Challenges and Strategies of Remote Foreign Language Learning for Students with Autism Spectrum Disorder

Iryna Haidai, Liudmyla Suvorova, Nataliia Pankovyk, Yuliia Herasymchuk and Olha Zadoienko
Department Pedagogical Technologies and Language Training, Zhytomyr Polytechnic State University, Chudnivska Str. 103, 10005 Zhytomyr, Ukraine
org_gio@ztu.edu.ua, ktpl_slk@ztu.edu.ua, kptmp_pnm@ztu.edu.ua, kptmp_gyup@ztu.edu.ua, kptmp_zoi@ztu.edu.ua

Keywords: Foreign Language Competence, Distance Learning, Inclusive Environment, Gamification, Virtual Socialization, Communicative Skills.

Abstract: People with cognitive impairments constantly face a number of modern challenges, including a pandemic, martial law, and instability of psychoemotional functions, which already complicates the education of students with autism. Today, inclusive education in Ukraine is only beginning to develop effectively, but global crises significantly limit full-fledged education. The difficulty lies in adaptation - a kind of «adjustment» of educational materials for people with disabilities. A gadget, which was previously perceived as a means of entertainment, a tool for obtaining pleasure or «reward», must now become an educational center, a source of knowledge accumulation. Therefore, the goal was to study how the acquired digital skills and abilities can positively affect the education of students on various distance platforms. The results of the observation showed that the advantage of students with autism is their unique ability – to be able to work perfectly with a gadget. The study offers practical and proven effective ways of teaching students with ASD. The object of study was distance learning tools tested on students of the transitional educational level – grades 4-6, who studied in an inclusive form of education. The results showed that the organization of education of students with autism in a distance format has a number of both disadvantages and advantages. Among the disadvantages: unhealthy virtual socialization; inability to adapt educational materials; blurred social roles; sensory overload; technical problems with video and connection; distraction by clips; limited opportunities for forming strategies for psycho-emotional communication. On the other hand, the studies showed that individual topics were quite effectively mastered using online platforms. These are a case-block approach to presenting material using distance technologies, game practices, and programs that help in learning a foreign language. Such a well-developed experience will become a practical find in developing inclusion at the level of professional pre-higher and higher education in Ukraine in the future.

1 INTRODUCTION

In August 2024, as part of the organization of the "Parents and Early Intervention" program dedicated to the problem of autism, a rather active three-day discussion on the topic of children's disability took place in the context of the deployment of military operations in Ukraine. This event was held with the support of Daria Herasymchuk, the Commissioner of the President of Ukraine for Children's Rights and Child Rehabilitation, and the UN Office for the Protection of Human Rights [1]. The crisis situations in which Ukraine found itself – first the pandemic, and then the war – demanded a quick search for optimal ways to teach; therefore, the distance format became the environment that needed to be studied, deeply mastered methodically, and at the same time to look for the most effective mechanisms that would work on the result [2].

On April 26, 2022, the Cabinet of Ministers of Ukraine adopted and approved a number of changes to the organization of inclusive education in Ukraine in conditions of war (On amendments to the procedures approved by resolutions of the Cabinet of Ministers of Ukraine dated April 10, 2019 No. 530 and dated September 15, 2021 No. 957 CMU Resolution No. 483 of April 26, 2022) [3].

An important nuance was that schools and other educational institutions began to function as a shelter for families from regions of active hostilities, and

desk-based learning was replaced by an online learning format. The above-mentioned document (Decree No. 483) also outlined a number of tips and practical recommendations for organizing the education of children with special educational needs under martial law. Some of them were developed two years before the start of a full-scale invasion, that is, during the pandemic.

2 PROBLEM STATEMENT

It is important to note the obstacles that inhibit acquiring knowledge in emergency situations. First of all, there is the problem of access to technology because effective learning requires a stable Internet connection and appropriate digital devices, which does not always seem possible in the conditions of systematic rocket attacks, lack of light, and network. Secondly, the distance format is a completely undeveloped form of learning organization for a student with disabilities because the home environment is less structured than a class or an auditorium.

Virtual education of children with autism involves, first of all, a radical revision of social roles: parents, at a certain point, have to play the role of a teacher, accompanying a student with ASD during an online lesson. As research shows, this reorganization of social functions leads to emotional exhaustion, a state of helplessness in parents who already find themselves alone with the problem of autism [4]. In addition, limited support for assistants and teachers can lead to a decrease in the effectiveness of the educational process, a decrease in motivation, and a deterioration in the quality of the teaching process. The organization of psychological support for children and their families is also a necessary step in creating favorable learning conditions in crisis conditions [5]. Therefore, it is essential to review the strategy of organizing the education of children with autism through the prism of teamwork, taking into account online cooperation.

Distance learning, which has become a new field in the knowledge acquisition system, has not been worked out sufficiently regarding inclusion. Due to the variability of gnosis (even autism has a relatively wide panorama of syndromes and their variations) and the different complexity of the degree of damage to cognitive abilities, each student had to find his own algorithm for organizing learning in crisis conditions.

