International Journal of Innovative Studies in Sociology and Humanities (IJISSH)

ISSN 2456-4931 (Online) **www.ijissh.org** *Volume: 4 Issue: 5 | May 2019*

Partial Cognitive Functions of Students with Intellectual Disability in the Context of Stimulation

Assoc. prof. Dr.BibiánaHlebová, Ph.D.[1], Jana Kožárová, M.A., Ph.D.[2]

[1]*Department of Special Education,Faculty of Education, University of Prešov in Prešov, Slovak Republic*

[2]*Department of Special Education, Faculty of Education, University of Prešov in Prešov, Slovak Republic*

Abstract: *Intention of the scientific study roots in the current educational issue in Slovakia, which is related to full-valued and functional education of pupils with mild intellectual disabilities in the school integration/inclusion settings. The fact that cognitive stimulation is by no means a new phenomenon is also indicated by scientific studies that compare the results published to date with experimentally validated cognitive programs. Their primary objective is to foreground the positive and negative aspects of the respective cognitive approaches and present the resulting recommendations for practical application.The present paper wants to outline the design of a cognitive stimulation program focused on boosting the level of reading competences (specifically the technique and method of reading and the understanding of text) of primary school fourth graders with mild intellectual disabilities in the process of individual school integration in classes of Slovak Language and Literature. The cognitive stimulation program is designed to develop partial deficit cognitive functions (visual distinction capacity - figure versus background, visual distinction capacity of shapes, visual memory, auditory distinctive capacity - sound versus background, auditory distinctive capacity of speech, auditorymemory, intermodal relation, perception of time sequence, tactile-kinaesthetic perception, orientation in space) in three different stimulation programmes based on the analysis of literary text designed for the target group of students with mild intellectual disabilities.*

Keywords: *cognitive functions, intellectual disabilities, stimulation of cognitive functions, students with intellectual disabilities*

1. INTRODUCTION

The objective of the present studyis to help to implement an inclusive approach designed for education of students with special educational needs at primary schools. The method focuses on developing reading competences of students with mild intellectualdisabilities (as part of the curriculum of the primary school subject Slovak Language and Literature, filed as ISCED 1, 2016) and this through the stimulation of partial deficit cognitive functions in students. In this respect, it is intellectual disabilities, prioritise reading competences and aim at developing it systematically. They should also take into account the current developmental stage of the cognitive processes of the individual children, as these are an important predictive indicator of the other study predispositions and skills of these children, as demonstrated by a number of authors. among them Doidge (2012), Hlebová, Ďorďovičová (2015), Hlebová, Ďorďovičová, Palková (2015a, 2015b), Kožárová and Vargová (2017), Medina (2012), Perfetti, Lesgold (1977, In: Blachman, 1991), Pokorná (2010a), Rolloff (1989, In: Sindelarová, 2008), Siegel (2003) and Stanovich (1986) (In: Pokorná, 2010a), Valenta and Petrášet al. (2012), Zezulková (2011), Žovinec (2014), Žovinec, Krejčová, Pospíšilová (2014). It is therefore of major importance for a teacher to identify the strong points in each student in the process of integration/inclusion, build upon these, recognise the patterns of his or her psychological development and take into account the overall context and the correlations between the cognitive functions. It is equally important to respect the individual development pace of each student with mild intellectual disability, which, despite its belatedness, is part of a process - a process that is a major indicator of the student's learning potential. Furthermore, the teacher should take into account the fact that the school performance of a student with mild intellectual disability is not exclusively a result of his or her cognitive functions, but is to a major extent influenced by social factors, as indicated in a number of works, such as Metelková, Svobodová, Švrčková (2010), Pokorná (2010b), Zezulková (2011), Valenta, Michalík, Lečbychet al. (2012).

