



ADAPTING REQUIREMENTS TO THE NEEDS AND ABILITIES OF STUDENTS – MATHEMATICS AND SCIENCE

Individual development and educational needs of the student according to diagnostic areas	The scope of accommodation of educational requirements
Physical functioning (fine and gross motor skills, including the ability to move and move around in a school setting) and body awareness and self-care activities	<ul style="list-style-type: none"> • adapting the pace of work to the student's abilities, • taking into account motor limitations and slower work pace; • worksheets adapted to the child's motor skills and taking into account his or her disability (reducing the number, scope and degree of difficulty); • the use of specialized accessories and aids, e.g. the use of pencil and pen covers; • extending the time spent working on a given activity; • adjusting the seating position in the classroom; • taking into account motor limitations in movement; • allowing hyperactive children to exercise their initiative under the supervision of a supporting teacher; • in the case of a dysgraphic child, enabling writing in capital letters, in disconnected writing (without combining letters); • not exempting the student from performing activities during classes. • do not call to the board if he has difficulty moving,

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	<ul style="list-style-type: none"> • placing the student in the classroom at a desk that ensures comfort and easy access to him, • marking the left and right sides in different ways and in different places, e.g. by drawing students' attention to the activities they perform with their left and right hands, • creating situations conducive to learning about the institutions and facilities that will be used in the future, • the student takes a seat in the first desk during classes, he or she can decide which row of desks he or she chooses, provided that it will ensure the comfort of correct hearing and understanding of lesson tasks, which is assessed by the teacher, • ensuring work in good acoustic conditions, • maintaining the student's attention during classes, • providing ready-made elements for pasting - diagrams, a small number of details occurring in given tasks (fewer elements, larger dimensions requiring initially less precise movements), • using modern educational technologies (computer classes) - computers, printers, digital cameras to conduct lessons - printing tasks, using educational computer games, developing physical fitness,
<p>Sensory functioning (visual, auditory, sensory, smell, balance)</p>	<p>Sight/Vision</p> <ul style="list-style-type: none"> • improving perception, memory, analysis and visual synthesis, • in Braille – the size of the Braille cell, the height of the points, the distance between the points, the distance between individual signs, words and lines; • in tactile graphics – graphic sizes, line thicknesses, types of textures, spaces between elements filled with different textures; • in enlarged print – font type and size; • in adaptations of drawings for visually impaired students - size of graphics, thickness of contour lines, colors, color contrasts, • eliminating unnecessary equipment from the room that significantly distracts the child's visual attention, e.g.: boards with decorations, colorful pictures. • using subdued colors in the room furnishings (walls, furniture, equipment) whenever possible.



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- limiting the number of aids used during teaching classes to a minimum.
 - increasing the format of image material.
 - using pictures with little detail.
 - using contour pictures.
 - presentation of teaching aids at the appropriate distance and height adapted to the child's abilities.
 - ensuring that the child has had the opportunity to read the demonstration material.
 - adjusting the light intensity to the child's needs;
 - seating the student close to the teacher in order to increase the student's concentration and reduce the number of distracting stimuli, increase the teacher's direct control and reduce the number of errors when copying from the board;
- Hearing:**
- improving auditory functions (exercise: auditory sensitivity)
 - conducting classes necessary for psychomotor development, stimulating the development of vision, hearing, balance, feeling and smell.
 - making sure the child heard and understood the command correctly.
 - repeating and modifying commands, e.g. giving them in a simpler linguistic form, using a gesture, demonstration or drawing.
 - establishing a conventional sign in the event of failure to understand or hear an order, e.g. a gesture, graphic sign or other.
 - directing the child's attention at important moments during classes through verbal, modeling or pictorial prompts.
 - speaking naturally, not raising your voice.
 - turn your face towards the child, do not change your position during oral communication.
 - eliminating noise in the room and sounds from outside, e.g. closing the window.
 - the teacher should choose shoes with a "quiet" sole during the lesson (e.g. clicking heels can be very irritating for a child with psychomotor hyperactivity disorder)
- Sensory:**
- using anti-stress toys to reduce tension;

