ASSISTIVE DEVICES AND TECHNOLOGY IN EDUCATION OF CHILDREN AND STUDENTS WITH MENTAL RETARDATION

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ABSTRACT
The purpose of the present study is to establish what type of assistive devices and technologies are used in the educational process for children and students with mental retardation. The purpose formulated determines the respective methods: theoretical analysis, pedagogical supervision, conversation and enquiry. The study discusses current situation in Bulgaria and summarizes international good practice regarding assistive devices and technologies that can facilitate children and students with mental retardation in their education.
The results from this survey confirm the thesis that Bulgarian educational system, regarding the theme of the assistive devices and technologies for children with special educational needs is hardly recently discussed and the usage thereof is rather incident than practice. The study also emphasizes the importance of assistive technology in education of children and student with mental retardation.

Key words: special education needs, integrated education, mental retardation, low-tech assistive devices, high-tech assistive devices

INTRODUCTION

The focus of the present paper is the problem of assistive devices and technologies in educational process of children and students with mental retardation.

The educational systems of several European countries are implemented assistive devices and technologies for children and students with special educational needs. In regards of the implementation of assistive devices and technologies in the sphere of education the leading countries can be named as England, Italy, Germany and the USA. Our educational system, regarding the theme of the assistive devices and technologies for children with special educational needs is hardly recently discussed and the usage thereof is rather incident than practice.

It is a fact, that the technologies have opened many doors in the educational system for

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children and particularly for the ones with disabilities. The alternative solutions in the world of technologies facilitate writing, reading and communication skills of children with physical, sensor, and cognitive disabilities in various manners. They suggest effective solutions for the teachers too, who work with students with special needs. Within the context of the considered problem, one can see the change of the language used when we talk about assistive devices and technologies. When defining the support devices and technologies, we consider the definition of the World Health Organization. Though a little bit general, the term "assistive technologies" is accepted as "any device or equipment, which allows the individuals to fulfill tasks which can not be fulfilled independently or to facilitate the manner and security of the activity performance".

Assistive technologies may include commercially available or "home made" devices and technologies that are specially designed to meet the idiosyncratic needs of a particular individual (1).
Within the context of definitions, the potential range of the assistive technologies and devices,

is exceptionally wide and covers both highly technological (high-tech), as well as low technology (low-tech) solutions (2).

The actuality of the studied problem we search in the more clearly defined trend related with the idea "How the assistive devices and technologies can facilitate children and students with mental retardation in their education".

The mental retardation is defined by the Tenth Revision of the MKB as the "state of the retained or incomplete development of intellect, featured by the disorders of the skills, which rise in the very process of development and give their share in the formation of the general level of intelligence, that is the cognitive, speech, motion and social skills". The further clarifications of that definition direct our attention unto the fact that the "backwardness can be combined, but also can not be combined with other psychic or body disorders."

Through the prism of the classification systems of the mental retardation, criteria are drawn, which are the basis potions for the particularization of the different degrees of mental deficiency: light mental deficiency, moderate mental deficiency, heavy mental retardation and deep metal mental retardation.
The mental retardation is a complex conception, which can be difficultly determined and measured. This complexity facilitates the wide range of assistive devices and technologies, which make easier the equal participation of children with mental retardation in the educational process.

The problem with the evaluation, implementation and utilization of assistive devices and technologies by the children and by students with mental retardation in the educational process defines the frame of the conception and the basic directions of the pedagogy for children with mental retardation.

METHOD
Within the construct of the integrated and special education the assistive devices and technologies are included for children and students with mental retardation.
The purpose of the study is directed through the perspective of the theoretical and practical significance of the problem.
The purpose of the present research is to establish what type of assistive devices and

technologies are used in the educational process for children and students with mental retardation.

The purpose formulated determines the respective methods: theoretical analysis, pedagogical supervision, conversation and enquiry.

The pedagogical study covers the following aspects:
- Evaluation of the functional difficulties of children and students with mental retardation in the educational and learning process.
- Assistive devices that are recommended by the teams for complex pedagogical evaluation of children and students with mental retardation;
- Provision and usage of assistive devices and technologies by children and students with mental retardation in the educational process.
- International experience which demonstrates the influence and the roles of the assistive devices and technologies in the educational and learning process for children and students with mental retardation.

The theoretical conception developed during the coordination of the statements in the indicated aspects of the problematic, direct our activity unto planning, preparation and realization of the research.

RESULTS
In its very nature, this cognitive approach follows, how the functional difficulties of the children and students with mental retardation are evaluated in regards of the assistive devices and technologies and the usage thereof in the education and learning, and is conditionally divided in two stages.
1. First stage of the research
The first stage unites the activities directed unto the questionnaire study of teachers from the kindergartens and school in regards of the evaluation and utilization of the assistive devices for children and students with mental retardation in the school and learning process.
The results from the enquiry research show the following:
- In the card for the primary evaluation of the general development of a child or student with mental retardation by the Expert Complex Pedagogical Evaluation

unto the Regional Inspectorate of Education, the part for "special cares and technical solutions" is systematically been not filled in, and not assistive devices and technologies are being recommended.

