

DESIGNING TEACHING MATERIALS FOR CHILDREN WITH SPECIAL EDUCATIONAL NEEDS: VISUAL, HEARING AND INTELLECTUAL DISABILITIES

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Among the efforts currently being made to develop the education system, the most notable and important is the widespread and increased coverage of inclusive education. Inclusive education is the education of children with special educational needs in the same environment and conditions as their non-disabled peers. This system is designed to maintain equality between children and teens and create the necessary conditions for them to receive education, taking into account their civil rights. However, one of the factors that still prevents the full spread of inclusive education is the lack of sufficient educational and authentic materials. That is, the lack of textbooks, electronic and audio manuals, visual materials, books and teaching aids necessary for teaching students with visual, hearing, speech and intellectual disabilities negatively affects their learning process. This article offers alternative solutions and options to the problem mentioned above, offering ideas for creating new manuals and materials.

Introduction

In the era of globalization, one of the most notable efforts to comprehensively develop the education sector in all countries around the world is the integration of inclusive education. For this integration process and wide coverage, we first of all need educational materials, exhibitions and information technologies. It should be noted that such resources are not enough in our schools, and this causes a number of problems in the formation of inclusive education. In the education of children with special educational needs, educational materials selected in accordance with their needs, demands and interests lead to positive results in their mastery. This article analyzes the importance of educational, electronic and authentic materials, information technology tools and visual materials that should be applied in the educational process and the skills to use them in accordance with the needs of children.

Teaching materials for pupils with visual impairments.

1. Tactile materials. Tactile materials are objects that are designed to be read, understood and used through the sense of touch. These materials help visually impaired pupils to imagine the environment, the shape and size of objects through their hands. Examples of tactile materials include:

— graphs, diagrams, charts: these visual aids made in a relief style are useful for teaching statistics, mathematics, geometry, and philosophy to pupils.

— tactile books: books written in Braille and enriched with textured pictures.

— 3D models: geometric shapes, objects of study within the framework of academic subjects, etc.

Manipulative materials: counting sticks, abacus, cubes, tactile letters and numbers.

2. Braille-based educational materials. We know that Braille is an alphabet created specifically for people with visual impairments, and is a writing system that serves as a means of learning and communication. Examples of such applications include books and notebooks based on Braille, Braille labels for items in the classroom, large-print (18-24) materials, contrasting texts (black-and-white; yellow-black).

3. Technological aids. With their help, the learning process is not only enriched with educational technologies, but also students are able to use modern programs and overcome difficulties in an easy way thanks to them. Examples of these technologies include screen readers: NVDA, JAWS, VoiceOver; text-to-speech tools, digital magnifiers, Braille displays, accessible learning platforms

4. Audio aids. Audio guides focus on enhancing the learning process of visually impaired students through their auditory system and include audio books and textbooks, podcasts, audio instructions, and sound-emitting teaching aids: whiteboards, calculators, and more.

Teaching materials for pupils with hearing disabilities:

Pupils with hearing impairments and hearing loss need special teaching materials, and teachers should use visual and authentic materials to engage them in the lesson communication and process. Such materials are analyzed below:

1. Visual communication materials. This type of materials helps students expand their worldview, show and express their thoughts through images. Examples of such materials include tactile (finger alphabet) tables, picture dictionaries and flash cards, visual tables.

2. Visual communication systems. Examples of this category include PECS (picture exchange system), cards expressing emotions, and picture choice cards.

3. Digital and technological materials. Subtitles for video lessons, speech-to-text applications, tablet communication programs (Proloquo2Go, TouchChat, etc.), and vibrating or light-emitting devices (for breaks or warnings) are vivid examples of digital technologies.

4. Hearing aids. This type includes FM systems (teacher microphones and student receivers), induction systems, classroom sound reduction systems, and hearing aids and cochlear implants, depending on the needs of the student.

5. Authentic materials. This type of materials helps students develop real-life skills, such as how to behave in public places, communication etiquette, and social media skills. They include subtitled videos, real menus (with pictures, text), sample road signs with pictograms, visual signs of signs in public places (entrance/exit/stop, warning), and guides for the hearing impaired.

Teaching materials for pupils with intellectual disabilities

Pupils with intellectual disabilities are the next group of learners with special educational needs, and working with them is very difficult and problematic, requiring great patience and effort. It is necessary to be very careful when involving them in the learning process, otherwise small mistakes can have a bad effect on their psychology and cause them to lose their desire and interest in learning. Materials that can be used in lessons and learning processes:

1. Visual and tactile materials. These materials help to simplify abstract concepts and create impressions and ideas in the student's mind.

For teaching mathematics, it is advisable to use abacus, counting sticks, 3D models of geometric shapes, illustrated mathematical rules and formulas, and for teaching literacy, magnetic letters, picture and word matching cards, textured letters (tactile alphabet), and cards for constructing sentences. In the teaching of natural and social sciences, 3D models of objects, pictures are more common.

2. Visual supports. These types of materials make it easier to remember and understand information:

Visual charts include a pictorial representation of the daily routine, "Before-Then" charts, and step-by-step charts with pictures and instructions.

Pictograms and pictorial communication tools include PECS cards, picture boards for communication, and picture cards and flashcards.

Graphic materials include sequence cards, comparison charts, including Venn diagrams, and picture maps arranged in a narrative style.

3. Simplified learning materials. Since traditional learning materials are difficult for students with disabilities to master, there is a need to simplify learning materials. We can use the following steps:

1. Simplify texts and tasks: short and simple sentences, large and clear fonts, fewer multiple-choice tests, simplified worksheets.

2. Adapted manuals and books: illustrated and repetitive stories and texts, as well as stories of social importance (on topics such as behavior, family and friends).

3. It is advisable that the instructions for the task consist of instructions that are visually directional and consist of simple sentences.

4. Materials that support concentration:

These types of materials help students to concentrate for a certain period of time and increase the efficiency of reading and comprehension. These materials:

Calming tools: anti-stress kits, fidget toys, sensory displays

Attention management tools: visual timers - to track attention span, colored folders - to develop concentration and selection skills, colored markers for marking text - can be used to mark points that need to pay attention

Conclusion

In conclusion, although inclusive education continues to expand worldwide, serious challenges remain regarding the availability and adaptation of teaching and learning materials. In many cases, resources are not sufficiently accessible or responsive to the diverse needs of pupils with disabilities, which limits the effectiveness of inclusion in

practice. These difficulties can be addressed through the thoughtful use of modern educational and technological tools tailored to learners' individual needs, interests, age, and developmental level. When combined with appropriate pedagogical strategies and teacher support, such resources can significantly enhance accessibility, participation, and learning outcomes for all students.