A separate problem turned out to be the fact that not all parents have knowledge of a foreign language (both from the standpoint of language knowledge and teaching methods), which, again, complicated the learning process. Parents change roles with the teacher, thus becoming an important "channel of communication" for students with ASD, but it is extremely difficult for them to independently organize the child's education, where he could acquire knowledge without additional support [5].

The study of the problems of teaching students with autism is currently carried out at the level of scientific conferences in the context of scientific and methodological developments, forums, and collective studies. Even during the pandemic, a number of countries faced the need to find ways to preserve the learning process [6].

In choosing effective ways of working, it is necessary to consider the clinical features of the diagnosis first. The methodological component should be built taking into account the behavioral mechanisms of students with ASD, with an appeal to the "education system" in its close relationship with "health care, in order to ensure proper rights and services for children" [4]. The methodological base for students with disabilities is currently not properly developed in Ukraine, although the situation is improving yearly – and at least electronic versions of textbooks can be found on the Modernization of Education Content website [7].

While analyzing textbooks for learning the English language, it was found that the content of the proposed textbooks is somewhat complicated, especially for high school. The junior school has sufficient methodological support but shows a limited variety of educational materials. This can have a negative impact on students' motivation and language acquisition, as the use of monotonous textbooks does not contribute to the development of their cognitive skills. In turn, in high school, particularly for students of grades 9, 10, and 11, there is a significant shortage of methodological materials, and their content often does not consider students' cognitive capabilities. The same problem can be observed in higher education institutions, emphasizing the need to revise and improve educational materials and approaches to teaching English in senior and higher educational institutions. In view of this, there is an urgent need to develop more diverse and adapted textbooks that meet the modern requirements and needs of students.

The lack of knowledge and experience in the organization of distance-inclusive education leads to people with limited cognitive functions finding

themselves "overboard" of educational activities, adversely affecting their psycho-emotional state [8].

Order of the Ministry of Education and Science of Ukraine, which is a separate component of the document "On approval of the Regulation on Distance Learning" dated 04/25/2013. No. 466, registered with the Ministry of Justice of Ukraine on April 30, 2013. under No. 703/23235, it is clearly defined that distance learning is characterized by taking into account the mechanism of individualization regarding the acquisition of knowledge, abilities, skills, and methods of cognitive activity with the organization of a specialized environment that functions on the basis of modern psychological-pedagogical and information-communication technologies [9].

Distance learning in the languages of the crisis sets the tone for the principle of inequality in education because students with autism found themselves without adequate methodical support [6]. Parents and teachers faced the challenge of a difficult situation: before a number of questions – how to teach, how to choose methodological tools for the class, which platforms can be effective, and whether the family has access to them. Virtual education does not involve selectivity in explanation or individualization: the teacher cannot physically approach a student with limitations and additionally explain to him [10]. The teacher explains in the same way for everyone, so a student with ASD needs to optimize the learning process so that the learning environment meets all the requirements of "justice in education" [11]. Psychological help in its usual format has changed to the so-called "virtual, remote teletherapy" [6]. Therefore, the direct and indirect interaction between the teacher and the pupil with ASD is lost [12]. The gradual mastery of digital tools in teaching still gave some positives. The mechanism of virtual organization of training contributed to the variability of the work, from independent mastering of the material to team interaction with the teacher in the format of an online meeting. It is about synchronous and asynchronous work options. Asynchronous mastering of the material makes the educational platform available anytime to discuss "learning system management" [2]. The distance format is characterized by relative accessibility to materials and asynchrony in mastering them. However, the use of digitalization in an inclusive educational environment is a significant challenge. The main reason is the lack of motivation in students with limited cognitive abilities, for whom a gadget from a game tool, entertainment, or sensory object of relief should turn into a learning environment. Such rethinking is quite difficult to implement when working with children with an autism spectrum disorder.

Barriers and limitations in a social sense, adaptation to new learning conditions, and spontaneous nature – are other aspects of the difficulties that arise during the acquisition of knowledge of children with autism [13], [14].

3 METHOD

The study of the mechanism of remote organization of learning for students with autism, particularly their acquisition of a foreign language, is qualitative. The collection of diagnostic and statistical data was carried out by means of an anonymous survey, implemented through the agreement with the city administration of the Department of Education, Zhytomyr (Ukraine). A questionnaire was previously created using a Google Form. Creating a Google Form for collecting relevant data facilitated quick feedback from parents and teachers. Here is the structure of such a questionnaire:

1) General information:
   - Full name of the respondent: (text field)
   - Social role (parent, teacher)
   - Student's grade: (text field)
2) Use of technology:
   - Which platforms do you use for learning? (checkboxes: Zoom, Google Meet, Microsoft Teams, etc.)
   - Do you experience difficulties with using technology? (yes/no)
3) Teaching methodology:
   - How do you assess the effectiveness of distance learning for the student? (scale: 1-extremely unsatisfactory to 5-excellent)
   - Which learning methods proved to be the most effective? (text field)
4) Student's needs:
   - What special needs does the student have during learning? (text field)
   - What difficulties arise during distance learning? (text field)
5) Support and resources:
   - Do you receive sufficient support from teachers and employees of the resource-inclusive center? (yes/no)

- What additional resources or support do you consider necessary? (text field)

6) Feedback:
   - Additional comments or suggestions: (text field)
   - Completion of the form
   - Thank you for your participation!