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	<ul style="list-style-type: none"> • setting the appropriate temperature in the room; • sitting the child alone in a desk (if the student is hypersensitive to touch, he or she is subconsciously afraid that he or she could be touched by someone and this is a source of unpleasant tension); • using various plastic materials in selected lessons; • allowing touching teaching aids during selected lessons. <p>Smell:</p> <ul style="list-style-type: none"> • the use of perfumes or deodorants in moderation by teachers who have contact with children; <p>Balance:</p> <ul style="list-style-type: none"> • accompanying an adult while moving;
<p>Communication functioning</p>	<ul style="list-style-type: none"> • using universal language - short sentences composed of commonly used and understood words; • avoiding specialized terms and abbreviations (if necessary, they should be explained the first time they are used); • avoiding metaphorical terms and phraseological expressions; • using correct punctuation. • developing the communicative aspect of speech, • enriching passive and active vocabulary, specialized vocabulary related to the subject being taught • improving the structural aspect of speech (rules of use in practice), • improving the formal aspect of speech (articulatory expressiveness), • improving the articulation and breathing apparatus through breathing and phonation exercises, articulator exercises, • speaking and listening, using speech, stimulating active speech, • creating situations that encourage the development of students' communication skills, including reading and writing skills, as well as basic mathematical skills.
	<ul style="list-style-type: none"> • developing working memory (memory, puzzles, comparison),

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<p>Cognitive skills (attention, perception, memory, thinking)</p>	<ul style="list-style-type: none">• improving attention and auditory memory (locating sound sources, recognizing sounds, remembering the order of sounds, repeating sequences of words and sentences in the right order)• improving auditory analysis and synthesis, auditory attention• exercises in defining concepts,• improving quantitative reasoning,• extending working time,• concentration exercises
<p>Educational skills (reading, writing, counting, acquiring knowledge, understanding content, solving problems, using knowledge in practice)</p>	<p><i>Mathematics</i></p> <ul style="list-style-type: none">• Formulating clear and short instructions.• Evaluating the reasoning, even if the final result of the task was incorrect (which could result from calculation errors), and vice versa - assessing positively if the result of the task is correct, even if the strategy for achieving it was not very clear.• Spending more time learning the multiplication tables.• Allowing the student to learn different ways to learn the times tables.• Allowing the use of mathematical formulas when solving tasks. <p><i>Geometry</i></p> <ul style="list-style-type: none">• Extending the time to activate spatial imagination during geometry lessons - using the visual method.



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- Guidance and direction in orientation through: - precise determination of the location of a given object; - making geometric shapes and using them in calculations; - application of exercises and experiments using spatial models.
- Using practical exercises with geometric devices: - using a ruler, measuring a given section, drawing a section of a given length; - drawing distances using compasses; - measuring angles with a protractor.
- Failure to judge incorrect layout of a drawing or incorrect proportions of objects and spatial relationships.
- Not criticizing the student, helping to prepare graphs and geometric drawings or preparing them for the student.
- Taking into account possible difficulties in geometry by allowing more exercises and experiments using spatial models.

Counting

- Enabling the student to count in various ways in order to obtain the correct result: on squares, with drawing lines, etc.
- Increasing the amount of time devoted to practicing addition, subtraction, multiplication and division.
- Not rushing the student while performing activities at the board.
- Allowing more time to learn and perform operations with fractions.
- Enabling the student to use formulas when calculating the volume and area of solids and complex figures.
- Applying the principle of grading difficulty when solving equations: from short to longer.
- Reminding the student of the order in which activities should be performed.



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Saving

- Marking the symbols of mathematical operations with colors.
- Paying attention to written addition, subtraction, multiplication, division (especially accurate writing of units under units and so on)
- Showing the child that incorrectly copying, for example, bars or operation signs in inappropriate places, may result in incorrect calculations.
- Allowing the student to write in a grid notebook during geometry lessons.
- Not judging the difficulty of reading tables and charts.

