„ION CREANGĂ” STATE PEDAGOGICAL UNIVERSITY, CHIȘINAU

With manuscript title
U.D.C376.091(043.2) =111

CRIȘAN ELENA

THE USEFULNESS OF EDUCATIONAL SOFTWARE IN CORRECTING LANGUAGE DISORDERS IN STUDENTS WITH INTELLECTUAL DISABILITIES

Specialty 534.01 - Special Pedagogy

Summary of the Doctoral Thesis in Educational Sciences

CHIŞINĂU, 2026

The thesis was elaborated within the Doctoral School of Educational Sciences of the „Ion Creanga” State Pedagogical University of Chisinau, Republic of Moldova

The componence of the Public Support Commission of the PhD thesis:

Chairman::
RACU Aurelia, university professor, habilitated doctor in Educational Sciences, „Ion Creanga” State Pedagogical University of Chisinau, Republic of Moldova

Scientific supervisor:
STRATAN Valentina Associate Professor, PhD in Educational Sciences, „Ion Creanga” State Pedagogical University of Chisinau, Republic of Moldova

Official reviewers:

1. **OLĂRESCU Valentina,** university professor, PhD în Psychology „Ion Creanga” State Pedagogical University of Chisinau, Republic of Moldova
2. **POPOVICI Doru Vlad**, university professor, habilitated doctor in Educational Sciences, University of Bucharest, Romania
3. **GONCEARUC Svetlana**, university professor, PhD în Educational Sciences, State University of Moldova, Republic of Moldova

The defense will be held on March 27th, 2026, at 11 a.m. in the meeting of the Public Support Commission of the Doctoral School of Educational Sciences of „Ion Creanga" State Pedagogical University, Chisinau (Ion Creanga Street No 1, block 2, Senate Hall.

The PhD thesis in Educational Sciences and the abstract can be consulted at the Scientific Library of the „Ion Creangă” State Pedagogical University of Chisinau and on the website of ANACEC www.anacec.md

The abstract was sent on 26th February 2026

Chairman of the Committee for public presentation:

RACU Aurelia, university professor, habilitated doctor in Educational Sciences, „Ion Creanga” State Pedagogical University of Chisinau, Republic of Moldova

Scientific supervisor:
STRATAN Valentina Associate Professor, PhD in Educational Sciences, „Ion Creanga” State Pedagogical University of Chisinau, Republic of Moldova

AUTOR
CRIȘAN ELENA

CONTENT

CONCEPTUAL REFERENCES

The relevance and importance of the issue addressed. The most common form of language manifestation is speech, that is, the verbal realization of the communication process. Man cannot think without using linguistic means, the thinking of a typical, fully developed man is always verbal thinking, and verbal language is always loaded with mental content. Language represents a complex system of codes and rules that allows the communication and expression of thoughts, emotions and needs; it is a dynamic process, influenced by biological, psychological and social factors. Any disruption of these factors can generate difficulties in understanding or expressing language, leading to language disorders or intellectual deficits of varying intensity. The child with mental deficiencies (disabilities) encounters difficulties in phonetic and phonological aspects, caused by his inability to observe exactly how pronunciation is produced, necessary for correct imitation. A. Gherguț [29,31] considers that the existence of a large number of language disorders and the deficit of thinking give the speech of the child with intellectual disability an almost unintelligible character, its reception being much more difficult, and in terms of expression a simple, uniform verbal behavior; from a lexical aspect, the vocabulary of the child with disabilities is limited, especially in terms of words and abstract concepts. The authors M. Roșca, A. Roșan, consider that the mentally disabled person expresses difficulties in perceiving the structure of a word or a sentence. The analysis and synthesis of words is carried out with difficulty in the young schoolchild, the narrow visual field determines reading, by letters or syllables; the semiotic function is poorly represented, which affects both the level of language development, the capacity for communication, and the efficiency of thinking operations, of mnemonic procedures and of image combinatorics. Educating children, students with intellectual disabilities, requires teachers to use special methods and techniques to find new, innovative ways to recover deficiencies and form correct motivational stimuli [32, 34].

The current guidelines Burlacu,T., [7, 8], Gherguţ, A., [27, 29], Popovici, D. V., [42, 43] in the field of psychopedagogy, recommend the use in school of tools derived from professional software applied on the computer, on the other hand, the new guidelines in the field of special psychopedagogy Fogarassy – Neszly, P., [25], Muşu, I. [34], Pădure, M., [36], Racu, A., Popovici, D.V., Racu, S., Danii, A. [44], Tobolcea, I., [45, 46] discuss the functions that the "computer" and its related programs have, namely as a mediator – it supports and motivates the child by adopting learning at his level, a "proteic" function (the computer ensures a transcoding of a deficient sensory or motor channel into another well-controlled one), this type of application is useful or how many times are working with children who present different types of deficiencies. Starting from the excessive concreteness of the thinking of children with intellectual deficiencies and the lack of coherence of thinking, many authors A. Gherguț [30,], Păunescu, C., Mușu, I. [37], V. Olărescu [35], E. Enăchescu [24] show how these limit, more or less accentuated, access to information and the ability to retrieve and transmit information.

Treating speech disorders from their initial stage creates the early premises for eliminating some of the causes of school failure, namely the causes of speech therapy [4, 6]. Therapy must be adapted to each child, to each individual case, at a pace that suits his or her learning possibilities and the degree of the disorder. Due to the complexity of the problems involved, the methods in the therapy of speech disorders are very diverse. Specifically, the techniques used are based on exercises and encompass what the child must go through to achieve the proposed objective: obtaining correct speech [46, 47]. Any practicing speech therapist recognizes that the technique of sustained repetition of the correct pronunciation of sounds, syllables, words and sentences entails a decrease in interest and motivation for practice, as it causes a certain monotony, fatigue and regression in correction [41,46]. That is why a combination of traditional techniques with new logo-therapeutic computer technology would stimulate the child's motivation for systematic practice and accelerate therapeutic progress. Through computer technology, the therapeutic relationship is improved in the sense of eliminating the frustration activated by the monotonous exercises of classical therapy, which indirectly determines the increase in children's self-esteem [43].

Description of the research field and identification of the research problem. The synthesis of the evolution of terminology in the field of intellectual disabilities reflects a global transition from medical and stigmatizing terms to more inclusive terms. This terminological evolution is not just semantic, but represents a paradigmatic shift: from a focus on the "defect" of the individual to an emphasis on eliminating social barriers, promoting rights and inclusion. The use of the term "intellectual disability" emphasizes respect for the dignity of persons and alignment with international human rights standards. [49,50] In a healthy educational environment, technology, according to P. R. Petrescu [38], can support students to use the new technology-based learning framework to learn, communicate, collaborate, create and develop their skills and knowledge. Current guidelines in speech therapy C. Bodea Hațegan [2,3,4], I. Tobolcea [45, 46,], D.V. Popovici [42] V. Olărescu [35], Crișan E., Stratan, V. [18-21], M.D. Avramescu [1], D. Buganu [6], recommend the use in school of tools derived from professional software applied on the computer. On the other hand, the new guidelines in the vision of some authors such as: R. Foloștină [26], O. Istrate [33], A. Gherguț [30] discuss the functions that the "computer" and its related programs have, namely as a mediator - it supports and motivates the child by adopting learning at his level, a "proteic" function, (the computer allows the transcoding of an affected sensory or motor channel into a functional and well-controlled one. This type of application is valuable whenever working with young people who have various types of deficiencies) [12-16]. As the author Burlacu T. emphasizes, capitalizing on the real potential of each student with special needs requires a correct assessment and the development of an individualized educational plan, which should include the use of access technologies and computer-assisted instruction, adapted to the particularities and needs of each student with special needs [7, 8]. In many countries, including Romania, national strategies and programs are developed that aim to integrate ICT into the educational process at all

levels, as well as the introduction of digital textbooks and computer resources as the main teaching materials used in the classroom.

The successful integration of ICT in teaching is part of the natural evolution of learning and is an opportunity to integrate the latest technological discoveries with the interaction and involvement offered by the traditional way of knowing. The use of ICT can significantly contribute to increasing the attractiveness of the educational process. In addition, with the COVID-19 pandemic, the use of information technologies in various levels of learning has increased. Authors such as Lin Y. and Neuschaefer-Rube C. [48], establish the idea that, in order to find, use and evaluate such resources, it is important to be familiar with the structures, concepts and formats of existing digital tools. Studies appear in the literature that support reduced intervention times, the attractiveness of learning activities for students, the ease with which the therapist can manage the assessment, intervention, and the child's progress through the use of educational software [48], however, the analysis and synthesis of the literature and current research elucidated the existing gaps, which helped us conclude the lack of studies devoted to the usefulness of educational software, especially the Logopedix software, in remediating language disorders in students with intellectual disabilities (mental retardation).

Based on the above, we claimed the Scientific Problem, anchored on several questions: *How important is the educational software used in correcting language disorders? What are the conditions for applying educational software? What strategy for using educational software in correcting language disorders in students with mental retardation should be implemented? What is the attitude of practicing speech therapists towards implementing software in speech therapy activity? What skills in technologies, platforms, software do speech therapists have? Can educational software be useful in speech therapy intervention with all categories of students with disabilities?*

Research goal: identifying the competence and potential of speech therapists to use educational software in speech therapy, their opinion and attitude regarding the usefulness of software in improving language disorders, and if necessary, structuring information sessions on the use of educational software for them and assessing the language development of students with intellectual disabilities (mental retardation) in order to develop a Speech Therapy Intervention Program mediated by Logopedix software, aimed at facilitating the improvement and remediation of language disorders

Research objectives: -studying and arguing the specialized conceptual benchmarks regarding mental disability (mental retardation), types of educational software, their usefulness in the educational process; -developing a questionnaire for speech therapists, to identify the competence and potential of using educational software in speech therapy; -identifying educational software suitable for students with mental disabilities (mental retardation), the conditions and strategies for their usefulness; -selecting and applying methods for evaluating the language of students with mental retardation; -structuring information sessions on the use of the "Logopedix" educational software for speech therapists; -developing, implementing and

validating the Speech Therapy Intervention Program, based on the use of the resources of the "Logopedix" educational software, administered to students with mental disabilities (mental retardation); -drawing general conclusions, recommendations and suggestions for future research.

Research hypothesis. We assume that the use of the educational software Logopedix in speech therapy, in addition to classical speech therapy strategies with students with mental disabilities (mental retardation), will accelerate the speech therapy effect, if:

- we assess the level of language development of students,

- we know the potential and skills of speech therapists about educational software and their attitude towards the use and usefulness of the software,

- based on the results, we will develop information sessions for speech therapists on the use of the educational software Logopedix and a speech therapy intervention program mediated by the educational software Logopedix, appropriate to the level of language development of students.

Research methodology:

- *theoretical methods* (analysis and synthesis of specialized literature); *empirical methods* (questionnaire, test, observation and control experiments, speech therapy interventions). The following instruments were used: "Questionnaire on the use of educational software, experience of using applications in speech therapy"; "Test for knowing the psychological age of language" (VPL); "Test for examining lexis"; "Test for auditory comprehension of language - TACL-R"; *mathematical and statistical methods* (Indicators of measuring the variation of data around the central tendency – standard deviation; Indicators of kurtosis and flattening/asymmetry (Skewness), Mann-Whitney U Test; Wilcoxon Test; Chi-square Test; Cronbach's Alpha Index; Fisher Test; Kruskal-Wallis Test; Model Fit; Omnibus Test; Shapiro–Wilk Normality Test, Rank-Biserial Correlation, McFadden Coefficient of Determination, establishing the difference between two means in the case of independent/dependent samples; mediation model.

The experimental sample consisted of: 214 speech therapists, participants in the questionnaires; 60 students aged between 10 and 14, diagnosed with mental retardation, from the "Constantin Păunescu" Special Secondary School, Tecuci, Galați County.

The results obtained that contribute to solving the scientific problem:

- *scientific systematization* of data from field research;

- *identification* of the competence, potential, opinion, attitude, degree of use of an educational software by speech therapists in the language therapy of students with mental disability (mental retardation);

- *highlighting* the speech therapy educational software as a specific tool in *the remediation and improvement* of language disorders;

- *structuring* information sessions on the use of an educational software for speech therapists;

- *development* and implementation of a speech therapy intervention program mediated by an educational software, appropriate to the level of language development of students with mental disability (mental retardation).

- *determining* the increase in the efficiency of therapeutic interventions in the correction of language disorders in students with mental disability (mental retardation)

- *the specialized* literature on intellectual disability, mental retardation, speech therapy, educational software was studied and analyzed;

The scientific novelty and originality of the research findings:

- the specialized literature on intellectual disability, mental retardation, speech therapy, educational software was studied and analyzed; the "Questionnaire on the use of educational software - the experience of using applications in speech therapy" for speech therapists was developed and applied;

- a set of methods for evaluating the language of students with intellectual disability (mental retardation) was selected and applied; the strategy of combining traditional speech therapy methods with new speech therapy information technology was substantiated, which would stimulate the motivation of students with intellectual disability (mental retardation) for systematic practice and acceleration of therapeutic progress;

- information sessions for speech therapists were structured, on the use of the educational software "Logopedix"; the Speech Therapy Intervention Program, based on the use of the educational software "Logopedix", was developed, implemented, validated;

- the opportunities, but also the obstacles, of using educational software in speech therapy from the perspective of practicing speech therapists were highlighted; the language of students with intellectual disabilities (mental retardation) was improved through the use of Logopedix software.

The theoretical significance of the work consists of the following: substantiating theoretical approaches in which educational software increases the motivation and efficiency of logo-therapies, transforming the process of remediation of language disorders into an animated, interactive and efficient activity for students with intellectual disabilities (mental retardation); integrating the principles of holistic learning with information technology by developing the methodology for using educational software in organizing and carrying out speech therapy activities for students with intellectual disabilities (mental retardation); developing a speech therapy intervention program through the educational software "Logopedix" with applicability in correcting language disorders in the case of students with intellectual disabilities (mental retardation), with the possibility of transposing it into a methodological guide for organizing therapeutic intervention; developing and carrying out a questionnaire for evaluating specialists from the perspective of the usefulness of educational software in speech therapy intervention.