In light of the above-mentioned statements, the present paper wants to outline the design of a cognitive stimulation program focused on boosting the level of reading competences (specifically the technique and method of reading

and the understanding of text) of primary school fourth graders with mild intellectual disabilities in the process of individual school integration in classes of Slovak Language and Literature. The cognitive stimulation program is designed to develop partial deficit cognitive functions (visual distinction capacity - character versus background, visual distinction capacity of shapes, visual memory, auditory distinctive capacity - sound versus background, auditory distinctive capacity of speech, auditory memory, intermodal relation, perception of time sequence, tactile-kinaesthetic perception, orientation in space) as prerequisites for boosting reading competences of younger primary school students with mild intellectual disabilities, this based on previously conducted research.[1]

2. COGNITIVE ASPECTS OF STIMULATION PROCESSES DESIGNED TO ENHANCE READING COMPETENCES OF STUDENTS WITH MILD INTELLECTUAL DISABILITIES

The cognitive approach to educating children with mild intellectual disabilities focuses on psychological processes such as perception, memory, and concentration, judgement, decision-making and problem-solving. It is anchored in the presupposition that the functioning of an organism can only be fully understood on the basis of a thorough study of those psychological processes that can be observed objectively through external behaviour which, in its turn, must be accounted for through those psychological processes that are central to it. (Nolen-Hoeksema, 2012). Reading is a complex process that can be defined on the intersection of language, memory, thinking, perception and concentration. One of the many theories, existing around the theme, proposes that the main cause of reading issues with students suffering from mild intellectual disability may consist of a disorder in processing phonemic information and a consequent issue in identifying words (Pollatsek and Rayner, 1989, In: Sternberg, 2009).

The mastering of reading can be described as the activation of a sequence of partial functions in cognitive processes (Fig. 1):

1. distinguishing individual letters within complex visual representation - the text - visual distinction (figure versus background);

2. distinguishing letters from signs of a similar shape - visual distinction capacity of shapes, orientation in space;

3. correct distinction and recollection of individual letter forms - visual memory;

4. connecting the shape of a character with its auditory modality, i.e. the sound - establishing intermodal relations;

5. recollecting the sound of a phoneme - auditory memory;

6. this is preceded by auditive perception of phonemes that make up a word - auditory distinction (figure versus background distinction);

7. mutual distinction of phonemes - auditory differentiation of speech;

8. when and if a student with mild intellectual disability can manage all the steps as defined above, he or she must be able to correctly perceive the sequence of letters in order to read a word that makes sense - time sequencing (seriality).

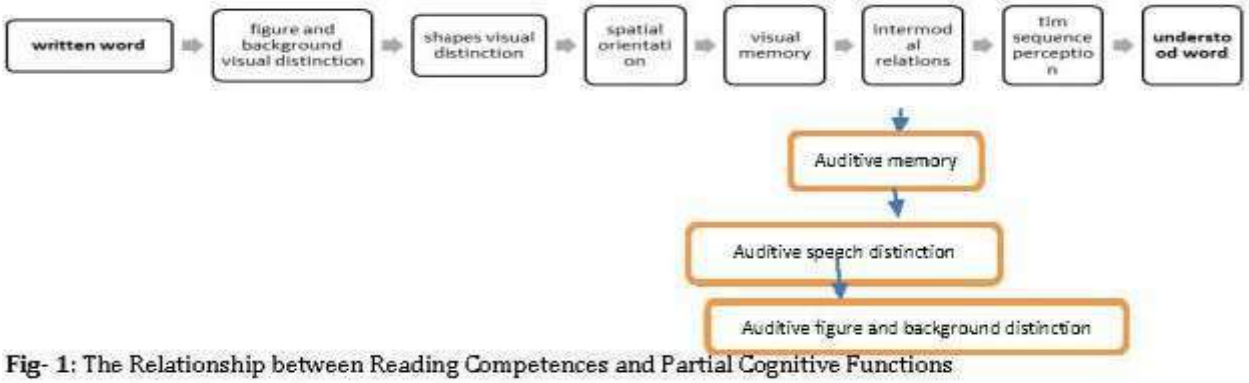


Fig- 1: The Relationship between Reading Competences and Partial Cognitive Functions

1 The question was dealt within a dissertation by Mgr. Jana Ďorďovičová entitled *Cognitive Stimulation of Reading Competences in Students with Mild Intellectual Disabilities Educated within School Integration Programs* (Prešov, Faculty of Education in Prešov, 2015) under the supervision of assoc. prof. Dr.BibiánaHlebová, Ph.D.