Word problems

- Reading word problems aloud or silently.
- Checking whether the student has read the content of the task and understood it correctly.
- Analyzing the task together with the student:
 - repeating the content of a task or command;
 - providing additional explanations;
 - asking supporting questions;
 - guiding the right way of thinking, solution;
 - referring to specifics;
 - graphical presentation of the task content;
 - referring to everyday life situations.
- Dividing complex tasks into smaller steps.
- Permission to use formulas, multiplication tables and other aids.
- Not rushing the student when solving tasks.
- Orally commenting on actions during calculations requiring multiple transformations (at the blackboard)



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- Referring to experiences from everyday life by combining mathematical knowledge with practical skills.
- Using a polysensory method of mathematics education.
- Formulating commands and instructions briefly, simply and concisely.
- Allowing the use of written mathematical terminology (definitions, formulas, etc.) during lessons and tests.
- Adapting the pace of work to the student's abilities.
- Using tasks of varying difficulty alternately so that they are not boring and provide opportunities to perform the task correctly, which will contribute to increasing the student's self-esteem.

Physics

- Using short, understandable instructions when performing various commands, exercises and tasks.
- When solving tasks, checking whether the student has read the content of the task and understood it correctly; providing additional guidance as needed.
- Direction, guiding the student to the right line of thinking when transforming formulas and replacing physical units.
- Dividing tasks into stages and encouraging them to be completed in small steps.
- Covering small amounts of material with less difficulty (lowering the requirements cannot go below the core curriculum).
- The use of various physical experiences that enable the child to understand physical phenomena and processes in an illustrative way.
- Allowing the student to recreate the content of rules, definitions and experiences in his own words.
- Allowing (with the student's consent) to replace written work (class work or test) with an oral answer.
- Replacing complex questions with more simple questions during oral responses.
- Monitoring the degree of understanding of the instructions read by the student, especially during tests (slow reading pace, poor understanding of a text read once may make it impossible to demonstrate knowledge of a given material.)
- Reducing the number of tasks (commands) due to the slow pace of reading and/or writing to be completed



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within the time allocated for the entire class or extending the student's working time.

- Trying to ensure that the child does not learn encyclopedic, mechanical reproduction of knowledge from memory without understanding.
- Careful explanation of definitions and rules.
- Dividing material into smaller parts to make it easier for the student to remember and reproduce.
- Listing a few basic questions that the student should find answers to while reading the material (asking for answers when asking questions.)
- Giving up on suddenly answering questions without warning, especially on distant parts of the material.
- Use oral and written instructions in simple terms, make sure they are well understood, provide additional explanation if necessary.
- Referring to specifics, presenting the content of tasks graphically, directing and guiding thinking, referring to everyday life situations.
- Repetition and recall, consolidation of acquired knowledge and skills.
- Recalling and consolidating acquired knowledge:
 - in the initial and final part of educational classes;
 - during revision lessons;
 - after quizzes, tests and tests to supplement the knowledge.
- Using many teaching aids to diversify the teaching process.
- Using various forms of testing knowledge and skills in order to limit assessment based on the student's written answers.
- Conducting oral tests at the desk, sometimes even individual questioning.
- Assigning as much homework as the student can do on his own.
- Carrying out systematic assessment of homework.

Science/Biology

- Providing assistance to a student with difficulties in moving and orienting in the field (using a compass, compass



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- rose, magnetic needle)
- Guidance and direction in orientation on the map by precisely determining the location of a given object.
 - Active use of biological research methodology through:
 - planning, conducting and documenting observations and simple biological experiments,
 - conducting microscopic observations of fresh and permanent preparations.
 - Learning about the nature of your region, your homeland and the nature of the world.
 - Taking into account the principle of grading difficulties by moving from what is close (getting to know the child's immediate surroundings) to what is distant (getting to know other regions of Poland).
 - Indication of the content necessary to master.
 - Learning about nature through various forms of direct contact with nature:
 - closer and further trips to known ecosystems: orchard, garden, field, meadow, forest, lake, river, pond.
 - Using searching, observational and research methods.
 - Using simple oral and written instructions, making sure they are well understood, providing additional explanations if necessary.
 - Taking into account difficulties in understanding the content, especially when working with the text independently; checking understanding of the content of tasks and instructions and providing appropriate assistance if necessary.
 - Extending the time for oral expression, not calling the student to speak immediately (giving him even a short time to think)
 - Help during oral presentations in the selection of vocabulary, guidance through auxiliary questions.
 - Not calling for answers without notice, especially from distant parts of the material.
 - When solving tasks, checking whether the student has read the content of the task and understood it correctly, providing additional instructions if necessary.
 - Extending the time to solve tasks during quizzes and tests.
 - Assigning homework with tasks similar to those performed in class.