The applied value of the work lies in the two-dimensional approach to speech therapy. In the foreground is the methodological approach, specific to speech therapy for correcting language disorders in

students with mental retardation, supplemented by the information-technological approach, exercised by educational software, especially "Logopedix", in order to motivate students for systematic practice and accelerate therapeutic progress. The study enriches pedagogical and speech therapy science, and the scientific benchmarks will serve as additional information in the continuous training of specialists. The speech therapy intervention program through the educational software "Logopedix" developed, implemented and validated, offers an alternative intervention model for improving language disorders in students with mental retardation and can be successfully used by practicing speech therapists. The theoretical and practical information, resulting from the research, can serve as documentation resources for speech therapists, the questionnaire, developed and applied, serves to identify the opinion of speech therapists about the usefulness of educational software in correcting language disorders in students with mental retardation. The analysis and statistical processing of the results of the developed and applied questionnaire identified the circumstances (totality of environmental factors) of the existence of differences between speech therapists regarding the approach to educational software in practical activity.

The main scientific results submitted for support consist of the following components:

- There is the "Questionnaire on the use of educational software, the experience of using applications in speech therapy",

- We have recorded the potential and skills, attitude and opinion of speech therapists regarding the use versus usefulness of educational software in speech therapy;

- There are statistically significant differences between speech therapists within socio-demographic data,

- In all institutions that provide speech therapy services, there are devices that are available to speech therapists to be used and the attitude of speech therapists towards the use of information technologies is open, positive, confident in the usefulness of their use in the treatment of language disorders with students with mental retardation,

- There is a Speech Therapy Intervention Program, based on the use of the resources of the "Logopedix" educational software,

- There is a guideline content for conducting information sessions and training practical skills for working with the "Logopedix" educational software, for speech therapists,

- There are statistically significant differences between the remediation of language disorders in students with mental retardation with whom speech therapy intervention was carried out through the Logopedix educational software and those who benefited only from classical speech therapy intervention.

Approval and implementation of the research results. The resulting materials were presented at the joint meetings of the sessions of the Doctoral School of Educational Sciences, in the published works of scientific conferences, in specialized journals, in the process of continuous and complementary training of speech therapists; recommended for the courses of Special Pedagogy, Speech Therapy, Speech Therapy

Assistance, for the training of students in special psychopedagogy and master's students in speech therapy at the "Ion Creangă" University of Education and the "Ovidius" University of Constanta.

Publications on the topic of the thesis: The theoretical and practical aspects illustrated and the results of the research were reflected in 28 publications, of which 11 in scientific journals, 17 in collections of scientific conferences.

The volume and structure of the thesis. The thesis consists of: annotations, list of abbreviations, introduction, three chapters, general conclusions and recommendations, bibliography of 152 titles, 4 appendices, 132 pages of basic text, 47 figures and 12 tables.

Keywords: language disorder, Intellectual disabilities/mental retardation, educational software, speech therapy software program – Logopedix, utility and use of software.

THESIS CONTENT

The thesis consists of the following parts: annotation, list of abbreviations, introduction, three chapters, conclusions and recommendations, bibliography, annexes.

In *the Introduction,* the topicality and importance of the research topic, the major scientific problem addressed, as well as the purpose and objectives of the thesis were presented. Also, the scientific novelty of the investigation and the results obtained were highlighted, along with the theoretical importance and applicative value of the work, the implementation and validation of the research results.

In Chapter 1, entitled "*Scientific reflections on the use of educational software in the remediation of language disorders in students with intellectual disabilities*", a theoretical incursion is made from the point of view of language disorders in students with mental retardation and the usefulness of educational software from the perspective of correcting language disorders. The concepts of mental retardation, educational software, speech therapy were defined. The theoretical approaches, general and specific aspects of language and communication in the context of intellectual disability (mental retardation), the classification and delimitation of mental retardation with the main characteristics, the dynamics of development of the person with mental retardation, the specifics of computer-assisted speech therapy; the short, medium and long-term implications of integrating digital tools in the process of correcting language disorders in students with mental retardation were highlighted.

Chapter 2, entitled "*Recording the attitude and potential of practicing speech therapists in the use of educational software in speech therapy of students with intellectual disabilities*" includes the description of the observation experiment, with the purpose, objectives, hypotheses and methodology of the research. The chapter is devoted to the evaluation of speech therapists only, regarding their opinion towards educational software and their use in speech therapy. The "Questionnaire on the use of educational software - the experience of using applications in speech therapy" was developed and applied for speech therapists. The questionnaire consists of 23 items (questions) and was completed by 214 practicing speech therapists from various institutions and who carry out activities with different categories of subjects with language disorders

- primary or secondary. At the initial stage, only the first part of the questionnaire questions were presented. The answers were statistically processed and described, explaining the significance of the results.

The goal put forward for the assessment stage: developing a questionnaire for speech therapists and identifying the competence and potential of speech therapists to use educational software in speech therapy, their opinion and attitude regarding the usefulness of software in improving language disorders.

Objectives of the assessment experiment:

- developing a questionnaire for speech therapists to identify the potential for using educational software in speech therapy;

- identifying the sample of speech therapists available to complete the questionnaire;

- applying the "Questionnaire on the use of educational software, experience of using applications in speech therapy";

- processing and interpreting the information provided by the surveyed speech therapists;

- exploring possible differences between the opinions of speech therapists regarding the skills and attitude towards the use of educational software depending on their demographic characteristics (gender, age, length of service), but also on environmental factors such as: category, type of institution in which the specialist works.

- estimating possible effects of personal factors, environmental factors, degree of intellectual disability of students, on the attitude of speech therapists towards the use of educational software in speech therapy.

- drawing conclusions regarding the potential and skills of using educational software, the attitude, the opinion of practicing speech therapists.

The hypothesis of the finding stage *was:* We assume that the assessment of the potential, skills and attitude of speech therapists regarding educational software and their attitude towards the use and usefulness of the software will present us with different results:

- There will be statistically significant differences between speech therapists regarding the potential, skills and attitude vs. the use of educational software depending on their demographic and environmental characteristics (gender, age, length of service);

- There will be statistically significant differences between speech therapists regarding the attitude towards the use of educational software in speech therapy, depending on the degree of disability/intellectual deficiency of the students (mild, moderate, profound, severe mental retardation or multiple disability).

- There will be statistically significant differences between speech therapists depending on the category and type of institution in which they work;

- There will be statistically significant differences between speech therapists depending on the level of their studies.

The variables of the observational experiment are;

Independent variables/predictors: gender, age, work experience, category and type of institution, level of education of speech therapists, type/degree of disability, type of mental retardation of students.

Dependent variable/criterion: Language disorder, speech therapists' skills about educational software; speech therapists' attitude towards the use of educational software in speech therapy.

The variables taken into account in this study have the following levels:

1. Gender: male, female.

2. Age: 20-40 years, 41-60 years.

3. Work experience: a few months, 1 year, 1-10 years, over 10 years.

4. Attitude towards the use of educational software in speech therapy: positive, neutral and negative. Institution category: state, private.

5. Type of school: preschool, primary school, middle school, high school, private psychology office, speech therapy office.

6. Categories of institutions

7. Degree of intellectual disability of the student being worked with:

Following the analysis and synthesis of the research works of Lin Y, Neuschaefer-Rube C., Dai M., Xu J, Lin J, Alazzam MB., Al-Radaideh AT, Alhamarnah RA, Abbasi R., Zare S., Ahmadian L., Saeedi S., Ghazisaeedi M., Ebrahimi M., Tadayon H., Abbasi R., Sadeqi Jabali M., we were inspired and developed the *"Questionnaire on the use, usefulness, experience of using educational software, technological applications in speech therapy*".

The header part of the questionnaire refers to the demographic information of speech therapists, being composed of items that tracked data such as age, gender, type of employment contract, type of institution, background, length of service, studies, potential and competence.

The questionnaire includes a total of 23 items designed and adapted to correspond to the specifics of the Romanian language and cultural context, and is divided into two parts. The first part, 11 items, will be completed by speech therapists initially, in the ascertainment stage, to collect information about the level of familiarity with technological devices, educational platforms and software, the use and willingness of speech therapists to use them in speech therapy.

The questionnaire contains items with predefined answers on a five-point Likert scale, ranging from 5=total agreement to 1=total disagreement for items aimed at achieving objectives in the speech therapy process, on the one hand, but also a Likert scale from 1 to 10 for items aimed at satisfying students' educational needs through the use of educational software in the therapeutic process, on the other hand.

The process of adapting the Questionnaire involved the contribution of a multidisciplinary team, consisting of a psychopedagogue, a speech therapist, a clinical psychologist and a pediatric neurologist, thus ensuring the accuracy and relevance of the content from a theoretical and practical perspective. The questionnaire was initially piloted on a sample of 30 speech therapists, in order to test the clarity, relevance

and coherence of the items. The internal consistency analysis of the instrument revealed a Cronbach's Alpha coefficient of 0.79, a value that indicates a satisfactory level of internal reliability and validity. This result confirms that the instrument adequately measures the proposed constructs and can be used with confidence in the main research. In the case of our sample of 214 participants, the Cronbach alpha index was 0.86, which leads us to conclude that this instrument measured what it intended to measure.

Tabel 1. Cronbach Alpha

Cronbach Alpha	N
o,866	**23**

The questionnaire was disseminated online through the Google Forms platform to all speech therapists in special schools and other forms of professional practice.

Methods used: for the evaluation of speech therapists - *Questionnaire o*n the use of educational software - experience of using applications in speech therapy; *statistics*: Indicators for measuring data variation around the central tendency - *standard deviation*; Indicators of kurtosis and flattening/asymmetry (Skewness), Mann-Whitney U Test; Cronbach's Alpha Index; Kruskal-Wallis Test; Model Fit; Omnibus Test; Shapiro–Wilk Normality Test

The first stage involved achieving objective O1 according to which we investigate the opinion of speech therapists regarding the use of educational software in speech therapy intervention; we correlated the response to different items of the questionnaire with the demographic data of the study participants.

Thus, 214 practicing speech therapists participated in the study; The socio-demographic data about the speech therapists participating in the research are illustrated in the table.

Tabel 2. Socio-demographic data of speech therapists (no.)

Gender		age		origin		Studies			Contract type		contract category	
F	M	20/40	41/60	urban	rural	Hsc	M	D	undeterm	determin	state	private
132	82	84	130	194	20	51	130	24	186	28	175	39

We present arguments regarding socio-demographic data. The uneven distribution by *gender* reflects a frequently encountered trend in the speech therapy profession, where the female population is more numerously represented. Regarding the *age* of the participants, the average age of the participants is M = 37.51 years, with a standard deviation of SD = 2.6, which indicates a relatively homogeneous grouping of values around the average. The uneven distribution by *environment of origin* can be explained, on the one hand, by the higher accessibility of the urban population to means of communication and information, but also by the more extensive possibilities of participating in educational or research activities. At the same time, the low share of respondents from rural areas could reflect the geographical, technological or socio-economic barriers that limit the involvement of this segment of the population in studies of this type. This demographic characteristic is important in interpreting the research results, since the environment of origin can significantly influence the attitudes, values, level of information and behaviors of the participants. The

education variable highlights a clear trend towards advanced training at postgraduate level, which reflects the involvement of speech therapy professionals in the continuous development and deepening of scientific and applied knowledge. Depending on the *type of contract* held at work, it is observed that the majority of participants work under an open-ended contract, which indicates professional stability and long-term employment in the field of speech therapy. In contrast, a small number of speech therapists hold a fixed-term contract, which may suggest either a temporary position (such as collaborations, educational projects or substitutions) or the fact that they are at the beginning of their professional career.

Tabel 3. Socio-demographic data of speech therapists (no.) (continuation)

Length of service				Type of institution						Type/degree of disability				
Up to 6 months	1 year	1-10 year	10+	Pri-mary	Pre-shcol	Gim-nas	Hsc	Psychol office	S-T office	Mild MR	Moder MR	S/Pr MR	Neuro SD	ASD Rett,Asp
6	22	47	139	18	9	106	10	49	22	96	22	15	56	25

For the variable *Length of service (*Table 3), we note a significant concentration of participants in the category "over 10 years", which suggests a high level of professional experience and career stability, they have consolidated expertise in their field of activity. The category "1–10 years" includes those in the professional maturation stage, who have accumulated average experience in the field. Speech therapists with 1 year of seniority or are in the first months of activity also participate. The distribution presented indicates a clear dominance of specialists with long experience, an aspect that can positively influence the quality of the responses, at the same time, the presence of participants from all seniority categories ensures a beneficial professional diversity for the comparative analysis of the data. Depending on the *category of the institution* in which they work, it is observed that most speech therapists work within state institutions, which indicates a clear dominance of the public sector in the field of speech therapy. On the other hand, a smaller number of speech therapists work in private institutions, which suggests a smaller, but still significant, representation of the private sector, reflecting the diversification of practice environments in the field. This distribution highlights the fact that the speech therapist profession is to a greater extent institutionalized in the public system, where educational and speech therapy support services are more frequently integrated. At the same time, the presence of professionals from the private sector indicates the gradual expansion of the field and in the sphere of individual or specialized services offered in private offices. In *relation to the type of educational institution*, the data indicate a majority presence of specialists in secondary education, gymnasium, where the requirements for speech therapy intervention are frequently encountered, where language disorders and learning difficulties are of an accentuated intensity and severity, requiring specialized interventions. The presence of professionals in speech therapy centers and offices, psychology, underlines the scope of speech therapy activity beyond the strict school context, demonstrating the complexity and adaptability of the profession.

