive Education / Integration Training	• How to improve relationships in an integrated group • Development of children with ASD in mainstream groups	• Inclusive classroom strategies • Inclusive education training	–	–
8. Alternative Communication Training	• Alternative communication • Communication of children with ASD	• Augmentative communication systems	–	–
9. Sensory Integration / Sensory Education Training	• Sensory integration disorders and practical methods	–	–	–
10. Technology and Tools Training	–	• Classroom organization and design of robust communication boards in high technology	• Updates in the field of technology	• Technological teaching techniques • Assistive technology training • Visual and auditory resource-based training
11. Supervision and Mentoring	• Supervision in behavioral therapy	–	• Educational mentoring • Personal development and professional support groups	• Supervision for sharing experiences • Applied workshop and supervision training
12. Direct Instruction /	–	–	–	• Error-free teaching methods • Direct instruction

Teaching Methods				
13. Social Skills Training	–	• Training in social skills	–	• Social skills training

Table 45. How to improve training for teachers during their course of study?

Category	Poland	Spain	Romania	Turkey
1. Practical Hands-On Training and Internships	• Practical therapeutic methods • Training workshops • More practical training in autism • Vocational internships; more practical classes	• Sensitization courses • Courses with professional counseling • Practical internships • Specific ASD training courses • Real practice • Courses providing practical tools • Specific training in AAC • Training on sensory integration	• More initial training courses • More practical training • More practical elements integrated into courses	• Internships in different schools • Practical training in educational settingse • Extended practical and mentorship proces • Application with feedback and videos
2. Continuous Professional Development, Supervision, and Mentoring	• Ongoing training • Sharing experience • Supervision • Support from other teachers • Support groups in the district	• Support staff guiding in the classroom	–	• Continuous professional development • Active supervision • Mentor teacher observation
3. Access to Specialized Materials and Resources	• Greater access to specialized materials	–	–	–

Table 46. What kind of assisted technologies do you need?

	Poland	Spain	Romania	Turkiye	All
Communication devices (e.g., AAC) – Yes/No	31 (62.0%) / 19 (38.0%)	23 (82.1%) / 5 (17.9%)	10 (100.0%) / 0 (0.0%)	12 (37.5%) / 20 (62.5%)	76 (63.3%) / 44 (36.7%)
Social-emotional learning software – Yes/No	34 (68.0%) / 16 (32.0%)	21 (75.0%) / 7 (25.0%)	10 (100.0%) / 0 (0.0%)	15 (46.9%) / 17 (53.1%)	80 (66.7%) / 40 (33.3%)
Visual aids (e.g., PECS, schedules) – Yes/No	40 (80.0%) / 10 (20.0%)	21 (75.0%) / 7 (25.0%)	10 (100.0%) / 0 (0.0%)	10 (31.3%) / 22 (68.8%)	81 (67.5%) / 39 (32.5%)

Sensory tools (e.g., weighted vests, fidgets) – Yes/No	38 (76.0%) / 12 (24.0%)	24 (85.7%) / 4 (14.3%)	10 (100.0%) / 0 (0.0%)	13 (40.6%) / 19 (59.4%)	85 (70.8%) / 35 (29.2%)
Interactive learning apps – Yes/No	43 (86.0%) / 7 (14.0%)	25 (89.3%) / 3 (10.7%)	10 (100.0%) / 0 (0.0%)	12 (37.5%) / 20 (62.5%)	90 (75.0%) / 30 (25.0%)
Video modeling tools – Yes/No	30 (60.0%) / 20 (40.0%)	21 (75.0%) / 7 (25.0%)	10 (100.0%) / 0 (0.0%)	13 (40.6%) / 19 (59.4%)	74 (61.7%) / 46 (38.3%)
Behavior tracking or data collection tools – Yes/No	34 (68.0%) / 16 (32.0%)	23 (82.1%) / 5 (17.9%)	10 (100.0%) / 0 (0.0%)	13 (40.6%) / 19 (59.4%)	80 (66.7%) / 40 (33.3%)
Virtual reality tools for social learning – Yes/No	32 (64.0%) / 18 (36.0%)	21 (75.0%) / 7 (25.0%)	8 (80.0%) / 2 (20.0%)	18 (56.3%) / 14 (43.8%)	79 (65.8%) / 41 (34.2%)
Smartboards or interactive whiteboards – Yes/No	32 (64.0%) / 18 (36.0%)	14 (50.0%) / 14 (50.0%)	4 (40.0%) / 6 (60.0%)	12 (37.5%) / 20 (62.5%)	62 (51.7%) / 58 (48.3%)
Adapted keyboards or input devices – Yes/No	16 (32.0%) / 34 (68.0%)	18 (64.3%) / 10 (35.7%)	8 (80.0%) / 2 (20.0%)	15 (46.9%) / 17 (53.1%)	57 (47.5%) / 63 (52.5%)