Chemistry

- Extending the learning time of definitions, formulas and chemical symbols.
- Taking into account the difficulties associated with writing down chemical reactions, confusing signs of operations, and rearranging numbers.
- Obtaining and processing information from various sources using information and communication technologies.
- Giving more time for oral answers and independent written work (during them - approaching the student, making sure if he or she needs help).
- Providing assistance during oral statements in the selection of vocabulary, guiding the right course of thinking by asking targeted, auxiliary questions related to the issue being developed.
- Providing assistance, tips and guidance in creating a clear analysis pattern by asking additional guiding questions, helping in organizing the information, drawing conclusions while discussing topics and cross-cutting issues.
- Understanding and applying acquired knowledge to solve problems.
- Mastering practical activities.
- Limiting reading and writing texts in the lesson to necessary notes that are not included in the textbook.
- Increasing time for completing tasks and practical exercises.
- Approaching the student when working independently and providing help and explanations if necessary,

encouraging him to make effort and complete the task.

- Allowing you to improve your grades in a calm environment.
- Recognizing and rewarding activity and effort put into cognitive work during lessons and at home.
- Rewarding for independently performing tasks and completing the work started.
- Safe use of simple laboratory equipment and basic chemical reagents.
- Designing and conducting simple chemical experiments.
- Longer fixation, dividing difficult material into smaller portions.
- Frequent reference to specifics (e.g. graphical presentation of task content), effective use of the principle of visuality.
- Discussing small parts of material with a lower degree of difficulty (lowering the requirements cannot go below the core curriculum)
- Providing commands in a simpler form (dividing complex content into simple, more understandable parts)
- Assigning as much homework as the student can do on his own.
- Extending the time to acquire, repeat, consolidate and remember a given part of the material.

- Extending the time allocated to learning thematic modules.

Geography

Spatial orientation

Not calling the student to the map unannounced, guiding and directing the student in finding objects, cities, rivers.

- Oral questioning, but without showing on a map or indicating the directions of the world.
- Determining the exact location of a given object on the map.
- Easing requirements for finding specific features on the map without first discussing their location.
- Providing assistance to a student using a contour map.
- Increased contour map format (A3).
- Limiting the task to coloring the map according to the legend.
- Softer assessment due to low level of visual-spatial orientation, for example outdoor lessons, determining the directions of the world

Geographic knowledge

- Enabling the student to use various sources of geographical knowledge.
- Dividing the material to be learned at home into smaller parts and extending the time to master them, breaking current tasks into smaller parts.
- Direct contact with the geographical environment:
 - closer and further trips to known ecosystems: orchard, garden, forest, field, meadow, lakes, river;
 - sightseeing and tourist trips in order to get to know and examine the area (surface features, geological structure of the Earth);



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- use of teaching aids, for example physical, political and other maps.
- Use of geographical knowledge and skills in practice.
- Providing commands in a simpler form (dividing complex content into simple, more understandable parts).
- Increased time to complete the task.
- Approaching the student during independent work and, if necessary, providing help and explanations, encouraging the student to make effort and complete the task.
- Extending the time to acquire, repeat, consolidate and remember a given part of the material.
- Asking questions in advance, when and what exactly the student will be asked about.
- Limiting the requirements for speaking on a specific topic to a few short, simple sentences on a given topic.
- Adjusting the level of difficulty of school and homework tasks to the individual student's abilities (asking fewer tasks with a lower degree of difficulty).
- More gentle assessment of charts, maps and drawings made carelessly.

Technology

- Suggesting the topic of technical work.
- Not criticizing the student, his slow pace of work, awkwardness of movements.
- Assisting in the preparation of charts and technical drawings or preparing them for the student.
- Approaching the student, directing action.
- When assessing, pay attention to:

- arranging elements on the card and maintaining proportions;
 - ability to use acquired artistic techniques in practice;
 - using utensils and tools;
 - diligence, aesthetics, completing the work, creative inventiveness.
 - maintaining order at the workplace;
 - demonstrating theoretical knowledge.
 - Encouraging activities requiring construction, cutting, modeling, creating spatial forms and arranging (blocks, puzzles, puzzles)
 - Extension of time to perform technical work.
 - Making sure that a student with impaired spatial orientation understands the concepts of right and left.
 - Appreciating the willingness to overcome difficulties, effort, perseverance, and independence in action.
 - Non-criticism, formative assessment for each piece of work done or completed.
- Information technology***
- Providing commands in a simpler form (dividing complex content into simple, more understandable parts)