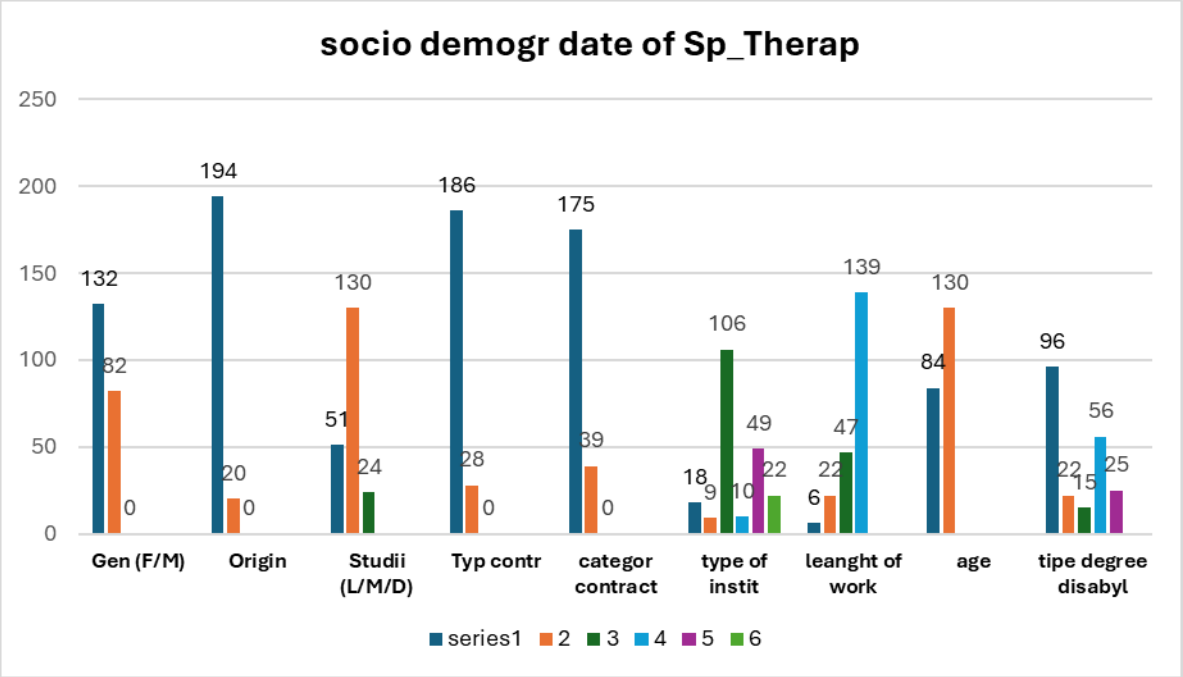

Fig.1. Socio-demographic data of speech therapists (no.)

This distribution reflects a predominant orientation of speech therapy activity towards special education institutions and educational support centers, where intervention needs are more pronounced and where the speech therapist plays an essential role in the process of school inclusion and communicative development of students. At the same time, the diversity of the types of institutions highlights the complexity and scope of the speech therapy field, which combines the educational, therapeutic and social dimensions. From the perspective *of the Type/Degree of deficiency* of the students with whom speech therapy therapy is carried out, the preponderance tends towards students with mild mental retardation, followed by students with language disorders with/without expressive disorders, in a neurological context, clinically and paraclinically objectified; students with ASD, Rett syndrome, Asperger etc.; students with moderate retardation and students with severe and profound retardation.

Completing the "*Questionnaire on the use, usefulness, experience of using educational software, technological applications in speech therapy*", faithfully shows us that most speech therapists in our sample support the use of educational software in making speech therapy more efficient. The questions they answered are: 1. Existing technology in the institution 2. What is the device you use most often at work? 3. On average, compared to the classic/traditional workload, the volume of therapeutic activity using educational software was: 4. Do you use any educational software in your activity? 5. What is that software? 6. To what extent do you use that educational software? 7. Is it easy for you to use this educational software? Do you use this software easily? 8. Is it easy to communicate with the student through the educational software? 9. How satisfied are you with the use of this software? 10. On a scale of 1 to 10, do you think that using educational software can make your work easier? 11. How often do you use the properties of educational software used in speech therapy?

We calculated and analyzed the speech therapists' answers to the questions of the Questionnaire... and obtained the following picture reflected in fig.2.

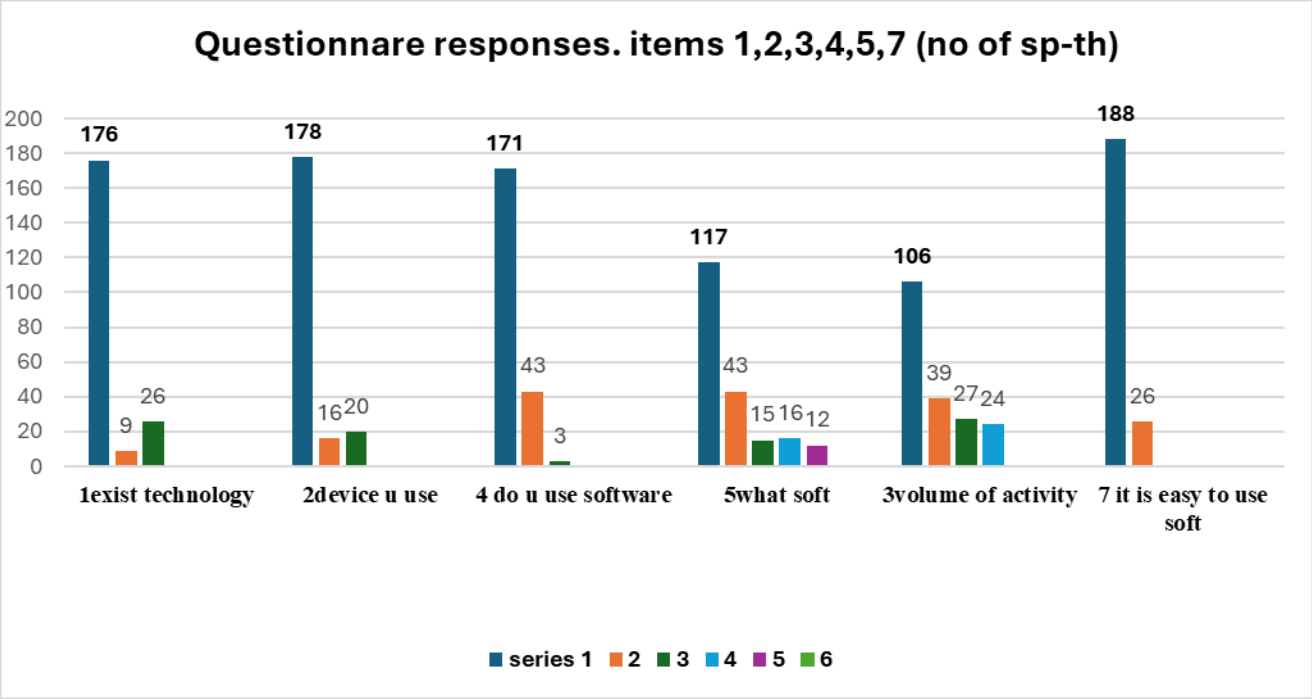

Fig.2. Subjects' answers to questions 1,2,3,4,5,7 (no. of speech therapists)

The figure reflects the reality of the scores, the positive trend of the responses. Depending on the *availability of technological equipment*, the laptop represents the main technological means either existing in the institution or own, which suggests that the existence of technology is obviously used. *The laptop* is the most frequently used device in the speech therapy process, but a smaller number uses either the phone or the tablet. Regarding *the use of educational software*, the distribution of speech therapists' responses indicates a high level of integration of technology and digital tools in speech therapy practice, reflecting the adaptation of professionals to modern educational requirements and the use of digital resources to stimulate language learning and development. The lower percentage of those who do not use educational software can be explained by factors such as the lack of technological infrastructure, the preference for traditional working methods or the variable level of digital competence. Overall, the results suggest a clear orientation towards digitalization and a significant openness of specialists in the field towards the use of technology in the educational and therapeutic act. *The most used educational software* mentioned by speech therapists is the "Tara" platform, while other educational software are used to a lesser extent, but significantly, for the adaptation and digitalization of the field. This variety of tools reflects the increased interest of speech therapists in using technological resources to support the processes of learning and recovering language. The data show that most respondents consider that the *workload* is higher when using educational software than in classic activities, due to the lack of familiarity with educational software, requiring a more intense work pace and a greater degree of interactivity. Some speech therapists consider that the volume is lower because they save the time needed to prepare digital materials, others mention that

the workload is similar between the two methods. Overall, the results reflect a trend in favor of using educational software, which optimizes speech therapy activity, increases students' involvement in the process of learning and correcting language. Regarding the *ease of use of educational software* in speech therapy, respondents state that the use of these programs is easy, which indicates a generalized positive perception of the accessibility and ergonomics of digital applications. What speech therapists specify in the following items of the questionnaire is visualized in fig 3.

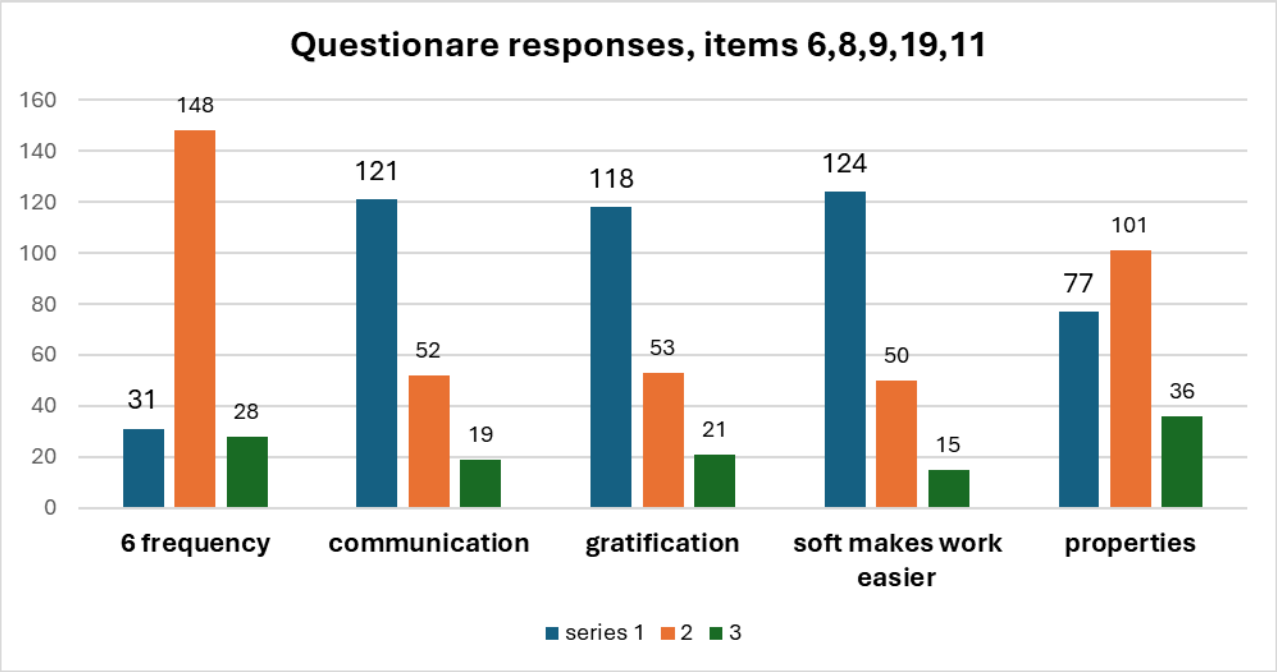

Fig.3 Subjects' answers to questions 6,8.9.10.11. (no. of speech therapists)

The answers to item 6 - To what extent do you use educational software? Most participants declare that they use it "to a large extent", which indicates a significant integration of digital technology in current speech therapy practice. A small number state "to a small extent", and some took a neutral position, suggesting an active and conscious adoption of technological tools, an indication of the acceptance and valorization of digital media as an efficient resource in the therapeutic and educational process (*Note: here and in other figures we have presented the scores that have a major trend*!). Towards the positive end of the evaluation scale, the respondents' answers were divided on the *dimension of communication* with the student through educational software, indicating an almost unanimous acceptance of the fact that educational software improves the therapeutic relationship and communication with students. Also within the dimension of communication through educational software, but in *accordance with the type/degree of disability* with which they work and their length of service, we estimated that: 62 of the participants who work with students with mild mental retardation and 36 who work with language disorders with/without expressive disorders, in a neurological context, objectively and clinically, and have over 10 years of experience, have above-average scores. The distribution of responses regarding the *perceived satisfaction* with the use of the software reflects a high satisfaction of the participants regarding the use of educational

software in their professional activity, the responses being shifted towards the higher score of the scale. Also, most speech therapists consider that educational *software makes their work much easier*. Overall, the distribution confirms the ability of educational software *to streamline* speech therapy activity, both in terms of organization and in the actual implementation of the therapeutic intervention. The results for "*How often do you use the software's* features" suggest an active and intentional involvement of the majority of speech therapists in the extensive use of educational software, confirming their interest in optimizing digital intervention in current practice.

The analysis of the scores obtained in the first part of the questionnaire suggests that practicing speech therapists to a greater or lesser extent are familiar with, use educational software and its features, using different devices; they claim that they are satisfied and that the software makes their work easier, some note their efficiency, statistically valued mentions, illustrated in table 4.

Table 4. Means and standard deviations for each item of the questionnaire

Items	N	Min	Max	M	SD
1. Existing technology in the institution	214	1	3	2,69	,699
2. What is the device you use most often at work?	214	1	3	2,74	,618
3. On average, compared to the classic/traditional workload, the volume of therapeutic activity using educational software was:	214	1	5	3,58	1,159
4. Do you use any educational software in your activity?	214	0	1	,80	,402
5. What is that software?	214	1	10	2,90	2,431
6. To what extent do you use that educational software?	214	1	5	3,08	1,113
7. Is it easy for you to use this educational software?	214	1	4	3,10	,682
8. Is it easy to communicate with the student through the educational software?	214	1	10	7,98	2,532
9. How satisfied are you with the use of this software?	214	1	10	7,94	2,595
10. On a scale of 1 to 10, do you consider that the use of educational software can make your work easier?	214	1	10	7,93	2,715
11. How often do you use the properties of the educational software used in speech therapy	214	2	5	4,15	,787

The main conclusions drawn from the processing of the results in Table 3 are briefly presented: *access and technological infrastructure* do not seem to be a major obstacle; *the perception of workload* indicates divergent opinions, which is worth exploring depending on experience or the type of institution; *the degree of adoption* of a software shows a wide range of tools, without an absolute leader, even if some applications are more popular. *The intensity of use* is moderate to high but the variability (SD) indicates occasional users and very active users; *ease and digital competence*, the exploitation of *software properties* is frequent, and the values show that most speech therapists feel comfortable with technology and try to fully exploit it; *the benefits perceived* in the relationship with students are attested to *communication, satisfaction and ease of work* and indicate a positive overall attitude. However, SD shows the existence of a more skeptical contingent or with less favorable experiences. The data confirm that the sample has consistent access to technology, frequently uses educational software and perceives it as useful, both in optimizing work and in communicating with students. The high variability in certain items (e.g., type of software and perceived benefits) suggests that factors such as type of institution, length of service or digital training may modulate

the experience with these tools – aspects that can be further investigated through analyses of difference (Mann-Whitney/Kruskal-Wallis) or regression models used in the study.