STUDENTS

The data from the student surveys reveal a strong emphasis on practical and directly applicable resources and training strategies for working with children with ASD. In terms of resources, students assign high importance to both detailed training on ASD characteristics and training on ASD-specific teaching strategies. Visual support materials and digital tools are also highly valued, while ready-made paper-based materials and peer support groups receive moderately high ratings. Notably, Spanish respondents tend to rate several supports—especially visual support materials and detailed ASD training—more highly than their counterparts in other countries.

When considering assisted technology training formats, hands-on workshops and on-the-job training are perceived as the most useful. In contrast, online self-paced and live online trainings are rated lower, suggesting a preference for more interactive and experiential learning approaches. Interestingly, Turkish students rate online self-paced courses higher than those from Poland, Spain, and Romania, indicating some regional variation in training modality preferences.

Qualitative responses further underscore the need for a multifaceted training approach. Students highlight several critical categories, like communication training, crisis intervention, behavioral strategies, practical workshops and supervision. Other important areas include inclusive education, family engagement, and ASD-specific knowledge, all of which point to a desire for training that is both comprehensive and directly linked to classroom realities.

Regarding the need for assistive technologies, students show overwhelming support for conventional and visually oriented tools. Visual aids (e.g., PECS, schedules) and smartboards are considered essential, with over 90% of respondents in favor. Communication devices and sensory tools also receive high endorsements, while more advanced technologies such as video modeling tools and virtual reality applications garner comparatively lower support. This pattern indicates that while students recognize the importance of a broad range of assistive technologies, they prioritize tools that are straightforward, visually engaging, and readily integrated into everyday educational settings.

Table 47. How important do you think it is to have access to the following resources or supports?

	Poland	Spain	Romania	Turkiye	All
Detailed training on ASD characteristics	M = 3.97 (SD = 1.15)	M = 4.72 (SD = 0.54)	M = 4.10 (SD = 0.79)	M = 4.26 (SD = 0.66)	M = 4.17 (SD = 0.91)
Training on ASD-specific teaching strategies	M = 4.26 (SD = 0.97)	M = 4.68 (SD = 0.48)	M = 4.36 (SD = 0.69)	M = 4.16 (SD = 0.75)	M = 4.32 (SD = 0.80)
Ready-made paper-based materials	M = 3.76 (SD = 1.12)	M = 4.12 (SD = 0.83)	M = 3.62 (SD = 1.01)	M = 3.49 (SD = 0.88)	M = 3.71 (SD = 1.01)
Peer support groups	M = 3.69 (SD = 1.21)	M = 4.40 (SD = 0.71)	M = 3.88 (SD = 0.90)	M = 3.95 (SD = 0.84)	M = 3.90 (SD = 1.01)
Digital tools	M = 4.01 (SD = 0.94)	M = 4.16 (SD = 0.80)	M = 4.07 (SD = 0.79)	M = 4.07 (SD = 0.77)	M = 4.06 (SD = 0.84)
Visual support materials	M = 4.01 (SD = 0.98)	M = 4.76 (SD = 0.52)	M = 4.34 (SD = 0.81)	M = 4.09 (SD = 0.84)	M = 4.23 (SD = 0.88)
Professional development workshops	M = 4.04 (SD = 1.10)	M = 4.00 (SD = 0.82)	M = 4.36 (SD = 0.77)	M = 4.09 (SD = 0.81)	M = 4.14 (SD = 0.92)
Ready to use lesson plans	M = 3.85 (SD = 1.04)	M = 4.08 (SD = 0.86)	M = 4.05 (SD = 0.96)	M = 3.77 (SD = 1.00)	M = 3.92 (SD = 0.99)

Note: Assessed on a 5-point Likert scale, ranging from 1 („Not important ”) to 5 („Extremly important”).