- More frequent repetition and consolidation of the material.
- Giving more time to master a given skill, providing patient advice and instruction.
- Providing support in the form of guidance, tips, taking frequent breaks for short relaxation, etc.
- Not waiting for an immediate answer, preparing in advance by announcing that the student will be asked a question.
- Extension of time for oral responses.
- Covering small amounts of material with less difficulty.
- Increasing the number of repetitions in order to memorize, consolidate and understand the introduced teaching content.
- Allowing more time for the material to harden.
- Avoiding difficult or very abstract concepts.
- Often referring to specifics and examples.
- Avoiding cross-cutting questions.
- Introducing a slower pace of work.



- Wide application of the principle of visibility.
- Assessing the student's willingness and effort put into carrying out exercises and tasks, rather than the level of knowledge and skills.
- Not forcing the student to perform tasks that cause difficulties for the student.
- Avoiding criticism and negative evaluation in the class forum.
- Taking into account, first of all, the student's attitude towards the subject, his willingness, effort and preparation for classes in materials and necessary aids.
- Assigning as much homework as the student can do on his own.
- Allowing the student to work in a group and take on different roles, such as casualty and rescuer, and demonstrate real-life skills in applying first aid in emergencies.
- When assessing, taking into account the student's effort, commitment and practical skills, and not only the encyclopedic knowledge of the curriculum content.
- The use of consolidation and repetition of newly introduced knowledge at various stages of educational activities, both at the beginning of the educational unit and at the end.
- Relying on practical exercises when repeating knowledge.
- To a broader extent, shaping the student's awareness of his level and scale of achievements and strengthening his

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belief in the possibility of improvement.

- Providing the scope of questions and issues that will appear on the test (for example, 12 questions from a given section, 4 of which will appear on the test.)
- Breaking down complex exercises into parts and assessing their performance in stages; gaining knowledge in small steps.
- In case of problems with reading the tasks, difficulties in silent reading and understanding, providing the student with discreet help in the form of reading the given task.
- Extending the time to complete tasks, exercises, writing tests, quizzes, control work, and tests.
- Systematic monitoring of teaching results combined with work evaluation affecting the quality of the level of teaching and learning and the principle of durability of the student's mastery of new knowledge and skills.
- The use of various forms of monitoring the level of knowledge and practical skills acquired by students, the ability to combine theory with practice, for example oral and written statements, homework assignments.
- Enabling the student to change the form of written work into an oral one in case of problems related to reproducing the learned knowledge and transferring it in writing.
- Adjusting the difficulty of tasks included in tests and quizzes to the student's intellectual capabilities, selecting tasks from the necessary and elementary curriculum content included in the core curriculum.
- If necessary, limiting the number of tasks on exams and tests.



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	<ul style="list-style-type: none">• First, taking into account the content from the basic level, and then the content beyond the basic level (expanding, complementing, going beyond the program.)
Emotional development, identification and expression of emotions and social functioning, peer relationships with adults, understanding and observing social norms	<ul style="list-style-type: none">• developing the ability to deal with unpleasant emotions, to relieve emotional tension,• conducting classes improving how to deal with feelings,• teaching how to deal with physical and emotional tension,• building faith in one's own abilities and strengthening self-esteem and self-confidence by creating opportunities to achieve success, appreciating the effort the child puts into work,• communicating needs and emotional states; teaching the rules of social coexistence (in particular, helping neighbors and other pro-social behaviors, respecting the personal dignity of others, politeness and kindness)• developing the ability to establish proper social interactions,• improving interpersonal communication.• developing the ability to establish proper social interactions,• developing skills in coping with various social situations, teaching skills in resolving conflict situations,• teaching the ability to manage one's own behavior,• developing the ability to make choices and developing a sense of responsibility for one's own decisions,• teaching responsibility and developing emotional independence• enabling the student to participate in various social events i

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| <ul style="list-style-type: none">• cultural as a recipient and creator of culture,• encouraging group games, |
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