Next, we tested the hypothesis that there are statistically significant differences between the opinions of speech therapists regarding *the attitude* towards the use of educational software in speech therapy depending on their demographic characteristics (gender, age, work experience, studies), but also on environmental factors such as: the category of institution in which the speech therapist works and the degree of intellectual disability of the student being worked with. For the *variable Gender,* the hypothesis is supported, W (U)=7208, p< .001, and the means of the two groups being M=97.65 and M=87.40. r=0.33; the hypothesis is also confirmed for the *variables age and work experience*, p >0.05. Differences can be observed between the age means in the age group 20-40 and 40 60 years. Participants aged 20-40 (M=92.97) and those with less than or equal to 10 years of work experience (M=92.81) have higher averages, U =5086, p=0.024; moderate differences are highlighted *between the levels of education* - the Kruskal-Wallis test W=7.447, p=0.024, indicates a general trend of increasing performance with the level of academic training; for the *degree of student disability*, the hypothesis is supported p < .001, the Kruskal-Wallis test W=50.485, p=< .001, indicates a statistically significant difference in the variable *"type of disability"*.

The hypothesis that personal (gender, age) and environmental factors (type of institution, type of school and degree of intellectual disability of the student being worked with) influence speech therapists' attitude towards the use of educational software in speech therapy was verified through the AIC and BIC criteria.

For neutral and negative attitudes, the only predictors included would be age, p<0.05, p=0.036, and for positive attitudes, the significant predictors would be: gender, speech therapists' age, and the student's degree of intellectual disability. Multinomial logistic regression suggests that age is a significant predictor for both the differentiation between neutral and negative attitudes, as well as between positive and negative attitudes. In addition, the student's gender and type of disability significantly influence the probability of manifesting a positive attitude. In contrast, the type of school and the type of institution do not present statistically significant effects in any of the analyzed comparisons.

Table 5. Predictors of speech therapists' attitude

Total score	Predictor	Estimat	SE	Z	p
neutral attitude - negative attitude Total score neutral attitude - negative attitude	Intercept	6.2073	2.3513	2.640	0.008
	Gender	-0.4720	0.8555	0.552	0.581
	Age	-1.4636	0.6992	2.093	0.036
	Type.of.student.disability	-0.2960	0.3354	0.883	0.377
	Type.of.school	-0.2920	0.2074	1.408	0.159
	Type.of.institution	0.0912	0.0859	1.062	0.288
	Intercept	10.4494	2.3028	4.538	< .001

positive attitude - negative attitude	Gender	-1.7108	0.7986	2.142	0.032
	Age	-1.2681	0.6987	1.815	0.047
	Type.of.student.disability	-0.8523	0.3345	2.548	0.011
	Type.of.school	0.0949	0.2249	0.422	0.673
	Type.of.institution	-0.1380	0.0850	1.624	0.104

Also, in this case, a possible explanation of the result would be that educational software still has limitations in adapting the interface and types of exercises to the type of basic language disorder that the student with mental retardation has. In conclusion, we claim: The attitude of speech therapists towards the use of educational software in speech therapy is positive - statistically significant differences were identified in the attitude towards the use of educational software depending on gender, age, level of education, institution and degree of mental deficiency of students; there is an increased awareness of the potential of these tools in the speech therapy process, but there is a lack of adequate training in the use of these resources. The results suggest the need for training programs aimed at supporting the effective integration of technology in speech therapy for practitioners.

Chapter 3, entitled "*Valorization of the Speech Therapy Intervention Program and the Attitude and Opinion of Speech Therapists towards the Use of the Educational Software Logopedix in Speech Therapy of Students with Intellectual Disabilities*" is structured non-traditionally, in the sense that we present the evaluation methods and the results of the initial testing of the language of students with intellectual disabilities. Based on the results of the students but also the responses of the speech therapists to the Questionnaire, we meditated on the structuring of the *Speech Therapy Intervention Program using the educational software Logopedix,* highlighting the objectives, principles and stages of the training program, which aims to improve language disorders in students with intellectual disabilities (mental retardation). The activities were carried out in accordance with the structure of the software, the emphasis was placed on developing the child's ability to recognize letters, to reproduce them graphically and to form sentences starting from given words. The exercises were carried out entirely within the educational software program, combined with speech therapy teaching strategies. In parallel, information sessions were structured for speech therapists regarding the use/functioning of the Logopedix software, software that was accepted by them (speech therapists) to be implemented in the daily work with the students with whom they carry out speech therapy in the institution where they work.

Following the implementation of the training program, we started retesting students with mental retardation, as well as speech therapists, who completed the second part of the "*Questionnaire on the use of the educational software Logopedix - experience of use in speech therapy*" and used it.

The goal set at this stage: Development, implementation of a speech therapy intervention program, based on the use of the resources of the educational software "Logopedix" with students with mental retardation and information sessions on the use of the educational software "Logopedix", held online with speech therapists participating in the experiment,

Objectives: 1. Development of the content of information sessions with speech therapists participating in the experiment, on the use and verification of the efficiency of the educational software "Logopedix". 2. Development and implementation of a speech therapy intervention program, based on the use of the resources of the educational software "Logopedix", to remedy the language disorders of students with mental retardation. 3.Evaluation of language development of students with mental retardation; 4. Structuring the experimental group (EG) and the control group (CG) of students with mental retardation; students in the GE will participate in the Speech Therapy Intervention Program, based on the use of the resources of the "Logopedix" educational software, and students in the CG will participate in classical speech therapy.

Initial assessment and ascertainment results of language development of students with mental retardation. Participants: 60 students with mental retardation, chronological age: between 10-14 years, IQ=70-35.

Note 1: the level of intellectual development of the participants (the value of the intelligence coefficients) was not calculated, as well as the language disorder was not established by us, but were extracted from the children's personal files submitted to the school secretariat. *Note 2:* The students were assigned 30 students each to EG and CG. The distribution into the two groups was carried out, taking into account the compliance with the homogeneity criterion, established for each evaluation method used depending on the results obtained at the initial and final evaluation. *Note 3:* The initial (constatative) evaluation of the participating students, EG and CG, was carried out before the implementation of the Speech Therapy Intervention Program, by individually administering three methods: 1. The "Knowledge of Psychological Age of Language (PAL)" test; 2. The lexical examination test; 3. The TACL-R test.

Results of the initial testing:

1. PAL test - it was found that: - the average PAL, initially obtained by students in the EG is M=4.795, compared to the average chronological age (CA), which is M=8.15; a gap in language development of 3.35 years, which is quite large; - the average PAL, initially obtained by students in the GC is M=4.785, compared to the average chronological age (CA), which is at the level of M=8.25 years; therefore, the initial gap in language development in this group is 3.46 years, similar to that of the experimental group. Statistical processing using the Fisher test, it is noted that the gap is greater, the lower the intelligence quotient is and vice versa. The test indicates the homogeneity of EG and GC, meaning they are similar, homogeneous: $F=12.83$, $p<0.05$.

2. *The test for examining the lexis* - Fisher's Exact test, confirms the equality, the homogeneity of the two groups for both variables, Fwords M=11.23, $p < 0.018$; Fsentences M=21.53, $p <0.033$

3. *Results TACL -R Test* – we obtained, for the I section - Word classes and relations, EG - M=24.9, and for CG - M=24.8; for the II section - Grammatical morphemes, EG - M=24.1, and for CG – M=23.5;

for the III section - Developed sentences, EG – M=20.2, and for CG – M=19.2. The U test demonstrates that EG and CG have the same characteristics, p>0.05.

Tabel 5. TACL-R, EG/ CG, test U

Test and p	Word classes and relations	Grammatical morphemes	Developed sentences
U	198.500	169.000	169.000
p	.966	.397	.399

Results of the final testing, retest. The purpose of the reevaluation: determining the impact of the Speech Therapy Intervention Program through the use of educational software, on language and communication disorders of students with mental retardation from EG, but also CG.

The results of the PAL. Test obtained before/after speech therapy intervention (test/retest) by EG and GC students highlight a slightly superior performance in GE students, M2= 5.8085 years, compared to M1=4.7955 years; in CG students, PAL reaches M2=5.3950 years, compared to M1=4.7855 years. At the post-intervention phase (test) it was calculated: EG, M =1.0895 years increase, SD=1.2726; GC, M =0.6095 months increase, SD = 1.66203); The U test statistic indicates M= 0.883, p = 0.383; Cohen's d index = 0.28, which signifies a reduced effect size. Therefore, there are no statistically significant differences between EG and CG regarding PAL development. The explanation would be that PAL is a developmental parameter that does not have a spectacular evolution in students with mental retardation. Experience demonstrates that results are seen after a four-year interval from the start of schooling, with particular differences depending on the type of mental retardation. In conclusion, it can be considered that an increase in PAL, as a result of the speech therapy intervention using the "Logopedix" software, exists in GE students, although the differences are not statistically significant.

The results of the Lexical Examination Test, in both subtests, for EG and CG in the test/retest phase, tend towards a progress for EG, but the progress rate is low for the existence of statistical significance. Upon retesting, EG and CG in the 2 subtests (words/sentences), statistically significant differences re-emerged, p<0.05. U_w M=7.43, p=.003; U_{sent} M=13.22, p=.020. Therefore, the hypothesis is confirmed.

Results TACL-R Test, by applying the Wilcoxon test, a statistically significant advance in development was highlighted in both EG and CG students.

Table 6. Average results, EG/ CG test-retest, for the TACL-R test sections

	EG				CG			
	TestM1	Retest M2	***Z***	***P***	Test M1	Retest M2	***Z***	***P***
S-1 Words	24.90	38.35	38.35	0,000	24.85	33.80	-3.941	0,000
S-2 Morphemes	24.15	38.50	38.50	0,000	23.55	32.00	-3.935	0,000
S-3 Sentences	20.25	34.80	34.80	0,000	19.20	31.85	-3.941	0,000

At the retest phase, statistical processing indicates statistically significant differences between EG and CG: at S-1 Words U= 48,000; p= 0.000), at S-2 Morphemes U= 3,500; p= 0.000), at S-3 Sentences U= 38,000; p= 0.000). The results obtained at the three sections of the TACL-R test demonstrated that the

performances of EG students are significantly superior to CG students in terms of language comprehension skills, at the end of applying the intervention program through the Logopedix software, which validates the working hypothesis advanced at this level. The conclusion drawn reflects the existence of a statistically significant difference in the development of language between the EG and CG students, in the context of the application of the educational software Logopedix.

Speech therapists' attitude towards the use and usefulness of the educational software Logopedix in speech therapy intervention with students with mental retardation.

The goal: to evaluate the opinion, attitude of speech therapists towards the usefulness of the educational software Logopedix, the efficiency of its implementation in speech therapy. Hypothesis: we assume that all speech therapists, after having implemented the educational software Logopedix in speech therapy activities to improve language disorders in students with mental retardation, have a positive attitude and opinion towards the usefulness of the educational software and will mention that it is useful and efficient, will obtain scores above average. 214 speech therapists participated, the same speech therapists who completed the first part of the questionnaire and participated in the information sessions regarding the use and functionality of the educational software Logopedix, which was subsequently implemented in their practical activity with students within the institution where they are employed.

Processing and interpreting speech therapists' responses to the items of the second part of the questionnaire.

The items that speech therapists responded to, included in the second part of the questionnaire, are listed below: 12. On a scale of 1 to 5, how much does the educational software help you in identifying the student's language disorders? 13. Does the educational software help you in setting sounds? 14. Have you managed to remedy/reduce/optimize the language disorders with the help of the educational software? 15. Was it easy for you to perform the initial/final evaluation using the educational software? 16. Is it easy for you to manage your time, using the educational software in speech therapy? 17. Is it easy for you to communicate with the student through the Logopedix educational software? 18. Have you managed to establish a trusting speech therapist-student relationship with the help of the educational software? 19. On a scale of 1 to 10, do you think that the student's stress/anxiety was reduced by using the educational software? 20. On a scale of 1 to 10, do you think that the use of educational software in speech therapy is important? 21. What is your attitude towards the use of the educational software Logopedix? 22. In what situations do you not recommend the use of the educational software? 23. Would you suggest that other speech therapists use the educational software in correcting language disorders?

The speech therapists' responses are illustrated in Fig. 4 and described below. Speech therapists responded that the effectiveness of educational software in i*dentifying* language disorders is possible, there is a need to differentiate it from the primary disability that the student has. Very few speech therapists support the impossibility of identifying language disorders in students with ASD, Rett syndrome, Asperger

syndrome and in students with severe and profound mental retardation (IQ below 35). If we analyze the possibility of sound *setting/imposition* from the perspective of disability, speech therapists respond differently, emphasize the dependence on the degree/type of disability, and most note the usefulness of the software in imposing in the case of students with mild and moderate mental retardation, in complex language disorders in a neurological context. The analysis of frequencies about the *remediation of language disorders*, using the Logopedix software, indicates that it receives the greatest validation in the case of speech therapy with students with mild mental disability.