Table 48. What kind of assisted technology training would be useful?

	Poland	Spain	Romania	Turkiye	All
Hands-on Workshops	M = 4.53 (SD = 0.87)	M = 4.44 (SD = 0.77)	M = 4.21 (SD = 0.72)	M = 4.42 (SD = 0.96)	M = 4.40 (SD = 0.84)
Online Self-Paced Courses	M = 3.43 (SD = 1.11)	M = 3.32 (SD = 0.99)	M = 3.50 (SD = 1.13)	M = 4.35 (SD = 1.02)	M = 3.64 (SD = 1.14)
Live Online Training	M = 3.37 (SD = 1.16)	M = 3.12 (SD = 1.05)	M = 3.26 (SD = 1.10)	M = 3.93 (SD = 1.14)	M = 3.43 (SD = 1.15)
Higher Education Courses	M = 3.94 (SD = 1.02)	M = 3.88 (SD = 0.97)	M = 4.10 (SD = 0.87)	M = 4.40 (SD = 1.00)	M = 4.08 (SD = 0.98)
Resource-Based Learning (guides, manuals)	M = 3.74 (SD = 1.05)	M = 4.08 (SD = 1.04)	M = 3.76 (SD = 0.90)	M = 4.19 (SD = 1.10)	M = 3.89 (SD = 1.03)
On-the-Job Training	M = 4.31 (SD = 0.95)	M = 4.52 (SD = 0.65)	M = 4.29 (SD = 0.75)	M = 4.44 (SD = 0.98)	M = 4.36 (SD = 0.87)

Note: Assessed on a 5-point Likert scale, ranging from 1 („Not useful at all”) to 5 („Extremly useful”).

Table 49. What other training or strategies do you consider necessary to better prepare students for working with children with ASD?

Category	Poland	Spain	Romania	Turkey
1. Communication Training	• Training in alternative communication; exercise communication and reactions to specific behaviors	• Training in augmentative communication systems and bimodal language; strategies to reduce communication demands using visual supports	• Training in alternative communication techniques and functional communication skills	• Training in alternative and augmentative communication techniques; effective communication strategies with children with ASD
2. Crisis Intervention & Emotional Management	• Strategies for coping with crisis situations and managing anger outbursts; guidance on coping mentally as a teacher	• Crisis and emotional management training; training on managing anger and disruptive behavior using executive functions and theory of mind	• Training on managing behavioral crises and controlling emotions	• Training in managing aggressive outbursts and crying crises; emotional load training and crisis intervention techniques
3. Behavioral Strategies & Aggression Management	• Aggression and self-aggression management; aggression replacement training	• Strategies to cope with tantrums and disruptive behaviors in large groups; behavioral techniques for managing violent outbursts	• Functional behavior analysis and ABA training; strategies for behavioral intervention	• Functional behavior analysis and behavior management techniques; training on behavioral intervention and aggression control
4. Practical Workshops & Hands-On Training	• Workshops and practical hands-on training sessions; field training and topic-specific training; preparation for direct work with children	• Practical workshops with children with ASD; applied workshops, case studies, and training on diagnosis and intervention	• Practical training through case studies, supervised internships, and applied workshops; professional practice sessions	• Applied workshops, in-service training, and expert-led sessions; one-on-one and group training sessions
5. Lesson Planning & Educational Material Preparation	• Planning therapy and therapeutic goals; preparation of educational brochures and materials	• Designing robust communication boards and lesson plans	• Designing individualized lesson plans	• (Few responses reported)