This online data collection tool allowed us to quickly engage a wide range of respondents: 180 parents (only one parent could complete the questionnaire) who have children with special educational needs, as well as 227 teachers. It is worth noting that the majority of parents were those whose children were diagnosed with ASD, communication behavior and socialization disorders, and mental development disorders with elements of autism (see Table 1).

Table 1: Individual psychological characteristics of students in quantitative terms.

Individual characteristics of the student	Quantitative assessment
Diagnosed with early childhood autism, established disability	18
Mental development disorders with elements of ASD	29
Behavioral, communicative, and social problems	86
Diagnosed with autism spectrum disorder without disability status	38
The child has social-communicative disorders not diagnosed by specialists but noted by parents and teachers	9

The age scale of these students covered grades 4-6. It should be clarified that the survey also included parents whose children study in special classes at general education schools (for example, such classes are organized at Lyceum No. 14 in Zhytomyr). Among the interviewed teachers and parents of students with SEN -- from lyceums No. 1, 4, 5, 7, 8, 10, 12, 15, 17, 19, 20, 21, 22, 23, 24, 26, 28, 30, 34, 35. The survey was conducted in 2020, and the implementation of effective methods and practices was checked during 2020-2023. The results are presented below in the main part of this publication.

The research took place in several stages (see Table 2).

A motivational rating scale was used to measure the state of success in learning a foreign language, taking into account the peculiarities of the nature of autism, which is a poorly researched socio-psychological problem. Mechanisms of both short-term and long-term development prospects were also taken into account.

When modeling the motivational rating scale, the following components were considered (see Table 3).

Table 2: Stages of research.

Stage	Description
Preparatory and evaluation	Development of a questionnaire for conducting an anonymous survey questionnaire
Diagnostic and prognostic	Study of survey results with determination of possible risks and achievements in learning a foreign language
Effective and practical	Methodical development and search for remote forms, methods, techniques, and practices in foreign language learning by students with ASD with subsequent adaptation/modification of educational materials
Problem-evaluative	Outline and development of evaluation criteria for students with autism who studied according to the selected methods during the research stage
Discussion and problem	Determination of problematic issues, difficulties, and formulation of educational, didactic, and scientific perspectives.

The analysis of the data provided for the determination of a range of urgent and priority problems guided the selection of effective, efficient methods, techniques, and platforms, with the help of which learning a foreign language would be as successful as possible. An overview of the most effective methodologies and a description of their effectiveness are demonstrated below.

4 RESULTS

4.1 Survey Results

Questions for teachers related to difficulties in working with children with SEN, support from inclusive resource centers. In addition, the issues of the principles of drawing up a program for the individual development of a child with SEN, finding means to increase the effectiveness of learning, and difficulties that arise during distance learning of students with cognitive limitations were raised.

Table 3: Percentage ratio of motivational assessment mechanisms in working with students with autism spectrum.

Mechanism	Content	Effectiveness in practice (%)
Individual approach	Consideration of individual characteristics and abilities of the child. Selection of materials according to the capabilities and interests of the child	100%
Clear goals	Establishing clear and achievable learning goals. Step-by-step breakdown. It is important that goals are specific and measurable	95%
Positive reinforcement	Use of positive reinforcing stimuli such as praise or reward for achievements. This encourages the child to further efforts. However, some children reacted aggressively to incentive stimuli (10%)	90%
Visual aids	Use of cards, pictures, or graphs that can help the child understand what is expected of them. However, some children did not understand the meaning of visual cues	85%
Regular monitoring	Conducting regular assessments and tracking progress. This helps to timely adjust the curriculum according to the child's needs (keeping an observation diary by the assistant parents)	100%
Interaction with parents and specialists	Coordinated work with parents and other specialists to ensure consistency of approaches at home and at school; however, 30% of parents did not always follow the necessary recommendations and did not interact in a team with teachers and specialists	70%

According to the interviewed teachers working in inclusive classes, the problem of the difficulties they faced was the most relevant. First of all, it is about instability in the behavioral reactions of students during the lesson (76.4%), the need to allocate additional time in the lesson to work with SEN (10.2%), as well as the problems of preparing and developing special tasks taking into account the individual development program (11.8%) – the results are presented in Figure 1.