- In the kindergartens and schools, the members of the teams do not evaluate the individual needs of the children and students with mental retardation for assistive devices, due to the lack of knowledge on the assistive devices and technologies for children and students with special educational needs, as well the application thereof in education;

- Didactic materials are used in the school process, but no assistive devises and technologies facilitating learning and education of children and students with mental retardation are found;

- Assistive devices and technologies are not available in the kindergarten and school for the children and students with mental retardation;

- In the answers of 13% of the respondents the "accessible architectural environment" is determined as assistive technology, which is very indicative for the misunderstanding of essence of the topic.

- The need of additional qualification in regards of the assistive devices and technologies for children and students with special educational needs and the application thereof in the educational and learning process. Only 3% from the questioned ones, have participated in training or course related with the assistive devices and technologies for children and students with special educational needs, which confirms the necessity of additional qualification on the subject.

From the enquiries, conversations and discussions made with the pedagogy college and with the teams in the kindergartens and schools the layout of the following problematic spheres is being shown:

- Evaluation of the individual needs of children and students with mental retardation for assistive devices and technologies is present, as a question in most of the cards for complex evaluation, but is not performed by the teams in the kindergartens and schools.

- In the educational and learning process assistive devices and technologies which facilitate the writing, reading and communication of children and students with mental retardation are not applied;

- Necessity of additional qualification of teachers and teams for complex pedagogical evaluation in regards of the assistive devises and technologies and their implementation in the school process;

- Development of the methodology for evaluation of the needs of children and students with mental retardation in case with functional difficulties from assistive devices and technologies in the school process, as well the provision thereof for individual or group usage.

2. Second stage of the research
The second stage of the research is directed for good practices from the international experience in utilization of assistive devices and technologies for children and students with mental retardation in education.

One of the greatest potentials for the use of technology is in the education of children with disabilities. In one of the first published reports on the implications of technology in special education, Blackhurst (1965) study about ways that a variety of technological devices could be developed to enhance the learning and independence of students with a variety of disabilities (3).

In the perspective of the functional difficulties in education of children and students with mental retardation, the research of international experience responds with the wide range of assistive devices and technologies, which facilitate their equal participation in the educational and learning process.

The following list summarizes international good practice regarding assistive devices and technologies that can facilitate children and students with mental retardation in their education. While the list is certainly not exhaustive, we have attempted to provide a range of educational examples representing both the low technology-end and the high technology-end of the spectrum of assistive technology. They are arranged in the following categories:

- *Handwriting* – raised lined paper; pencil grips, adapted writing tools; tactile paper; alternative keyboard; templates of letters and/or words; tape-recorder

Picture 1

Writing devices - come in variety of shapes and sizes. They are designed to alleviate writing stress and gripping problems.

- **Reading** - books on tape; screen reading software; picture/print stories; line marker; highlighter; tracking and contrast aids

Picture 2

Tracking Devices - assists students in tracking lines of text displayed on the page. Generally highlights one row of text at a time. Device is moved down page as student moves from one line of text to the next.

- **Math** - calculator with large numbers, printout or talking capabilities; number line; touch point numbers; adapted abacus, protectors and tactile rulers
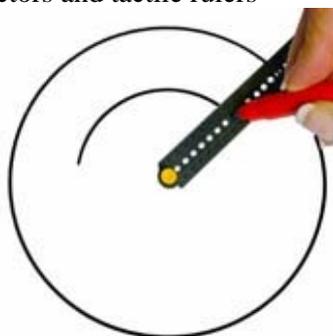
Picture 3

Adapted compass – made of black plastic, which allows the user to draw circles

measuring quickly and easily. Raised lines show the half centimeter marks and raised dots to show the centimeter marks, by each measurement mark is a hole for pens and pencils to fit in, enabling circles to be drawn.

- **Written expression** – dictation; story organisers; word prediction software; electronic dictionary
- **Daily organisation** - schedule; picture schedule; electronic memo minder; folder organizers. (4)
- **Communication** - pictures; topic boards; objects; signing; voice output communication devices

Picture 4

Alternate and Augmentative Communication (AAC) devices - range from low-tech picture communication symbols to high-tech electronic speech output devices and computer-based communication systems. AAC devices can be used as a substitute for oral speech or as an aide for clarifying or augmenting speech that is partially intelligible.

- **Levels of independence** - picture/print schedule; assignment book; study guide; alarm watch; voice recorder/memo minder, special scissor

Picture 5

Special scissors - easy grip lightweight scissors require only half the effort of regular scissors. Self-opening handles are operated by gentle pressure between thumb and fingers or fingers and palm.

- **Seating/positioning** - arm chair; bean bag chair; wrist support; desk easel; foot rest; accessible desk

CONCLUSION

It is clear that assistive technology have an important role to play in ensnaring that inclusive learning is available to all students.

In theoretical and applied aspect, the priority defined is as follows:

- Development and approbation of methodology for evaluation of the individual needs of children and students with mental retardation from the assistive devices and technologies in their education;
- Qualification of teachers and teams for complex pedagogical evaluation of the contemporary assistive devices and technologies for children and students with mental retardation.

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