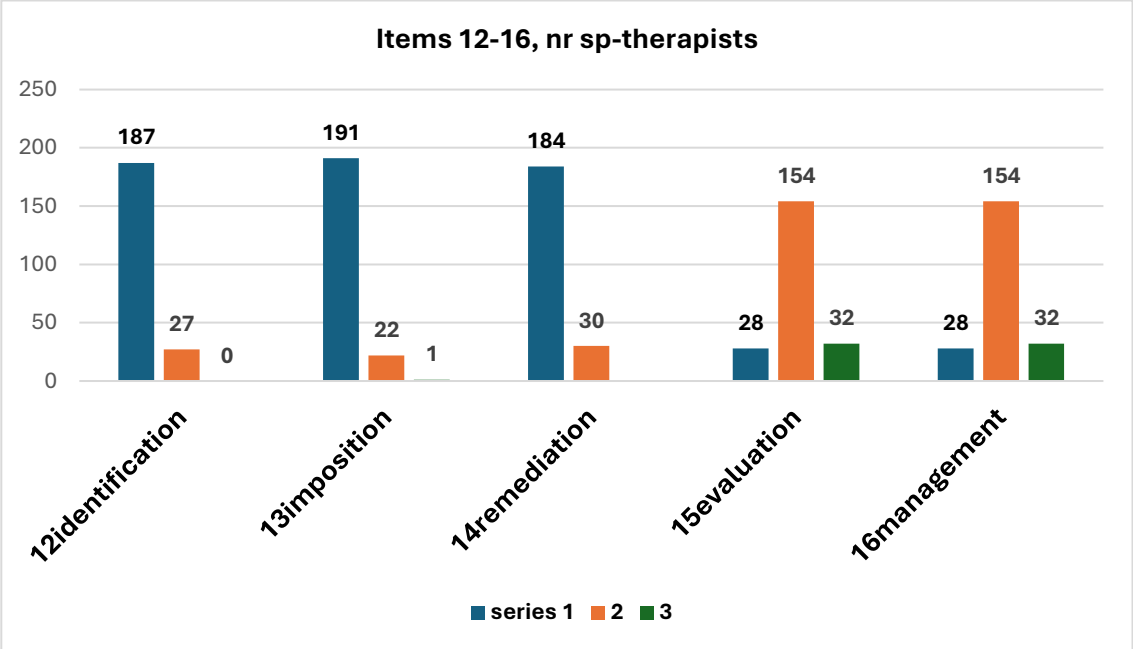

Fig.4. Distribution of scores on items 12-16, Questionnaire, no. of speech therapists

The results confirm the *efficiency in the assessment*, as being directly proportional to the severity of the student's intellectual disability, being effective in mild and moderate mental retardation. Most speech therapists believe that by using the Logopedix software, they can *manage their time* effectively, the difference being felt depending on the severity of the student's disability. It is easy *to manage time* when the student's disability is mild and they believe that it is more difficult in the case of students with severe and profound disabilities or ASD, Rett syndrome, Asperger syndrome.

The general response of the speech therapists is unanimously qualified with 5 points (214 speech therapists), when they were asked, if they *communicate easily* with the students through the Logopedix software (fig.5). They all sensed the validity of communication through the Logopedix software, and justify the answer by the attractiveness, color and animation of the software, which arouses attention, focusing the student on the instruction during the therapy. However, when we analyze the congruence of the Logopedix software with the degree/type of disability, the communication suffers. It is difficult to maintain *communication*, when carrying out activities with students with ASD, Rett syndrome and Asperger. Obviously, each case must be analyzed separately, taking into account the diversity of forms of autism.

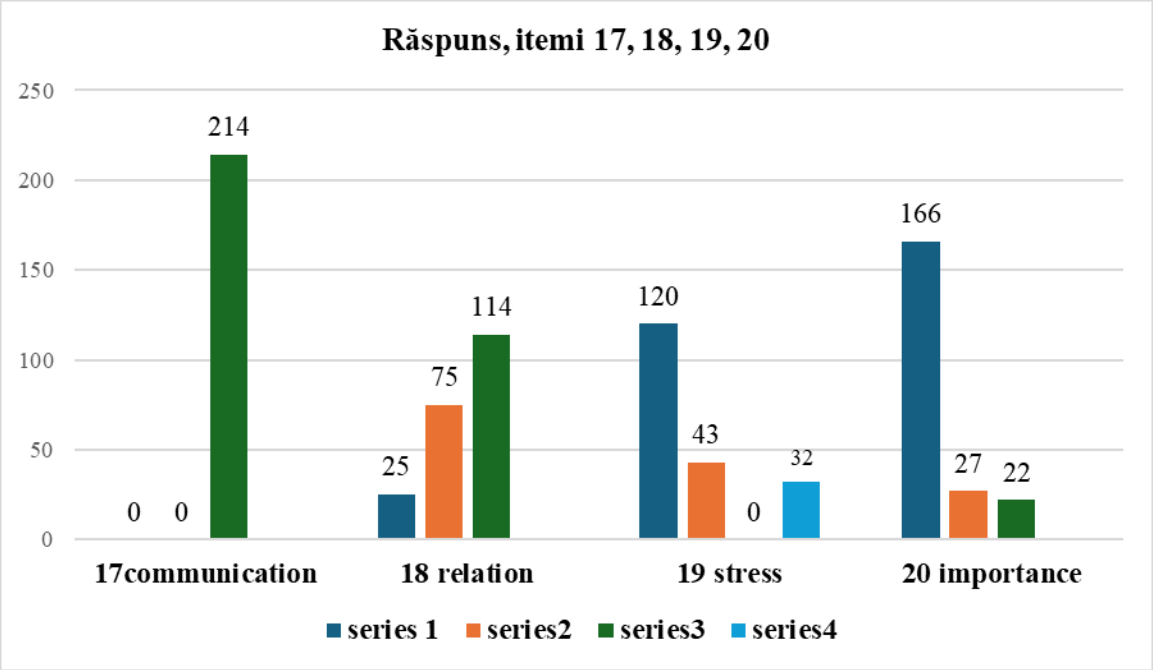

Fig.5. Distribution of scores on items 12-16, Questionnaire, no. of speech therapists

Regarding establishing the *trusting relationship* between speech therapist and student, speech therapists mention that through educational software, a trusting relationship with the student is easily established, right from the beginning, because the animation of the software activates the child's interest, first in the game, then gradually the interest and curiosity that will follow appear. Finally, through the Logopedix software, the student acquires, learns what is presented to him and forms the skills that were expected to be achieved through the speech therapy activity or lesson. The interpretation of the results allows the conclusion that the use of educational software is perceived, overwhelmingly, as a beneficial factor for *the emotional state of students*, contributing to the creation of a more relaxing learning environment and reducing the tension generated by school activities. This positive perception supports the idea that the integration of the Logopedix software has favorable psychological effects, reducing stress and anxiety. Regarding the *importance of using* the Logopedix educational software in speech therapy, it has been elucidated, although there are speech therapists who are reluctant to digital technology, but we believe that it is due to insufficient familiarity with the Logopedix software or a preference for other software or traditional intervention methods.

Speech therapists expressed a good (fig.6), positive *attitude* towards the use of the Logopedix software, that the implementation of this tool contributes to increasing the motivation, involvement and satisfaction of users in the educational process. Speech therapists *do not recommend* the use of educational software when it risks completely replacing the speech therapist's activity, in the case of severe pathologies, in technical infrastructure problems. The responses of speech therapists strongly lean towards the openness of speech therapists *to promote, recommend* the use of educational software in the therapy of language disorders, confirm confidence in its efficiency, relevance and benefits in professional practice, represent an

innovative methodological tool, with a positive impact on the speech therapy intervention process, favoring not only the interest of students, but also increasing the quality of the therapeutic act. Therefore, the results suggest a high level of professional acceptance, strengthening the basis for its extensive use in the educational and therapeutic field.

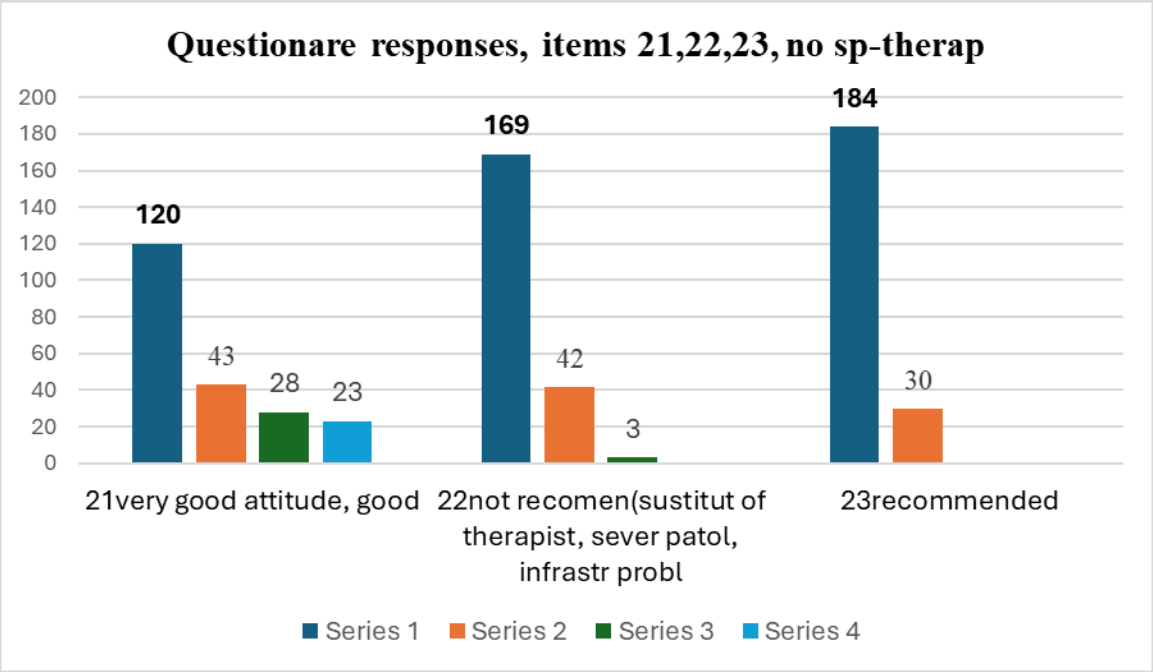

Fig.6. Distribution of scores on items 21-23, Questionnaire, no. of speech therapists

In general, most speech therapists responded positively to all questions of the "*Questionnaire on the use of educational software, experience of using applications in speech therapy*", which proves their usefulness and efficiency in improving language disorders, but also the interest, openness towards educational technologies. The attitude of speech therapists towards the use of educational software in speech therapy has changed, it is positive; they mention that they accept the use of Logopedix software with students with different degrees of disability; that efficiency increases more in direct contact and through the mixing of therapeutic techniques, but also depending on the student's potential. Through the Logopedix software, communication is effective, it was possible to establish relationships of mutual trust, to alleviate the stress and anxiety of students; speech therapists were able to identify, impose sounds, evaluate and correct language disorders, to develop impressive and expressive vocabulary, to develop writing and reading skills. The improvement of language disorders and the improvement of students' communication has been statistically proven through the results obtained from the applied language and communication assessment methods. The processing and interpretation of the data justify the correctly chosen trajectory of the research and confirm the hypotheses launched.

GENERAL CONCLUSIONS AND RECOMMENDATIONS

The objectives set for achieving the goal have been achieved and the scientific problem has been solved, and the important theoretical and applied scientific experiences of the research are stipulated in the following general conclusions:

1. The study of scientific literature in the field of education, from the perspective of technologies, education, inclusion, intellectual and language disabilities, has highlighted the fact that, globally, information technologies are gaining momentum in development and expansion. We have addressed an important issue of today, the use of information technologies in the teaching-education process in educational institutions, especially when addressing sensitive subjects who need specialized intervention.

2. A first objective achieved through research is the Questionnaire developed by us and applied to professionals - speech therapists, in order to evaluate their skills and potential, opinion and attitude towards technologies, educational software known, available and usable in everyday practical activity, and also the invitation to participate in workshops/informational training sessions, to prepare them for use in therapeutic activity, reducing language disorders and developing the communication of the beneficiary students, of the educational software Logopedix, adapted by us.

3. Educational software is a valuable tool in speech therapy, facilitating the process of remediation of language and communication disorders in an interactive and attractive way. They offer exercises adapted to the individual needs of each student, stimulating motivation and active involvement in therapy, can monitor progress and adjust exercises in real time, achieving faster and more effective results.

4. The scientific approach has demonstrated the existence of statistically significant differences between the opinions of speech therapists regarding the attitude towards the usefulness of using educational software in speech therapy depending on their gender and level of education, but also on environmental factors such as the type of disability of the student being worked with. Personal factors (gender, age) and environmental factors (type of institution, type of school and type of deficiency of the student being worked with) influence the attitude of speech therapists towards the usefulness of using educational software in speech therapy. For the neutral attitude, but also for the negative one, the robust predictor would be only age, and for the positive attitude, the predictor would be: gender, age of the specialists and type of student's deficiency.

5. The acquisition of functionality and acceptance of using the educational software "Logopedix" in the therapy of language disorders, with students with mental retardation, resulted in significantly superior results to those obtained only through classical speech therapy; however, a mediating factor in the use of educational software is the degree of deficiency of the students, which sometimes requires a longer time of therapy.

6. We recorded statistically significant differences with variable progress rates in the speech therapists' responses regarding the usefulness and use of the Logopedix software in all evaluated dimensions: *identifying and assessing* language disorders, *setting/emitting* sounds and r*emediating* language disorders;

improving the emotional state and reducing students' stress, improving communication and establishing a mutual relationship of trust with the student.

7. For items such as *time and workload* management, *attitude* towards using the software, *the importance* of the Logopedix software in speech therapy and whether you would recommend it to other speech therapists – the speech therapists' responses had positive values, which raises the weight of the software in speech therapy activities and confirms the need for its use. The situations in which speech therapists do not recommend the use of all software relate to problematic infrastructure, in deep pathologies and as a substitute for the speech therapist.

8. In parallel with the survey of speech therapists, the level of language development of students with mental retardation was assessed and the Speech Therapy Intervention Program was implemented by using the educational software "Logopedix" in speech therapy activities carried out with them. Statistically significant differences were highlighted between the results of students in the experimental and control groups on retest, which confirms the hypothesis that the level of language and communication development improved, language disorders decreased, phonetic, lexical, grammatical, semantic and pragmatic aspects of language improved, and writing and reading skills developed.

9. The results of the students and speech therapists on the applied methods demonstrated the efficiency and weight of the intervention program, through statistically significant differences, which allows us to state that the goal and objectives were achieved, the hypothesis was confirmed, and the research was completed, opening new perspectives for the integration of technologies in speech therapy, promoting a technologically diversified and efficient paradigm of intervention.