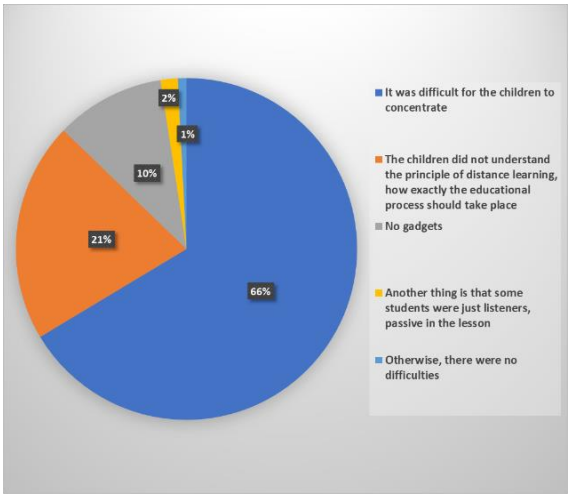

Figure 1: Difficulties in working with children with SEN during distance learning.

As we can see from the chart, the biggest difficulty during distance learning was that it was difficult for children to concentrate on online lessons - this was answered by 65.4% of respondents. This is due to the inability of children with autism to allocate attention rationally. It was also difficult for them to understand the very principle of distance learning because it was necessary to understand the reevaluation of social roles: the teacher is behind the screen of the gadget, and this is not a game but a full-fledged lesson, in addition, and dad or mom now play the role of an assistant (20.5%). It happened that students did not have individual gadgets or had to share them with their parents, brothers, or sisters (10.2%). There were isolated answers related to students' activity in the lesson – some students were passive listeners (1.6%). Only 0.8% of respondents had no difficulties.

A survey of parents on the same question about difficulties in distance learning showed the following results, presented in Figure 2.

From the parents' answers, it can be noted that the lack of pedagogical education inhibits the optimization of the process; for them, it is extremely important to organize an educational environment at home. In addition, most parents face the problem of the child not perceiving parents as teachers. This social reorientation of roles caused protests on the part of children and reluctance to cooperate. Distance learning limits the support of the teacher's assistant, the class teacher, and classmates as an environment for successful socialization.

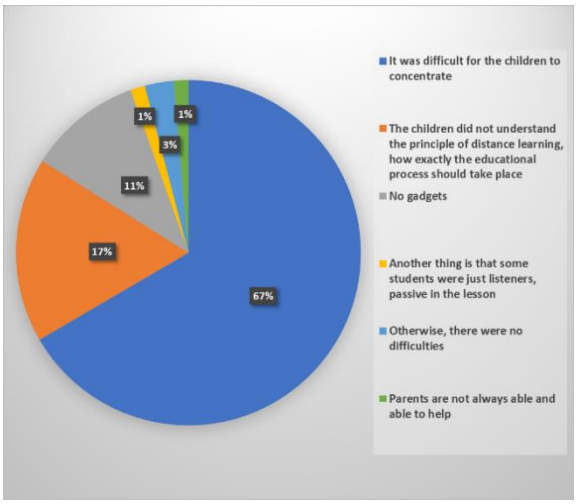

Figure 2: Difficulties in children with SEN during distance learning according to parents.

An educational problem also arose: if earlier, before the introduction of quarantine restrictions, parents did not allow or limit the use of gadgets, then with the introduction of the distance learning format, they would have to give up their beliefs for the sake of children's education.

The presented diagram emphasizes the fact that the most common problem during distance learning for students with ASD is the low level of concentration of attention.

Lack of understanding of the structure and organization of distance learning complicates the learning process for many students. It is worth noting that every child with autism is unique, so every educational plan must be unique. Studying at home with the support of a certain family member eliminates the rules and methods of work prescribed in the individual development program.

The results of surveys of teachers and parents indicate that teaching children with ASD requires a personalized approach, taking into account their strengths and peculiarities. Hence, there is a problem for teachers and parents regarding the correct organization of distance learning for children with ASD. Teachers support children with SEN at school, and parents take on this role at home. Failure to perceive mom or dad as a teacher reduces motivation and distorts the very desire to learn.

However, Dr. Stuart Shanker urges parents to approach challenges with compassion and understanding, not frustration: "Autistic children 'don't bother you,' they are 'difficult' [15]. Dr. also says that success in education is always possible. Temple Grandin: "How we see children with autism shapes how they see themselves" [16].

Teamwork can still be ensured even when teaching children with ASD remotely, provided there is constant dialogue and interaction between all participants in the educational process.

4.2 Adaptation Steps in Distance Learning of a Foreign Language by Students with ASD

Having received the results regarding the existing difficulties, we had the opportunity to develop and offer those formats of learning a foreign language, which, in our opinion, could be as effective as possible. Successful learning outcomes depend on specific teaching methods and support, positive dynamics, student engagement, and self-esteem. This is especially important in distance learning environments where students with autism can feel isolated [6].

Therefore, the methodology includes the assessment of both academic progress and individual psychological factors, students' motivation, a sense of self-efficacy, and the ability to master language material. Therefore, the methodology includes the assessment of both academic progress and consideration of individual psychological factors, student motivation, a sense of self-efficacy, and the ability to master language material.