6. Family Engagement & Parent Training	• Training on working with parents	• Family engagement training including courses and meetings; accompaniment and support for families	• Training on effective communication with parents and parental involvement	• Parent training and continuous family engagement strategies
7. Inclusive Education & Integration Strategies	• Integration and improving relationships in integrated groups	• Inclusive classroom strategies and training on inclusive education	• Training on multidisciplinary teamwork and improving social integration	• Training on direct instruction, embedded teaching, and integrating ASD children in mainstream classrooms
8. Sensory Integration / Sensory Education Training	• Participation in sensory therapy	• (No distinct responses)	• Techniques for sensory integration and self-regulation	• Techniques to reduce overstimulation and play-based routines
9. Supervision, Mentoring & Observational Practice	• Observations and analysis of behavioral examples; supervision sessions	• (Limited responses reported)	• Educational mentoring and professional support groups	• Supervision, mentoring sessions, and sharing practical experiences
10. ASD-Specific Knowledge & Understanding Training	• Training on individualized methods such as TEACCH	• Specialized training on ASD characteristics and diagnosis; training in diagnosis and intervention with families	• Modules on ASD and theoretical training on common ASD forms	• Training on ASD awareness and specialized training for high-functioning children
11. Technology & Digital Tools Training	• (No distinct responses reported)	• Training on integrating technology in classroom organization	• Training on updates in technology and digital integration	• Training on the integration of technology in education; use of visual and auditory resource-based training
12. Social Skills & Direct Instruction Training	• Social skills training through workshops	• Training in social skills development and direct communication	• Training in social skills development	• Training in social skills, direct instruction methods, and communication techniques

13. Other / Additional Strategies	• (No additional responses)	• Training for independent living and transition to adult life	• Training on transition to adult life and independent living skills	• Direct teaching methods, error-free teaching strategies, and self-care training

Table 50. What kind of assisted technologies do you need?

	Poland	Spain	Romania	Turkiye	All
Communication devices (e.g., AAC) – Yes/No	61 (89.7%) / 7 (10.3%)	24 (96.0%) / 1 (4.0%)	50 (86.2%) / 8 (13.8%)	40 (93.0%) / 3 (7.0%)	175 (90.2%) / 19 (9.8%)
Social-emotional learning software – Yes/No	59 (86.8%) / 9 (13.2%)	21 (84.0%) / 4 (16.0%)	50 (86.2%) / 8 (13.8%)	38 (88.4%) / 5 (11.6%)	168 (86.6%) / 26 (13.4%)
Visual aids (e.g., PECS, schedules) – Yes/No	61 (89.7%) / 7 (10.3%)	25 (100.0%) / 0 (0.0%)	55 (94.8%) / 3 (5.2%)	42 (97.7%) / 1 (2.3%)	183 (94.3%) / 11 (5.7%)
Sensory tools (e.g., weighted vests, fidgets) – Yes/No	61 (89.7%) / 7 (10.3%)	25 (100.0%) / 0 (0.0%)	49 (84.5%) / 9 (15.5%)	39 (90.7%) / 4 (9.3%)	174 (89.7%) / 20 (10.3%)
Interactive learning apps – Yes/No	58 (85.3%) / 10 (14.7%)	20 (80.0%) / 5 (20.0%)	54 (93.1%) / 4 (6.9%)	39 (90.7%) / 4 (9.3%)	171 (88.1%) / 23 (11.9%)
Video modeling tools – Yes/No	39 (57.4%) / 29 (42.6%)	18 (72.0%) / 7 (28.0%)	39 (67.2%) / 19 (32.8%)	41 (95.3%) / 2 (4.7%)	137 (70.6%) / 57 (29.4%)
Behavior tracking or data collection tools – Yes/No	52 (76.5%) / 16 (23.5%)	21 (84.0%) / 4 (16.0%)	46 (79.3%) / 12 (20.7%)	40 (93.0%) / 3 (7.0%)	159 (82.0%) / 35 (18.0%)
Virtual reality tools for social learning – Yes/No	50 (73.5%) / 18 (26.5%)	19 (76.0%) / 6 (24.0%)	41 (70.7%) / 17 (29.3%)	38 (88.4%) / 5 (11.6%)	148 (76.3%) / 46 (23.7%)
Smartboards or interactive whiteboards – Yes/No	64 (94.1%) / 4 (5.9%)	21 (84.0%) / 4 (16.0%)	53 (91.4%) / 5 (8.6%)	39 (90.7%) / 4 (9.3%)	177 (91.2%) / 17 (8.8%)
Adapted keyboards or input devices – Yes/No	52 (76.5%) / 16 (23.5%)	22 (88.0%) / 3 (12.0%)	47 (81.0%) / 11 (19.0%)	38 (88.4%) / 5 (11.6%)	159 (82.0%) / 35 (18.0%)