Recommendations for implementation:

1. Information on the advantages and disadvantages of using educational software in the therapeutic process.
2. Preliminary testing of the software and monitoring the impact on students.
3. Familiarizing the speech therapist with the interface, proposed by the manufacturers of educational platforms, ensuring accessibility for various degrees of disability.
4. Choosing the most suitable platforms for the specifics of the speech therapist. The possibility of using various platforms, certain exercises from a platform, adapting the exercises to the severity of the disability and individual-typological particularities, to achieve the therapeutic objective.
5. Encouraging mixed approaches, combining software with traditional therapy, in order to adapt interventions to individual needs, stimulate and maintain motivation and prevent the student's dependence on technology.
6. Promoting continuous training programs for speech therapists, focused on the evaluation and selection of educational software, with an emphasis on their adaptation to contexts and available resources.

Suggestions for future research:

• A future direction in research would be to expand the study to a more diverse sample, composed not only of speech therapists, but also of teachers and parents to evaluate the impact of technologies
• Conducting longitudinal studies to measure the efficiency of applications in speech therapy, the linguistic progress of students with intellectual disabilities and the long-term effects on their educational and social inclusion.
• Testing new software, adapted to language disorders (Verbal Apraxia, Dysarthria, Rhythm and Fluency Disorders, Aphasia), specific disorders (ASD, myofunctional, genetic, multiple, etc.)

BIBLIOGRAPHY

1. AVRĂMESCU, M.D. *Defectologie și Logopedie*. București: Ed. Fundației România de Mâine. 2002. 296 p. ISBN 978-973-725-868-7
2. BODEA HAȚEGAN, C. *Procesarea fonologică – Delimitări teoretice și aspecte practice*. În: Cartea albă a Psihopedagogiei Speciale. Cluj-Napoca: Departamentul de Psihopedagogie specială, 2013. p. 1-11. ISBN: 978-973-0157-57-4
3. BODEA HAȚEGAN, C. *Tulburările de limbaj și comunicare*. În: Psihopedagogie specială – Modele de evaluare și intervenție, coord. Roșan A. Iași: Editura Polirom, 2015. p. 212-243. ISBN: 978-973-46-4963-1
4. BODEA HAȚEGAN, C. *Logopedia. Terapia tulburărilor de limbaj. Structuri deschise*. București: Editura Trei, 2016. 634 p. ISBN: 978-606-719-722-8
5. BONDAR, N. Eficiența utilizării softului educațional. În: Materialele Conferinței *Probleme actuale ale Științelor Umanistice*. Analele științifice ale doctoranzilor și competitorilor, UPSC „I.Creangă", Ed. 18, 1 ianuarie 2019, Vol.18, Partea 1, pp. 111-119. ISBN 9975-46-421-1. ISSN 1857-0267.
6. BUGANU, D.A. Indispensabilitatea dintre comunicare și limbaj – viziune teoretico- științifică. În: Materialele conferinței științifice internaționale *"Cadrul didactic- Promotor al politicilor educaționale*", 11-12 octombrie 2019, Chișinău: Institutul de Științe ale educației. p. 687-692. ISBN 978-9975-48-156-4
7. BURLACU, N. *Repere metodologice ale elaborării și implementării softwarelor educaționale din perspectiva formării competențelor transversale la informatică.* Teză de doctor în Didactica Informaticii. Chișinău, 2015. 292 p.
8. BURLACU, N. Dimensiuni informațional – tehnologice și psihopedagogice de softwarelor educaționale. În: *Univers Pedagogic.*, vol.44, nr.4, p. 2014, p.33-41.
9. CARANTINA, D., TOTOLAN, D.M. *Psihopedagogie specială*. Ovidius University Press. Constanța, 2007. 289p. ISBN 978-973-614-377-9.
10. **CRIȘAN, E.** The speech therapy software LOGOPEDIX's application in correcting language disorders in students with C.E.S. În: *The „BlackSea" Journal of Psychology,* Vol. 15, Issue 2, 2024, p. 231-240. ISSN: 2068-4649 https://bspsychology.ro/index.php/BSJoP/article/view/339/314 (Index Copernicus)
11. **CRIȘAN, E**. Argumentul utilității software-ului educațional în structurarea programului de intervenție logopedică. În: *Didactica Danubiensis*, Vol.4, Nr.1, 2024, p. 150–157 ISSN: 2821-4374 https://dj.univ-danubius.ro/index.php/DD/article/view/3142 (EBSCO)
12. **CRIȘAN, E**. Actualitatea și importanța utilității software-ului educațional în corectarea tulburărilor de limbaj la elevii cu dizabilități intelectuale. *În: The „BlackSea" Journal of Psychology,* Vol. 14, Nr. 2/2023. p. 20–25. ISSN: 2068-4649 https://doi.org/10.47577/bspsychology.bsjop.v14i2.230 https://www.bspsychology.ro/index.php/BSJoP/article/view/339 (Index Copernicus)
13. **CRIȘAN, E.** Is educational software a luxury or a necessity in speech therapy for children diagnosed with intellectual disability? În: *Journal of Education, Society & Multiculturalism,* Vol. 6, Nr. 1, 2025, p. 44-59, ISSN: 2734-4754 / ISSN-L: 2734-4754, https://reference-global.com/journal/JESM (EBSCO, Erih Plus, DOAJ)
14. **CRIȘAN, E**. The value of training software systems in improving dyslalia in students with intellectual disabilities. În: *Studia Universitatis Babeș-Bolyai - Psychologia-Paedagogia,* Vol. 70, Nr.1, 2025, p. 231-248, ISSN 1221-8111, EISSN 2065-9431 https://doi.org/10.24193/subbpsyped.2025.1.11 (Erih Plus, DOAJ, Index Copernicus)
15. **CRIȘAN, E.** Utilitatea soft-urilor educaționale în corectarea tulburărilor de limbaj la elevii cu deficientă de intelect. În: *Intertext,* Nr. 1(65), 2025, p. 127-138, ISSN 1857-3711 ISSNe 2345-1750, https://doi.org/10.54481/intertext.2025.1.13 (categoria B)
16. **CRIȘAN, E.** Abordarea softului educațional în remedierea tulburărilor de limbaj la elevii cu dizabilități de intelect. In: *Revista Didactica Pro. Revistă de teorie și practică educațională*, 2025, nr. 1(149), pp. 49-52. ISSN 1810-6455. https://doi.org/10.5281/zenodo.14965051
17. **CRIȘAN, E.** Rolul software-ului educațional în corectarea tulburărilor de limbaj la elevii cu deficiență intelectuală. În: *Buletinul științific al Universității de Stat „Bogdan Petriceicu Hașdeu" din Cahul,* Seria „Științe Umanistice", nr. 2(22), 2025, p. 393-407. ISSN 2345-1866 ISSNe 2345-1904
18. **CRIȘAN, E**., STRATAN, V. Structura și implementarea programului de intervenție logopedică prin utilizarea softului educațional LOGOPEDIX la copiii cu CES. În: *Știință și Educație: Noi Abordări și Perspective*, Materialele Conferinței Științifice Internaționale Jubiliare, Seria XXVII, Vol.2, 27-28 martie 2025. Chișinău: CEP UPSC, 2025, p. 496-505. ISBN 978-9975-48-267-7. https://doi.org/10.46727/c.v2.27-28-03-2025.p496-505
19. **CRIȘAN, E**. Eficacitatea softului educațional în ameliorarea tulburărilor de limbaj la elevii cu deficiență de intelect. În: *Știință, educație, cultură:* Materiale ale Conferinței internaționale științifico-practice. A 34-a aniversare a Universității de Stat din Comrat. Vol.2, ianuarie 2025, Comrat: A&V Poligraf, 2025, p. 175-180. ISBN 978-9975-83-335-6. https://ibn.idsi.md/vizualizare_articol/230259
20. **CRIȘAN, E**. STRATAN, V. Utilizarea software educațional logopedix în terapia dislaliei. În: *Știință și educație: noi abordări și perspective.* Materiale ale Conferinței Științifice Internaționale, Seria 26, Vol.1, 21-22 martie 2024. Chișinău: CEP UPSC, 2024, p. 368-373. ISBN 978-9975-46-944-9. https://doi.org/10.46727/c.v1.21-22-03-2024.p368-373
21. **CRIȘAN, E**. STRATAN, V. Studiul utilității soft-ului educațional în terapia logopedică a copiilor cu deficiențe mentale. În: *Știință și educație: noi abordări și perspective*: Materialele Conferinței Științifice Internaționale, Seria 25, Vol.1, 24-25 martie 2023. Chișinău: CEP UPSC, 2023, p. 314-319. ISBN 978-9975-46-773-5. https://doi.org/10.46727/c.v1.24-25-03-2023.p314-319
22. **CRIȘAN, E**. STRATAN, V. Utilitatea soft-urilor educaționale în corectarea tulburărilor de limbaj la elevii cu deficiență de intelect. În: *Probleme ale științelor socioumanistice și modernizării învățământului*: Materialele Conferinței științifice naționale cu participare internațională, Seria 24, Vol.1, 25 martie 2022. Chișinău: CEP UPS „I. Creangă", 2022, p. 223-230. ISBN 978-9975-46-651-6; 978-9975-46-652-3. https://doi.org/10.46728/c.v1.25-03-2022.p223-230

23. **CRIȘAN, E.,** STRATAN, V., Terapia logopedică asistată de calculator. În: *Asistența logopedică: actualitate și orizonturi*. Materialele Conferinței Științifice Internaționale, 22-23 noiembrie 2018. Chișinău: CEP UPS „I. Creangă", 2019, p. 96-100. ISBN 978-9975-46-403-1. https://ibn.idsi.md/vizualizare_articol/123149
24. ENĂCHESCU, C. *Tratat de psihopatologie, ediția a II-a* . București: Editura Tehnică. 2005. 270p. ISBN 973-31-2247-5
25. FOGARASSY NESZLY, P. *Noutăți în domeniul tehnologiei asistive pentru nevăzători.* În: Preda, V., (coord.). Elemente de psihopedagogie specială, Cluj-Napoca, Editura Eikon. 2007. 301p, ISBN 978-973-757-069-7
26. FOLOȘTINĂ, R., SIMION E. *Învățarea digitală la copiii cu nevoi educaționale de suport*. București: Editura Universitară, 2020. 192 p. ISBN: 978-606-28-1206-5
27. GHERGUȚ, A. *Psihopedagogia persoanelor cu cerințe speciale. Strategii diferențiate și incluzive în educație.* Iași: Editura Polirom, 2006. 256 p. ISBN: 973-46-0397-3
28. GHERGUȚ, A. *Sinteze de psihopedagogie specială. Ghid pentru concursuri și examene de obținere a gradelor didactice.* Iași: Editura Polirom, 2013. 528 p. ISBN: 978-973-46-3386-9
29. GHERGUȚ, A., NEAMȚU, Cristina. *Psihopedagogie specială. Ghid practic pentru învățământul la distanță*. Iași, Ed. Polirom. 2000. 264 p. ISBN: 973-683-391-7
30. GHERGUȚ, A. *Tehnologii asistive – Sinteze de Psihopedagogie Specială – ghid pentru concursuri și examene de obținere a gradelor didactice*, Iași, Editura Polirom, 2016. 528 p. ISBN 978-973-46-3386-9
31. GHERGUȚ, A. *Educația incluzivă și pedagogia diversității*, Iași: Editura Polirom, 2016. 232 p. ISBN 978-973-46-5664-6
32. GONCEARUC, S. Formarea profesorilor pentru dezvoltarea relațiilor școală – familie în procesul educației fizice. În: *Formarea continua a specialistului de cultură fizică în conceptul acmeologic modern.* Materialele Conferinţei Ştiinţifice Internaţionale, ediția 1-a, 3 decembrie 2020, Chișinău, 313p. p.36-44.ISBN 978-9975-68-417-0.
33. ISTRATE O. Oportunitatea unui program de integrare a noilor tehnologii în educație. În: *iTeach Experiențe didactice.* Nr. 14/octombrie, 2012. București. p.1-2. ISSN 2247-966X. http://iteach.ro/experientedidactice/wp-content/experiente-didactice/10-2012.pdf
34. MUȘU, I. *Ghid de predare-învăţare pentru copiii cu cerinţe educative speciale.* București: Editura MarLink, 2000. 152p. ISBN 973-99601-8-9
35. OLĂRESCU, V. *Fundamentele logopediei*. Garomont Studio SRL.Chișinău, 2022, 336 p., 26 c.a ISBN 978-9975-162-05-0
36. PĂDURE, M. *Aspecte ale utilizării tehnologiilor de acces în educația persoanelor cu deficiențe de vedere.* În: Preda, V., (coord.), Elemente de psihopedagogie specială, Cluj-Napoca, Editura Eikon. 2007. 301p, ISBN 978-973-757-069-7
37. PĂUNESCU, C., MUȘU, I. *Psihopedagogie specială integrată; Handicapul mintal, handicapul intelectual.* București: Editura Pro Humanitate. 1997.
38. PĂUNESCU, C. *Introducere în logopedie*. București: Editura Didactică și Pedagogică, vol.I. 1976
39. PÂNIȘOARĂ, I.-O., MANOLESCU, M. *Pedagogia învățământului primar și preșcolar*. Iași: Editura Polirom, 2019. 600 p. ISBN: 978-973-46-7877-8
40. PETRESCU, P.R., PACEARCĂ, Ș. *Utilizarea TIC în procesul de predare – învățare în clasele care includ elevi cu C.E.S.* Brașov, 2011. ISSN 3045-2872 https://ccdbrasov.ro.
41. POPESCU, O. *Integrarea socială a copiilor cu tulburări de limbaj.* Teză de doctor în Psihologie Specială. Chișinău. 2019. cu titlul de manuscris: C.Z.U.: 316.614-056.264(043.3)
42. POPOVICI, D.V. *Strategii de comunicare augmentativă și alternativă pentru copiii nonverbali*. București: Editura Universității din București, 2016. 212 p. ISBN: 978-606-16-0675-7
43. POPOVICI, D.V. *Dezvoltarea comunicării la copiii cu deficiențe mintale.* București, Editura Pro Humanitate, 2000. 229p. ISBN 973-99734-1-8
44. RACU, A., POPOVICI, D. V. et al. *Psihopedagogia integrării*. Chișinău: Editura Tipografia Centrală, 2014. p. 172-180. ISBN: 978-9975-78-845-8.
45. TOBOLCEA, I. *Tehnici audio-vizuale moderne în terapia logonevrozei*. Iași, Ed. Universității „Al. I. Cuza". 2013. 205 p . ISBN/COD:973-85601-0-1
46. TOBOLCEA, I., PENTIUC, S., G., DANUBIANU, M., *Folosirea tehnologiei informației și comunicării în procesul de învățare a copiilor cu cerințe educaționale speciale.* Suceava: Editura Universității, 2009.
47. ABBASI R, ZARE S, AHMADIAN L. Investigating the attitude of patients with chronic diseases about using mobile health. In: *J Technol Assess Health Care.* 2020, Volume 36 , Issue 2 ; 139–144. DOI: https://doi.org/10.1017/S0266462320000070
48. LIN Y, NEUSCHAEFER-RUBE C. Digital Learning in Speech-Language Pathology, Phoniatrics, and Otolaryngology: Interdisciplinary and Exploratory Analysis of Content, Organizing Structures, and Formats. In: *JMIR Med Educ,* 2021; 7: e27901. doi: 10.2196/27901 https://mededu.jmir.org/2021/3/e27901/
49. https://icd.who.int/ (Pagina principală ICD-11) [accesat 12.03.2025]
50. https://www.psychiatry.org/getmedia/b68a5776-f88c-45c7-9535-fd219d7aa5cb/APA-DSM5TR-Update-September-2025.pdf [accesat 12.03.2025]