First of all, it was important to study the methodological base that is currently available and available in school libraries. Not all middle school classes are equipped with such textbooks, although they can be found in electronic access (Textbooks for people with special needs. Institute for the Modernization of the Content of Education) [7].

Some textbooks, especially for 6th-grade students, seem too complicated. Children with autism have different degrees of brain damage and different cognitive abilities. High-functioning autism allows you to master a foreign language more deeply, but students with intellectual disabilities cannot cope with the material that the authors of the textbook offer [16]. Optimizing the educational process for students with ASD is impossible without a mechanism for adapting and modifying educational material [17]. It is not only about the development but also the very mechanism of effective submission. We have developed a system of steps that, in our opinion, will contribute to efficiency in learning a foreign language (Figure 3).

During the teachers' survey, it was found that children were not very active in online lessons. This problem was solved using the mechanisms described below.

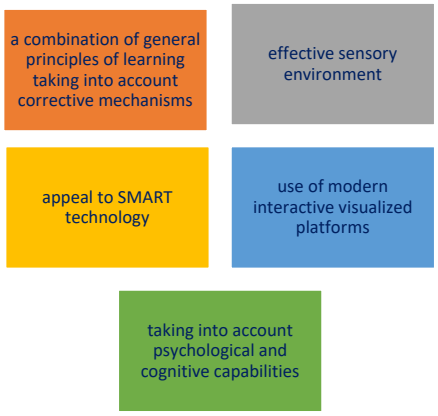

Figure 3: Mechanisms of effective teaching of students with ASD.

It is extremely important to be able to combine general pedagogical principles of learning with corrective pedagogy, applying this symbiosis in remote work. The technology of "small steps" (SMART) makes it possible to break down the task into stages, in portions, with the calculation of the final result. Individual and psychological aspects should be taken into account during the assessment of knowledge and during the development of an individual program for a student with ASD.

At the same time, maintaining an existing focus while searching for effective learning strategies should help avoid overreliance on diagnostic labels.

Adaptation of educational material for children with SEN should be carried out at all stages of work: at the level of selection of teaching methods, at the level of principles of using materials and resources, and at the level of evaluation. Thus, adaptation at the level of teaching methods occurs through the use of visualization, appeal to the capabilities of the Miro virtual board (Figure 4), and the completion of tasks, with a reduction in the amount of material.

According to the survey of teachers and parents, the problem was revealed that it was difficult for children to concentrate. In order to solve this problem, small steps were applied.

Tasks were divided into smaller ones, and thus, children could complete them more efficiently. For better understanding, the teacher can repeat the task and explain problematic points. Also, the teacher can give the student a task using a step-by-step algorithm (SMART principle).

Working with a mixed-ability class during a clothing vocabulary lesson, the teacher utilized an interactive whiteboard Miro to teach "There is/There are" structures. Using a "progressive disclosure" feature, the teacher motivated the class by displaying clothing images and encouraging students to construct correct sentences: This is a dress. /These are trousers.

Figure 4: Case study: Adapted exercise for clothing categorization using "There is/There are".

Adaptation for children with SEN at the assessment level is carried out by providing the student with the opportunity to complete the task in an arbitrary format, providing additional time to complete the task. It is also possible to allow the student to complete a smaller number of tasks on a test or exam, to allow the involvement of another person for help in completing written tasks, and to take notes instead of the child. It is worth noting that the assessment of a child with SEN should gradually be equated to the assessment of normal children – and by the end of school, the threshold for adaptation and modification will gradually decrease, which will contribute to the development of independent learning skills.

Another type of adaptation for students with SEN is adaptation at the level of materials and resources, including the use of materials of different levels of complexity, the use of printed and other materials, resources created by the teacher for students, alternative teaching materials, adaptation devices, and online platforms. For students with SEN, auxiliary alternative cards, diagrams, and line indicators can be used; the text can be marked with different colors, and audio and visual support can be provided.

Often there is a problem that children do not have their own gadgets and are forced to use them together with their parents and siblings. To resolve this issue in Ukraine, parents of children with special needs can apply to the "Lumos" fund – the Ukrainian Network for Children's Rights.

As part of the foundation's work, tablets were issued to children from the People's Liberation Army who needed psychological support due to military operations on the territory of Ukraine [19].

4.3 Digital Tools as a Component of Learning Individualization for Students with ASD

In the context of modern challenges for education caused by the pandemic and martial law in Ukraine, the use of digital tools to ensure individualized learning for students with autism spectrum disorders is of particular importance. Based on our research, we have identified the most effective digital platforms and tools that have been successfully adapted to meet the special educational needs of students with ASD during foreign language learning.

4.3.1 Miro Virtual Board as a Tool for Increasing Academic Resilience

One of the most effective digital tools we have implemented in the educational process is the Miro virtual board. Experience using this platform in teaching English to students with ASD has demonstrated several advantages in the context of learning individualization and creating a favorable socio-emotional environment (Table 4).