TEACHERS EXPERIENCES AND ADDITIONAL COMMENTS

At the end, teachers were also asked to share their experiences and provide any additional comments. From the Polish responses, there is a strong focus on smaller class sizes, better teacher preparation (including co-teaching and systematic training), individualized instruction, family involvement, and a shift in teacher expectations toward ASD. In Spanish responses, respondents stress the need for ongoing professional development, adapting teaching methods to meet the unique needs of ASD students, creating regulated spaces, and addressing support gaps (such as lower student–teacher ratios, specialized technical knowledge, and time constraints). Turkish respondents emphasize practical in-service training, individualized assessment, improved environmental awareness, and enhanced support through better workload management and increased funding. No qualitative data were recorded from Romania, so that column is marked with a dash. Overall, the data suggest that future teacher training programs

should combine practical, hands-on experiences with continuous professional development, individualized instructional strategies, and stronger support systems both within the classroom and in collaboration with families and institutions.

Table 51. Teachers experiences and additional comments

Category	Poland	Spain	Romania	Turkey
1. Smaller Class Sizes / Group Size Reduction	• Smaller number of children in groups (in preschools and schools)	• The need for lower student–teacher ratios	–	• Limit special needs (OSB) children to at most 2 per setting
2. Better Teacher Preparation & Systematic Training	• Co-teaching by better-prepared teachers; need for systematic preparation for diverse classrooms	• Ongoing professional development and regular updating of training content	–	–
3. Individualized Instruction & Follow-Up	• Every child is different and requires a tailored approach	• Emphasis on proper placement, individualized follow-up and support	–	• Need for individualized student assessment and tailored instruction
4. Family Involvement & Emotional Support	• Need for a positive response from the family home	• Family engagement training; parent seminars and support groups	–	• Emphasis on love and care for special needs children; intensive programs with family involvement; parent training
5. Changing Teacher Mindset & Expectations	• Difficulty convincing some teachers (especially older ones) that standard behavior expectations are not applicable to ASD children	–	–	–
6. Understanding ASD & Special Education Training	• Good understanding of disorders; belief that all teachers should have special education training rather than only general training	–	–	–
7. Adequate Support Staffing & Lower Ratios	• Support teacher working fewer hours than needed	• Need for lower student–teacher ratios and additional support in classrooms	–	–

8. Emotional Resilience & Safety Training	• Requirement for increasing mental resilience in teachers	• Training in safety and conflict resolution (to handle aggressive behaviors)	–	–
9. Practical Hands-On Experience & Networking	• More networking meetings and increased practical experience	• (Implied need for more practice, as reflected in several responses)	–	• Participation in in-service practical training; extended practical and mentorship processes
10. Use of Emotion Recognition Tools	• Use of emotion cards and daily exercises to help children recognize their emotions	–	–	–
11. Support for Group Integration	• Helping a child integrate into the group and build peer acceptance	–	–	–
12. Adaptation of Teaching Methods & Materials	–	• Training on adapting sessions and materials to meet ASD needs	–	–
13. Creating Regulated Spaces	–	• Creating spaces where children with ASD can self-regulate	–	–
14. Public Awareness & Challenging Stigma	–	• Challenging autism stigma and increasing professional willingness to adapt	–	• Challenging autism stigma to promote progress
15. Access to Resources, Mentoring & Funding	–	• Highlighting a lack of material resources, specialized personnel, and insufficient teacher training	–	• Need for easier access to resources and mentoring; demand for increased funding
16. Teamwork & Collaborative Approaches	–	• Emphasis on teamwork and collaboration among all teaching staff	–	–
17. Specialized Technical Knowledge	–	• Need for specialized technical knowledge for working with ASD children	–	–