LIST OF SCIENTIFIC WORKS ON THE THESIS TOPIC "THE USEFULNESS OF EDUCATIONAL SOFTWARE IN CORRECTING LANGUAGE DISORDERS IN STUDENTS WITH INTELLECTUAL DISABILITIES", by Mrs. **CRIȘAN ELENA,** PhD student, "Ion Creangă" State Pedagogical University of Chișinău

2. ***Articles in scientific journals***

2.2. în reviste din alte baze de date acceptate de către ANACEC (cu indicarea bazei de date)

1. **CRIȘAN, Elena.** The speech therapy software LOGOPEDIX's application in correcting language disorders in students with C.E.S. În: *The „BlackSea" Journal of Psychology,* Vol. 15, Issue 2, 2024, p. 231-240. ISSN: 2068-4649 https://bspsychology.ro/index.php/BSJoP/article/view/339/314 (Index Copernicus)

2. **CRIȘAN, Elena**. Argumentul utilității software-ului educațional în structurarea programului de intervenție logopedică. În: *DIDACTICA DANUBIENSIS*, Vol.4, Nr.1, 2024, p. 150–157 ISSN: 2821-4374 https://dj.univ-danubius.ro/index.php/DD/article/view/3142 (EBSCO)

3. **CRIȘAN, Elena**. Actualitatea și importanța utilității software-ului educațional în corectarea tulburărilor de limbaj la elevii cu dizabilități intelectuale. *În: The „BlackSea" Journal of Psychology,* Vol. 14, Nr. 2/2023. p. 20–25. ISSN: 2068-4649 https://doi.org/10.47577/bspsychology.bsjop.v14i2.230 https://www.bspsychology.ro/index.php/BSJoP/article/view/339 (Index Copernicus)

4. **CRIȘAN, Elena**. Potențialul software-ului educațional de a facilita corectarea tulburărilor de limbaj la elevii cu deficiențe intelectuale. În: *The „BlackSea" Journal of Psychology*, Vol. 12, Nr. 2, 2022, p. 64–75. ISSN: 2068-4649, https://bpsychology.ro/index.php/BSJoP/article/view/189 (Index Copernicus)

5. **CRIȘAN, Elena.** Is educational software a luxury or a necessity in speech therapy for children diagnosed with intellectual disability?. În: *Journal of Education, Society & Multiculturalism,* Vol. 6, Nr. 1, 2025, p. 44-59, ISSN: 2734-4754 / ISSN-L: 2734-4754, https://reference-global.com/journal/JESM (EBSCO, Erih Plus, DOAJ)

6. **CRIȘAN, Elena**. The value of training software systems in improving dyslalia in students with intellectual disabilities. În: *Studia Universitatis Babeș-Bolyai - Psychologia-Paedagogia,* Vol. 70, Nr.1, 2025, p. 231-248, ISSN 1221-8111, EISSN 2065-9431 https://doi.org/10.24193/subbpsyped.2025.1.11 (Erih Plus, DOAJ, Index Copernicus)

2.3. in journals from the National Register of specialized journals (with indication of category)

1. **CRIȘAN, Elena.** Utilitatea soft-urilor educaționale în corectarea tulburărilor de limbaj la elevii cu deficientă de intelect. În: *Intertext*, Nr. 1(65), 2025, p. 127-138, ISSN 1857-3711 ISSNe 2345-1750, https://doi.org/10.54481/intertext.2025.1.13 (categoria B)

2. **CRIȘAN, Elena.** Factori predictivi ai atitudinii specialiștilor din învățământul de masă și cel special față de integrarea soft-urilor educaționale în terapia logopedică. În: *Univers Pedagogic,* Nr. 3(87), 2025, p. 66-71, ISSN 1811-5470 https://doi.org/10.52387/1811-5470.2025.3.10 (categoria C)

3. **CRIȘAN, Elena.** Abordarea softului educațional în remedierea tulburărilor de limbaj la elevii cu dizabilități de intelect. In: *Revista Didactica Pro…, revistă de teorie şi practică educaţională*, 2025, nr. 1(149), pp. 49-52. ISSN 1810-6455. https://doi.org/10.5281/zenodo.14965051

4. **CRIȘAN, Elena**. Rolul software-ului educațional în corectarea tulburărilor de limbaj la elevii cu deficiență intelectuală. În: *Buletinul ştiinţific al Universităţii de Stat „Bogdan Petriceicu Haşdeu" din Cahul, Seria „Ştiinţe Umanistice"*, nr. 2(22), 2025, p. 393-407. ISSN 2345-1866 ISSNe 2345-1904

2.4. other journals

1. **CRIȘAN, Elena.** Evaluarea și înregistrarea progresului în tulburările de limbaj. În: *Revista: „Dincolo de cuvinte...”*. Periodic pentru inițiativă și dezvoltare profesională în educație și educație special integrată. Nr. 5, decembrie 2021. p. 154-156. MEC. IȘJTimiș. Centrul Școlar pentru Educație Incluzivă „Constantin Pufan”, Timișoara. ISSN 2602-0572 ISSN-L 2602-0372

3. ***Articles in conference proceedings and other scientific events***

3.2. in the works of scientific events included in other databases accepted by ANACEC

1. **CRIȘAN, Elena.** Programul Software ”Logopedix**”**. În: *The Impact of Educational Platforms in the Romanian School.* Conferința Multidisciplinară Internațională. București, 2020, p. 908-910, ISBN 978-973-0-33176-9. https://cadredidactice.ro/wp-content/uploads/simple-file-list/LUCRARILE-CONFERINTEI-MULTIDISCIPLINARE-INTERNATIONALE-THE-IMPACT-OF-EDUCATIONAL-PLATFORMS-IN-THE-ROMANIAN-SCHOOL%E2%80%9C.pdf

2. **CRIȘAN, Elena**. Dimensiuni informațional – tehnologice și psihopedagogice ale softwarelor educaționale. În: *Innovative Approaches In Teaching Activity*: Conferința Internațională. București, 2020, p. 589-591. ISBN 978-973-0-31799-2 https://cadredidactice.ro/wp-content/uploads/simple-file-list/CONFERINTA-INTERNATIONALA-INNOVATIVE-APPROACHES-IN-TEACHING-ACTIVITY%E2%80%9C.pdf

3.3. in the works of scientific events included in the Register of materials published on the basis of scientific events organized in the Republic of Moldova

1. **CRIȘAN, Elena.** Logopedia asistată de softuri educaționale – o abordare modernă în terapia copiilor cu retard mintal. În: *Mediul științific și educațional: realități și perspective pentru îmbunătățirea calității educaționale*: Conferința Științifică Internațională, ediția a V-a, 07.11.2025, Universitatea de Stat din Comrat https://conferinte.stiu.md/sites/default/files/evenimente/program-07-2-11-2025-prog-conf_0.pdf
2. **CRIȘAN, Elena**, STRATAN, Valentina. Structura și implementarea programului de intervenție logopedică prin utilizarea softului educațional LOGOPEDIX la copiii cu CES. În: *Știință Și Educație: Noi Abordări și Perspective*: Materialele Conferinței Științifice Internaționale Jubiliare, Seria XXVII, Vol.2, 27-28 martie 2025. Chișinău: CEP UPSC, 2025, p. 496-505. ISBN 978-9975-48-267-7. https://doi.org/10.46727/c.v2.27-28-03-2025.p496-505
3. **CRIȘAN, Elena**. Eficacitatea softului educațional în ameliorarea tulburărilor de limbaj la elevii cu deficiență de intelect. În: *Știință, educație, cultură:* Conferința științifico-practică internațională. A 34-a aniversare a Universității de Stat din Comrat. Vol.2, 1 ianuarie 2025, Comrat: A&V Poligraf, 2025, p. 175-180. ISBN 978-9975-83-335-6. https://ibn.idsi.md/vizualizare_articol/230259
4. **CRIȘAN, Elena.** Importanța softurilor educaționale în ameliorarea tulburărilor de limbaj la elevii cu deficiență de intelect. În: *Spațiul Științific-Educațional: Realități și Perspective pentru Îmbunătățirea Calității Educației:* Conferința Internațională Științifico-Practică, Ediția a IV-a, Universitatea de Stat din Comrat, 06 decembrie 2024. Comrat: S.n., 2025 (A&V Poligraf), p. 33-37. ISBN 978-9975-83-337-0. DOI: 10.5281/zenodo.15259731.
5. **CRIȘAN, Elena**. Trăsături distinctive ale comunicării și limbajului copiilor în contextul dizabilității de intelect. În: *Probleme de filologie: aspecte teoretice şi practice:* Materialele Conferinței Științifice Internaționale, ediția a XI-a, 28 octombrie 2024. Bălți: S.n., 2025 (CEU US), p. 156-161. ISBN 978-9975-50-362-4. https://ibn.idsi.md/vizualizare_articol/236822
6. **CRIȘAN, Elena**. The Usefulness of the Logopedix Software in Correcting Language Disorders in Students with Moderate and Mild Deficiency. În: *Învățare activă pentru dezvoltare durabilă*:

Conferință Științifică Internațională, 15 noiembrie 2024. Chișinău: CEP UPS „I. Creangă”, 2024, p. 303-308. ISBN 978-9975-46-989-0. https://doi.org/10.46727/c.15-11-2024.p303-308

7. **CRIȘAN, Elena**, STRATAN, Valentina. Soft-uri educaționale în terapia logopedică a elevilor cu deficiență de intelect. În: *Ştiinţă, educaţie, cultură*: Conferința ştiinţifico-practică internaţională, Vol.2, 21 octombrie 2024. Comrat: S.n., 2024 (A&V Poligraf), p. 142-146. ISBN 978-9975-83-294-6. https://ibn.idsi.md/vizualizare_articol/205085
8. **CRIȘAN, Elena**, STRATAN, Valentina. Utilizarea software educațional logopedix în terapia dislaliei. În: *Ştiinţă şi educaţie: noi abordări şi perspective:* Materialele Conferinţei Ştiinţifice Internaţionale, Seria 26, Vol.1, 21-22 martie 2024. Chişinău: CEP UPSC, 2024, p. 368-373. ISBN 978-9975-46-944-9. https://doi.org/10.46727/c.v1.21-22-03-2024.p368-373
9. **CRIȘAN, Elena**, STRATAN, Valentina. Studiul utilității soft-ului educațional în terapia logopedică a copiilor cu deficiențe mentale. În: *Ştiinţă şi educaţie: noi abordări şi perspective:* Materialele Conferinţei Ştiinţifice Internaţionale, Seria 25, Vol.1, 24-25 martie 2023. Chişinău: CEP UPSC, 2023, p. 314-319. ISBN 978-9975-46-773-5. https://doi.org/10.46727/c.v1.24-25-03-2023.p314-319
10. **CRIȘAN, Elena**, STRATAN, Valentina. Formarea competentelor de comunicare a elevilor cu tulburări de limbaj în mediul incluziv. În: *Ştiinţă, educaţie, cultură:* Conferinţa Ştiinţifico-Practică Internaţională, Vol. 2, 13 februarie 2023. Comrat: Universitatea de Stat din Comrat, 2023, p. 174-178. ISBN 978-9975-83-254-0. 978-9975-83-256-4 https://ibn.idsi.md/vizualizare_articol/179746
11. **CRIȘAN, Elena**, STRATAN, Valentina. Utilitatea soft-urilor educaționale în corectarea tulburărilor de limbaj la elevii cu deficiență de intelect. În: *Probleme ale științelor socioumanistice și modernizării învățământului*: Materialele Conferinței științifice naționale cu participare internațională, Seria 24, Vol.1, 25 martie 2022. Chișinău: CEP UPS „I. Creangă”, 2022, p. 223-230. ISBN 978-9975-46-651-6; 978-9975-46-652-3. https://doi.org/10.46728/c.v1.25-03-2022.p223-230
12. **CRIȘAN, Elena,** STRATAN, Valentina. O perspectivă istorică privind utilizarea computerului în învățare. In: *Cultura cercetării pedagogice: provocări şi tendinţe contemporane*: Conferință științifică internațională, Ed. 1, 5-6 iunie 2021. Chișinău: Tipografia Universității de Stat din Tiraspol, 2021, Ediția 1, Vol.4, pp. 120-129. ISBN 978-9975-76-349-3. https://ibn.idsi.md/ro/vizualizare_articol/141624
13. **CRIȘAN, Elena**, STRATAN, Valentina. Integrarea tehnologiilor informatice și comunicaționale (TIC) în procesul educațional. În: *Asistența psihosocială în contextul noilor realități pe timp de pandemie:* Conferinţa ştiinţifică naţională, 16 aprilie 2021. Chişinău: CEP UPS „I. Creangă”, p. 170-177. ISBN 978-9975-46-545-8. https://ibn.idsi.md/vizualizare_articol/156121
14. **CRIȘAN, Elena**, STRATAN, Valentina. Rolul computerului în acordarea serviciilor de sprijin elevilor cu CES. In: *Asistența complexă a copiilor cu cerințe educaționale speciale în mediul educațional incluziv*: Materialele Conferinței Științifice Internaționale, 10 decembrie 2020. Chișinău: CEP UPS „I. Creangă”, p. 413-419. ISBN 978-9975-46-480-2. https://ibn.idsi.md/vizualizare_articol/119787
15. STRATAN, Valentina, **CRIȘAN, Elena**. Terapia logopedică asistată de calculator. În: *Asistența logopedică: actualitate şi orizonturi*: Materialele Conferinței Științifice Internaționale, 22-23 noiembrie 2018. Chișinău: CEP UPS „I. Creangă”, 2019, p. 96-100. ISBN 978-9975-46-403-1. https://ibn.idsi.md/vizualizare_articol/123149

ADNOTARE

Crișan Elena. Utilitatea soft-urilor educaționale în corectarea tulburărilor de limbaj la elevii cu dizabilități de intelect Teză de doctor în ştiinţe ale educaţiei. Chişinău 2026.