The application of Miro for students with ASD was adapted, taking into account the three levels of emotional design described by D. Norman, according to which a product should be not only functional and effective but also pleasant to use and evoke positive emotions [21]. Our research confirmed that this approach contributes to better student engagement, increased motivation, and overall satisfaction with the learning process.

The results of using Miro showed that 78% of students with ASD demonstrated positive emotional reactions while working with the platform. Particularly important is the observation that more reserved students with autism, who usually participate less in group discussions, made significant contributions to task completion on the virtual board without feeling social pressure from classmates.

4.3.2 Specialized Applications in the Formation of Language Competencies

Based on foreign experience and our own experimental research, we have implemented a series of specialized applications designed to consider the special needs of students with ASD. These applications were organically integrated into the foreign language learning process and adapted according to the individual characteristics of students (Table 5).

Table 4: Features of using the miro virtual board in teaching students with ASD.

Functional capabilities	Adaptation for students with ASD	Results of application
Creation of personalized workspaces	Ability to change board color, add personal elements, and customize the visual environment according to the student's sensory needs	Reduced anxiety, increased motivation, creation of a comfortable learning environment
Real-time collaboration	Structured interaction with clearly defined roles and tasks, the possibility of asynchronous work	Development of social skills, overcoming communication barriers
Use of emotional pictograms	Inclusion of visual elements for expressing emotional state	Development of emotional intelligence, improved reflection, establishing emotional connection
Creation of project spaces	Clearly structured tasks with visual instructions and timeframes	Development of planning skills, sequential task completion

Table 5: Specialized applications and their adaptation for students with ASD.

Application name	Functional features	Adaptation for students with ASD	Level of effectiveness
Autism iHelp - WH?	Development of language skills through questions with answers based on real-world visualization	Individual pace, topic selection according to special interests, gradual task complexity	High (85% of students demonstrated positive dynamics)
Autism iHelp Language Concepts	Development of basic language concepts and vocabulary expansion	Use of real-life photographs, categorization, and sorting, an adaptation of difficulty level	Medium (67% of students showed improvement in language concept acquisition)
Proloquo2Go	AAC system for alternative communication	Individual symbol selection, interface adaptation, vocabulary customization according to needs	Very high (91% of non-verbal students began using the application for communication)

Table 6: Model of digital tool integration for learning individualization.

Learning stage	Digital tools	Adaptation strategies	Results
Introduction of new material	Miro, Padlet, Visual Timelines	Structured presentation, use of color coding, visual cues	Improved perception and understanding of new material
Reinforcement and practice	Quizlet, Wordwall, Autism iHelp	Individual pace, repetition, visual support, gradual complexity	Increased level of material mastery, skill formation
Communicative practice	Miro (for projects), Google Meet with visual support	Structured dialogues, visual aids, clear roles and scenarios	Development of communication skills reduced social anxiety
Assessment	Miro, Quizizz, individualized tests	Adapted format, additional time, visual support, alternative response forms	Objective progress assessment, reduced test anxiety

The implementation of these applications in the educational process occurred gradually, with constant monitoring of their effectiveness and necessary adjustments. An important component of successful adaptation was a comprehensive approach that involved using applications not only during classes but also incorporating them into homework and therapeutic sessions.

4.3.3 Integration of Digital Tools into the Learning Process

For maximum effectiveness in individualizing learning for students with ASD, we developed a comprehensive approach to integrating digital tools into the educational process. This approach involves combining different platforms and tools according to individual student needs and educational goals (Table 6).

An important component of effective digital tool integration is continuous monitoring and evaluation of their impact on the learning process. For this purpose, we developed a system of indicators that allows tracking the progress of students with ASD in five dimensions of engagement: behavioral, cognitive, collaborative, emotional, and social, as proposed by Redmond et al. [22].

4.3.4 Results of a Digital Tool Implementation

The results of our research confirm the high effectiveness of implementing digital tools in the process of individualizing learning for students with ASD. Based on survey data and observations, the following positive trends were identified:

- Increased motivation: 82% of students with ASD demonstrated increased interest in foreign language learning when using adapted digital tools.
- Development of digital skills: Integration of Miro and other digital platforms contributed to the development of students' digital competencies, which is an important component of their future professional adaptation.
- Overcoming access barriers: Digital tools ensured accessibility of the educational process even in remote learning conditions, guaranteeing educational continuity in complex social conditions.
- Inclusive assessment practices: The use of digital platforms allowed the implementation of fair and unbiased forms of assessment that take into account the individual characteristics of students with ASD.
- Positive learning atmosphere: The emotional aspect of using digital tools, especially Miro with emotional pictograms, contributed to creating a positive learning environment.

Comparative analysis of the academic performance of students with ASD before and after implementing the complex of digital tools showed significant improvement in foreign language acquisition. In particular, the average indicator of vocabulary mastery increased by 34%, grammatical structures by 27%, and communication skills by 21%.