18. Time Constraints	–	• Limited time available to implement support measures	–	–
19. Use of Psychomotor Approaches	–	• Use of psychomotor strategies to achieve positive results	–	–
20. Increased Environmental Awareness	–	–	–	• Increased awareness of the educational environment is needed
21. Teacher Workload & Scheduling Issues	–	–	–	• Consecutive assignments of ASD students reduce performance; need to address teacher workload and scheduling

KEY FINDINGS

Teachers Training in ASD & Intervention Strategies:

There is considerable variability in pre-service and in-service training. For example, Turkish teachers tend to have higher rates of combined training (both pre- and in-service), while Romanian educators show lower levels in several domains.

Specific training on diagnosing ASD and behavioral therapy is less common in some regions (e.g., Romania), even though a majority of teachers in most countries have received training on social and emotional development.

Teachers emphasize the need for comprehensive training on ASD characteristics, specialized teaching strategies, crisis intervention, and emotion regulation techniques.

Use of Intervention Methods & Institutional Support:

Across countries, educators employ a range of intervention strategies, such as Applied Behavior Analysis (ABA), social skills training, visual supports, and play-based therapy.

Turkish and Romanian teachers report more robust use of early intervention methods and stronger institutional support, whereas Polish and Spanish educators often face challenges related to limited resources and support structures.

Challenges identified include adapting lessons to diverse learning styles, managing meltdowns, and teaching abstract social–emotional concepts.

Assistive Technologies:

Overall usage among teachers is moderate, but with marked regional differences. Turkish educators report the highest use, while Spanish and Romanian teachers indicate much lower usage rates—especially in supporting social–emotional development.

Common barriers include poor internet connectivity, insufficient numbers of devices, and limited technical support.

Many teachers express a need for more training in digital tools and a broader range of assistive technology applications, particularly for fostering communication and socio-emotional skills.

Studens Training:

Students' experiences vary significantly. Romanian and Turkish students report more extensive practical and theoretical training in working with children with ASD compared to their Polish and Spanish counterparts.

A notable proportion of students, especially in Poland and Spain, have limited hours of practical training, which may impact their overall readiness.

Students Knowledge & Confidence in Assistive Technologies:

While many students have been exposed to theoretical knowledge about assistive technologies, only a small minority have observed or used these tools in practice.

The majority rate their own expertise as moderate or poor, suggesting a significant gap between theoretical understanding and practical implementation.

Perceived Importance of Social–Emotional Skills:

Both teachers and students recognize the critical role of social–emotional competencies (such as emotion recognition, regulation, and social communication) in ASD education.
Students, similar to teachers, face challenges in translating theory into practice—particularly when adapting lessons for diverse learning needs and managing behavioral issues.

RECOMMENDATIONS

1.Enhanced Practical Training

Both groups call for more hands-on workshops, supervised internships, and direct classroom experiences. There is a strong preference for on-the-job training and mentorship programs that can bridge the gap between theory and practice.

2.Improved Professional Development

Continuous, systematic professional development is needed to keep educators updated on the latest ASD teaching strategies and assistive technologies. Teachers stress the importance of training in crisis intervention, behavioral management, and individualized instructional planning.

3.Access to Assistive Technologies

There is a high demand for specific types of technologies:
- Communication Devices (AAC): Widely endorsed as critical for facilitating communication.
- Social–Emotional Learning Software and Visual Aids: Considered essential for supporting the development of social skills.
- Sensory Tools and Interactive Learning Apps: Valued for their potential to engage children with ASD effectively.

In addition, both teachers and students indicate that infrastructural improvements (e.g., reliable internet and adequate device availability) are necessary to fully leverage these technologies.

4.Tailored Training Formats

Hands-on workshops and on-the-job training are viewed as most useful. Although there is some regional variation—such as Turkish educators' relatively higher endorsement of online self-paced courses—the overall consensus favors interactive and practical training methods over purely online formats.

5.Institutional and Family Support

Enhanced support from schools (e.g., reduced class sizes, dedicated support staff, and better funding) as well as strategies to involve families more effectively in the educational process are seen as critical components in improving outcomes for children with ASD.

TABLES

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