Structura tezei: Teza este constituită din: adnotări, lista abrevierilor, introducere, trei capitole, concluzii generale și recomandări, bibliografie din 152 titluri, 4 anexe, 134 pagini text de bază, 47 figuri și 12 tabele. Rezultatele obţinute sunt publicate în 28 lucrări ştiinţifice.

Cuvinte-cheie: tulburare de limbaj, retard mintal, soft educațional, program sofware logopedic –Logopedix, utilitatea și utilizarea soft-urilor.

Domeniu de studiu: Psihopedagogia specială (logopedie).

Scopul cercetării: identificarea competenței și potențialului logopezilor de utilizare a soft-urilor educaționale în terapia logopedică, a opiniei și atitudinii lor referitor la utilitatea soft-urilor în ameliorarea tulburărilor de limbaj, iar la necesitate, structurarea ședințelor informaționale de utilizare a soft-urilor educaționale pentru ei și evaluarea dezvoltării limbajului elevilor cu dizabilitate intelectuală (retard mintal) în vederea elaborării unui Program de intervenție logopedică mediat de software Logopedix, orientat spre facilitarea ameliorării și remedierii tulburărilor de limbaj

Obiectivele cercetării: studierea şi argumentarea reperelor conceptuale de specialitate privind dizabilitatea intelectuală (retardul mental), tipurile de soft-uri educaționale, utilitatea lor în procesul educațional; elaborarea unui chestionar pentru logopezi, de identificare a competenței și potențialului utilizării soft-urilor educaționale în terapia logopedică; identificarea soft-urilor educaționale potrivite elevilor cu dizabilitate mintală (retard mintal), a condițiilor și strategiilor de utilitate a lor; selectarea și aplicarea metodelor de evaluare a limbajului elevilor cu dizabilitate mintală (retard mintal); structurarea ședințelor informaționale de utilizare a soft-ului educațional ”Logopedix” pentru logopezi; elaborarea, implementarea și validarea Programului de intervenţie logopedică, bazat pe utilizarea resurselor soft-ului educațional „Logopedix”, administrat elevilor cu dizabilitate mintală (retard mintal); trasarea concluziilor generale, a recomandărilor și a sugestiilor pentru cercetări viitoare.

Rezultatele obținute care contribuie la soluționarea problemei științifice importante constau în: *sistematizarea* științifică a datelor din cercetările de domeniu; *identificarea* competenței, potențialului, opiniei, atitudinii, gradului de utilizare a unui soft educațional de către logopezi în terapia limbajului elevilor cu dizabilitate mintală (retard mintal); *evidențierea* soft-ului educațional logopedic ca instrument specific în *remedierea și ameliorarea* limbajului; *structurarea ședințelor informaționale de utilizare a unui soft educațional pentru logopezi; elaborarea și aplicarea unui program de intervenție logopedică mediat de un soft educațional, adecvat nivelului dezvoltării limbajului elevilor cu* dizabilitate mintală (retard mintal)*; determinarea creșterii eficienței intervențiilor terapeutice în corectarea tulburărilor de limbaj la elevii cu* dizabilitate mintală (retard mintal), *ca urmare a diversificării terapiei prin utilizarea soft-ului educațional.*

Noutatea şi originalitatea ştiinţifică: s-a studiat și analizat literatura de specialitate despre dizabilitatea intelectuală, retard mental, logopedie, soft-uri educaționale; s-a elaborat și aplicat „Chestionarul privind utilizarea soft-urilor educaționale - experiența folosirii aplicațiilor în terapia logopedică” pentru logopezi; s-a selectat și aplicat un set de metode de evaluare a limbajului elevilor cu dizabilitate intelectuală (retard mental); s-a fundamentat strategia de a îmbina metodele logopedice tradiționale cu noua tehnologie informatică logo-terapeutică ce ar stimula motivația elevilor cu dizabilitate intelectuală (retard mental) pentru exersarea sistematică și accelerarea progresului terapeutic; s-au structurat ședințe informaționale pentru logopezi, de utilizare a soft-ului educațional „Logopedix”; s-a elaborat, implementat, validat Programul de intervenţie logopedică, bazat pe utilizarea soft-ului educaţional „Logopedix”; s-au evidențiat oportunitățile, dar și obstacolele utilizării soft-urilor educaționale în terapia logopedică din perspectiva logopezilor practicieni; s-a îmbunătățit limbajul elevilor cu dizabilitate intelectuală (retard mental) prin utilizarea soft-ului Logopedix.

Semnificaţia teoretică constă în**:** fundamentarea abordărilor teoretice în care soft-urile educaționale sporesc motivația și eficiența logo-terapiilor, transformând procesul de remediere a tulburărilor de limbaj într-o activitate animată, interactivă și eficientă pentru elevii cu dizabilitate intelectuală (retard mental); integrarea principiilor învățării holiste cu tehnologia informațională prin dezvoltarea metodologiei de utilizare a soft-ului educațional în organizarea și realizarea activităților logopedice pentru elevii cu dizabilitate intelectuală (retard mental); elaborarea unui program de intervenție logopedică prin soft-ul educațional „Logopedix” cu aplicabilitate în corectarea tulburărilor de limbaj în cazul elevilor dizabilitate intelectuală (retard mental), cu posibilitatea transpoziționării într-un ghid metodologic de organizare a intervenției terapeutice; elaborarea și realizarea unui chestionar de evaluare a specialiștilor din perspectiva utilității soft-urilor educaționale în intervenția logopedică.

Valoarea aplicativă a lucrării rezidă din abordarea bidimensională a activității logopedice. În prim plan este abordarea metodologică, specifică terapiei logopedice de corectare a tulburărilor de limbaj la elevii cu retard mental, suplimentată și de abordarea informațional-tehnologică, exercitată de soft-urile educaționale, în special „Logopedix”, în vederea motivației elevilor pentru exersarea sistematică și accelerarea progresului terapeutic. Studiul realizat îmbogățește știința pedagogică și logopedică, iar reperele științifice vor servi informații suplimentare în formarea continuă a specialiștilor. Programul de intervenție logopedică prin soft-ul educațional „Logopedix” elaborat, implementat și validat, oferă un model alternativ de intervenție pentru ameliorarea tulburărilor de limbaj la elevii cu retard mintal și cu succes poate fi folosit de logopezii practicieni. Informațiile teoretice și practice, rezultate din cercetare, pot servi drept resurse de documentare pentru logopezi, chestionarul, elaborat și aplicat, servește la identificarea opiniei logopezilor despre utilitatea softurilor educaționale în corectarea tulburărilor de limbaj la elevii cu retard mintal. Analiza și prelucrarea statistică a rezultatelor chestionarului elaborat și aplicat a identificat circumstanțele (totalitatea factorilor de mediu) existenței diferențelor între logopezi privitor la abordarea soft-urilor educaționale în activitatea practică.

Implementarea rezultatelor ştiinţifice. Materialele rezultate din cercetare au fost prezentate în cadrul ședințelor comune ale sesiunilor Școlii doctorale de Științe ale Educației, în lucrările publicate ale conferințelor științifice, în reviste de specialitate, în procesul de formare continuă și complementară a logopezilor; recomandate la cursurile Pedagogie specială, Logopedie, Asistență logopedică pentru pregătirea studenților în psihopedagogia specială și masteranzilor în logopedie UPSC „Ion Creangă” și a Universității „Ovidius” din Constanța.

ANNOTATION

***Crișan Elena*. The usefulness of educational software in correcting language disorders in students with intellectual disabilities**. Doctoral thesis in educational sciences. Chișinău, 2026.

Structure of the thesis: The thesis consists of: annotations, list of abbreviations, introduction, three chapters, general conclusions and recommendations, bibliography of 152 titles, 4 annexes, 134 pages of basic text, 47 figures and 12 tables. The results obtained are published in 28 scientific papers.

Keywords: language disorder, intellectual disabilities/mental retardation, educational software, speech therapy software program – Logopedix, the usefulness and use of software.

Field of study: Special psychopedagogy (speech therapy).

Research goal: identifying the competence and potential of speech therapists to use educational software in speech therapy, their opinion and attitude regarding the usefulness of software in improving language disorders, and if necessary, structuring information sessions on the use of educational software for them and assessing the language development of students with intellectual disabilities (mental retardation) in order to develop a Speech Therapy Intervention Program mediated by Logopedix software, aimed at facilitating the improvement and remediation of language disorders

Research objectives: studying and arguing the specialized conceptual benchmarks regarding intellectual disability (mental retardation), types of educational software, their usefulness in the educational process; developing a questionnaire for speech therapists, to identify the competence and potential of using educational software in speech therapy; identifying educational software suitable for students with mental disability (mental retardation), the conditions and strategies for their usefulness; selecting and applying methods for evaluating the language of students with mental disability (mental retardation); structuring information sessions on the use of the "Logopedix" educational software for speech therapists; developing, implementing and validating the Speech Therapy Intervention Program, based on the use of the resources of the "Logopedix" educational software, administered to students with mental disability (mental retardation); drawing general conclusions, recommendations and suggestions for future research.

The results obtained that contribute to solving the important scientific problem consist of: scientific systematization of data from field research; identification of the potential, opinion, degree of use of an educational software by speech therapists in language therapy of students with mental retardation; highlighting the speech therapy educational software as a specific tool in remediation and improvement of language; structuring information sessions on the use of an educational software for speech therapists; development and implementation of a speech therapy intervention program mediated by an educational software, appropriate to the level of language development of students with mental retardation; determining the increase in the efficiency of therapeutic interventions in correcting language disorders in students with mental retardation as a result of diversifying therapy through the use of educational software.

Scientific novelty and originality: the specialized literature on intellectual disability, mental retardation, speech therapy, educational software was studied and analyzed; the "Questionnaire on the use of educational software - the experience of using applications in speech therapy", the experience of using applications in speech therapy" for speech therapists was developed and applied; a set of methods for evaluating the language of students with mental retardation was selected and applied; the strategy of combining traditional speech therapy methods with the new speech therapy information technology was substantiated, which would stimulate the motivation of students with mental retardation for systematic practice and acceleration of therapeutic progress; information sessions for speech therapists were structured, on the use of the educational software Logopedix; the Speech Therapy Intervention Program, based on the use of the educational software "Logopedix", was developed, implemented, validated; The opportunities, but also the obstacles, of using educational software in speech therapy from the perspective of practicing speech therapists were highlighted; the language of students with mental retardation was improved through the use of educational software.

The theoretical significance consists of: substantiating theoretical approaches in which educational software increases the motivation and efficiency of logo-therapies, transforming the process of remediation of language disorders into an animated, interactive and efficient activity for students with intellectual disabilities (mental retardation); integrating the principles of holistic learning with information technology by developing the methodology for using educational software in organizing and carrying out speech therapy activities for students with intellectual disabilities (mental retardation); developing a speech therapy intervention program through the educational software "Logopedix" with applicability in correcting language disorders in the case of students with intellectual disabilities (mental retardation), with the possibility of transposing it into a methodological guide for organizing therapeutic intervention; developing and carrying out a questionnaire for evaluating specialists from the perspective of the usefulness of educational software in speech therapy intervention.

The applicative value of the work lies in the two-dimensional approach to speech therapy activity. In the foreground is the methodological approach, specific to speech therapy for correcting language disorders in students with mental retardation, supplemented by the information-technological approach, exercised by educational software, especially "Logopedix", in order to motivate students for systematic practice and accelerate therapeutic progress. The study conducted enriches pedagogical and speech therapy science, and the scientific benchmarks will serve as additional information in the continuing education of specialists. The speech therapy intervention program through the educational software "Logopedix" developed, implemented and validated, offers an alternative intervention model for improving language disorders in students with mental retardation and can be successfully used by practicing speech therapists. The theoretical and practical information, resulting from the research, can serve as documentation resources for speech therapists, the questionnaire, developed and applied, serves to identify the opinion of speech therapists about the usefulness of educational software in correcting language disorders in students with mental retardation. The analysis and statistical processing of the results of the developed and applied questionnaire identified the circumstances (all environmental factors) of the existence of differences between speech therapists regarding the approach to educational software in practical activity.

Implementation of scientific results. The results are used in the process of correcting language disorders in students with mild and moderate mental retardation. The resulting materials were presented at the joint meetings of the sessions of the Doctoral School of Educational Sciences, in the published works of scientific conferences, in specialized journals, in the process of continuous and complementary training of psychologists and speech therapists; recommended for the courses of Special Pedagogy, Speech Therapy, Speech Therapy Assistance, for the training of students in special psychopedagogy and master's students in speech therapy of "Ion Creangă" Pedagogical State University and of the "Ovidius" University of Constanta.

CRIȘAN ELENA

THE USEFULNESS OF EDUCATIONAL SOFTWARE IN CORRECTING LANGUAGE DISORDERS IN STUDENTS WITH INTELLECTUAL DISABILITIES

Specialty 534.01 - Special Pedagogy

Summary of the Doctoral Thesis in Educational Sciences

Approbed for printing:
Offset paper. Offset printing.
Printing sheets: 1.2

Paper format: 60x84 1/16
Print run: 50 copies
Order No.