It is important to note that the effectiveness of digital tool implementation largely depends on a systematic approach that involves:

- Continuous teacher professional development in digital technology use
- Tool adaptation according to each student's individual needs
- Regular monitoring and effectiveness evaluation
- Close collaboration with parents and other support team specialists

The obtained results indicate that the integration of digital tools is an effective mechanism for individualizing learning for students with ASD, especially in the context of foreign language learning. Implementation of such tools not only increases the effectiveness of the educational process but also creates a favorable socio-emotional environment, which is critically important for students with autism.

5 DISCUSSIONS

It is worth noting that many difficulties arise from working with children with ASD. Among the contradictions that can be outlined:

1) the contradiction between the need to use special educational and methodological support for children with ASD and its lack because this issue has not yet received sufficient coverage;
2) contradiction in the approaches to the assessment of students with SEN because, on the one hand, such children need to be assessed from the position of creating a situation of success so that the child feels motivated to study. On the other hand, the entrance exams to higher education institutions are not adapted for children with SEN, and there is a gap between real assessment and knowledge;
3) in some places, there are difficulties with the correct determination of the degree of support because there are currently 5 of them.

Teaching languages to students with special educational needs is not without its challenges. However, over time, there has been much discussion and debate within the language teaching community about what might constitute a viable pedagogy for these learners.

Any consideration of interactive resources must take place in the context of such appropriate pedagogy, as resources alone will not deliver results. The main question should always be, "How will this resource improve learning?" There is no point in using resources just because they are available or because you can.

Turning to the LD Online resource, we highlight a seven-step approach to creating a foundation for language learning by students with learning disabilities, presented in Figure 5 [20].

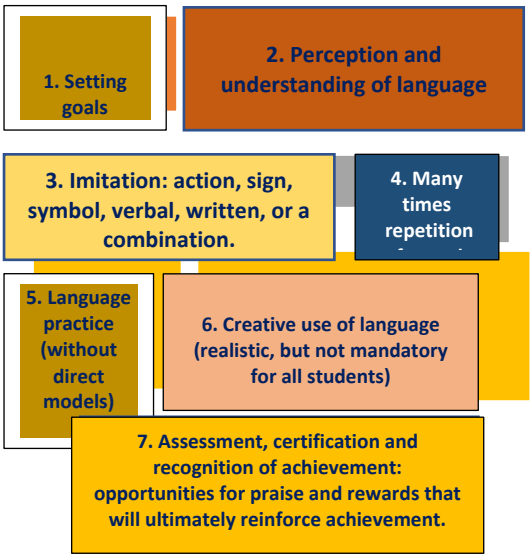

Figure 5: The main stages of learning a foreign language by students with SEN.

6 CONCLUSIONS

A key element of successful foreign language learning by students with ASD in a distance format is a seven-step approach to creating a foundation for language learning by students with learning difficulties. The individual approach, integration of materials and situations from real life, development of functional academic skills and use of visual materials, and creation of adapted educational and methodological support are also important here.

To educate children with ASD, it is necessary to adapt traditional teaching methods to the distance format. This approach will meet the educational needs of children with ASD, as well as promote their social development and emotional well-being.

It is also important for such children to create a situation of success in learning, to provide challenging tasks, in particular, to divide tasks into small steps, to apply a structured approach to education, and to model correct answers. A structured learning environment is a key element of successful distance learning for students with ASD.

Research prospects:

1) Studying the experience of distance education will contribute to a more effective search for strategies, methods and means for teaching children with special educational needs.

2) Monitoring data obtained on the basis of the survey will allow us to outline possible risks, problems and difficulties in the future, as well as indicate effective forms of organizing online learning.
3) Since the war is ongoing in Ukraine, it is important to provide different approaches to organizing learning, including distance learning, because in the territories close to the front, there is no possibility of studying in person.
4) The study helped to identify the shortcomings of online learning, group them, describe them and look for alternative ways to solve problem situations in the future.

Attention to the education of children with disabilities is growing every year, which is due to those factors of a stressful, environmental, crisis-boundary nature. Therefore, the educational space must be prepared not only for different learning formats, but also for compensating for educational losses caused by destructive factors.

REFERENCES

[1] Ukrainian Parliament Commissioner for Human Rights, “World Autism Awareness Day.” Ombudsman.gov.ua, 2023. [Online]. Available: https://ombudsman.gov.ua/uk/news_details/vsesvitnij-den-poshirennya-informaciyi-shchodo-problem-autizmu.

[2] M. Supratiwi, M. Yusuf, and F. K. Anggraini, "Mapping the Challenges in Distance Learning for Students with Disabilities during COVID-19 Pandemic: Survey of Special Education Teachers,"International Journal of Pedagogy and Teacher Education, vol. 5, no. 1, p. 11, Apr. 2021. [Online]. Available: https://doi.org/10.20961/ijpte.v5i1.45970.

[3] Osvita.ua, "On Amendments to the Procedures Approved by the Resolutions of the Cabinet of Ministers of Ukraine of 10 April 2019 No. 530 and of 15 September 2021 No. 957," Apr. 26, 2022. [Online]. Available:https://osvita.ua/legislation/Ser_osv/86366.

[4] J. G. L. Andrade, A. C. F. do Carmo, A. C. Tamanaha, and J. Perissinoto, “Eficácia de Programas Educativos à Distância para pais de crianças com diagnóstico de Transtorno do Espectro Autista: uma revisão integrativa,” CoDAS, vol. 36, no. 5, 2024, doi: 10.1590/2317-1782/20242023291pt.

[5] T. Bratyshko, “Organization of distance learning for students with special educational needs in an inclusive education” Pedagogy of the formation of a creative person in higher and secondary schools, vol. 1, no. 70, pp. 51–55, 2020, doi: 10.32840/1992-5786.2020.70-1.9.

[6] C. K. Syriopoulou–Delli, E. Papaefstathiou, K. Sarri, A.-E. Filiou, and E. Gkiolnta. “The use of distance learning and E-learning in students with autism spectrum disorder: A review,” Nucleation and Atmospheric Aerosols, vol. 2909, no. 1, Jan. 2023. [Online]. Available: https://doi.org/10.1063/5.0181795.

[7] Electronic versions of textbooks, imzo.gov.ua. [Online]. Available: https://lib.imzo.gov.ua/yelektronn-vers-pdruchnikv.

[8] L. Safta-Zecheria, “Challenges posed by COVID-19 to the health of people with disabilities living in residential care facilities in Romania,” Disability & Society, vol. 35, no. 5, pp. 837–843, Apr. 2020, doi: 10.1080/09687599.2020.1754766.

[9] Ministry of Education and Science of Ukraine, "Organisation of distance learning at school. Guidelines, May 2020." [Online]. Available: https://surl.li/lbvoig.

[10] F. Fahrudin, A. Ansari, and A. S. Ichsan, “Pembelajaran Konvensional dan Kritis Kreatif dalam Perspektif Pendidikan Islam,” Hikmah, vol. 18, no. 1, pp. 64–80, Sep. 2021, doi: 10.53802/hikmah.v18i1.101.

[11] W. Zhang, Y. Wang, L. Yang, and C. Wang, “Suspending Classes Without Stopping Learning: China’s Education Emergency Management Policy in the COVID-19 Outbreak,” Journal of Risk and Financial Management, vol. 13, no. 3, p. 55, Mar. 2020, [Online]. Available: https://doi.org/10.3390/jrfm13030055.

[12] A. N. Bahasoan, W. Ayuandiani, M. Mukhram, and A. Rahmat, “Effectiveness of Online Learning In Pandemic Covid-19,” International Journal of Science, Technology & Management, vol. 1, no. 2, pp. 100–106, Jul. 2020, doi: 10.46729/ijstm.v1i2.30.

[13] O. S. Homdijah, E. Heryati, Ehan, and M. P. Annisi, “Distance Learning for Children with Autism Spectrum Disorders,” JPI (Jurnal Pendidikan Indonesia), vol. 12, no. 2, pp. 367–375, Jun. 2023, [Online]. Available: https://doi.org/10.23887/jpiundiksha.v12i2.45794.

[14] C. T. Moody and E. A. Laugeson, “Social Skills Training in Autism Spectrum Disorder Across the Lifespan,” Psychiatric Clinics of North America, vol. 43, no. 4, pp. 687–699, Dec. 2020. [Online]. Available: https://doi.org/10.1016/j.psc.2020.08.006.

[15] S. Shanker and T. Barker. Self-reg: How to help your child (and you) break the stress cycle and successfully engage with life. New York: Penguin Press, 2016.

[16] T. Grandin. The way I see it: a personal look at autism & Asperger’s. Arlington, Tx: Future Horizons Inc, 2015.

[17] D. Costa and M. Williams, “English”, May 2018.

[18] L. Hordyk, “Modifications for Students With Autism: How Can Teachers Support Students With Autism in General Education Classrooms,” 2022. [Online]. Available:http://hdl.handle.net/20.500.12680/tx31qq470.

[19] ‘Lumos Foundation,’ Ukrainian Child Rights Network, Apr. 05, 2024. [Online]. Available: https://childrights.org.ua/members/https-www-wearelumos-org.

[20] LD Online. “All about learning disabalities”. [Online]. Available: https://www.ldonline.org.

[21] D. Norman, “Emotional Design : Why We Love (or Hate) Everyday Things”. New York: Basic Books, 2004.

[22] P. Redmond, L.Abawi, A.Brown, R. Henderson, and A.Heffernan, “An online engagement framework for higher education. Online learning”. vol. 22. no 1. p. 183-204, 2018. [Online]. Available: https://doi.org/10.24059/olj.v22i1.1175.