The foundations of *visual perception*, a capacity crucial for optimal development of reading competences, are laid as early as the second month of life. At this developmental stage, a child indulges in the attempts at visual contact, focusing on the area of the eyes and the mouth. Zezulková adds that the gradual development of this very capacity guarantees optimal conditions for the future development of reading competences, this through two specific functions of the brain: visual differentiation (figure versus background) and visual differentiation and visual memory. Jucovičová and Žáčková (2011) assume that in order to acquire reading capacity, it is important to overcome a phase typical for pre-school age, that is a phase in which a child tends to perceive the whole more prominently than details. With reading and the training of reading, in contrast, an essential prerequisite is to be able to perceive the tiniest details and be able to distinguish the important from the unimportant. In cases where one of the partial cognitive functions is weakened or disabled, the following problems with reading may occur (Bednářová, Šmardová, 2007):

- confusion of letters of different shapes (such as m, n; k, h);
- confusion of letters in different positions (such as d, b; p, b);
- a slow pace in learning and memorising letters and a resulting slow pace in reading and increased error rates.

Auditory perception develops as early as in the prenatal stages of life with the foetus perceiving auditory impulses from both the inside and the outside of the mother's body, both modified by the presence of the amniotic fluid (starting in month five). Through gradual development, it matures to a period when it guarantees optimal conditions for the development of reading competence through partial brain functions, specifically the auditory distinction capacity (figure versus background), auditory differentiation of speech (phonological analysis) and auditory memory (Zezulková, 2011). Stanovich (1986, In: Lechta, 2002) makes mention of *phonological comprehension*[2] as a predictor of reading capacity, describing it as the realisation of the acoustic form of speech and the ability to discern by hearing words within phrases, syllables within words and, at a more developed stage, sounds within words, this comprising the sequencing, frequency, etc. Impairment of auditory perception may have serious consequences on the development of speech (Bednářová, Šmardová, 2007; Zezulková, 2011) while a weakened partial cognitive function in the auditory area may be manifested in reading as one of the following phenomena (Bednářová, Šmardová, 2007):

- difficulty in clustering letters within syllables, syllables within words and orientation within syllables and words;
- speculative reading of words;
- confusing similar sounds within words (b, p; d, t; ž, š);
- slow-paced acquisition of grammar rules in speech;
- difficulty in understanding the meaning of words;
- problematic fixation on the proper pronunciation of sounds;
- resorting to compensatory reading techniques such as reading a word silently before speaking it out, reading a word repeatedly and the like

We navigate through space around us through visual, auditory, kinetic and sensory impulses and the processing thereof. Weakened *orientation in space* can result in the following defects in reading acquisition (Bednářová, Šmardová, 2007):

- difficulties with orientation within the text, that is with perceiving the text should be read in a certain direction, from left to right, as well as searching for information in the text;

2 The development of phonological perception and the method of developing a phonological conscience are analysed in detail in Lechta (2002). Pokorná (2010a) adds that the longitudinal studies by Liberman, Shankweiler (1989) have shown that training in phonological skills and processing helps reading acquisition. On the basis of this premise, it can be assumed that students with deficits in phonological processing find it harder to learn to read.

- inversive perception of the sequencing of letters, in itself strongly connected to perception of time sequencings, visual perception and laterality.

Uhry (1999, In: Lechta, 2002) describes three further predictors of reading: fast and coherent denomination, short-term verbal memory and the pace of fast articulation.

The role of *short-term verbal-acoustic memory*, also known as operational memory, has been described by Lurija (1983, In: Lechta, 2002). Jongová (1998) bases her research on Siegel's assumption (1993) that the grapheme-phoneme conversion rules must be kept in mind when processing the individual parts of a word (In: Kulišťák, 2011). Students with mild intellectual disabilities are able to break graphemes into phonemes but are unable to keep the phonemic chains in mind long enough to be able to connect them into words. Should specific speech assimilation and articulatory defects go hand in hand with this, the overall process of operational memorisation is hindered, which also determines speech capacity.

Intermodal auditory-visual and visual-auditory relations may obstruct the process of reading with errors based on confusing sounds (b, p). In such cases, the error is not related to issues with visual differentiation or orientation in space: the student does not know whether the pronounced (b) is represented by the character (b) or (p) as he or she finds it difficult to combine information from two sensory fields (Sindelarová, 2008). Pokorná (2010b) adds that reading with understanding is a complex process that consists of deciphering a written text through visual differentiation of shapes as well as intermodal coding (connecting a character with a sound), with all of these processes having to occur within an extremely short time span, within the limits of short-term memory.

The perception of time sequencing, or so-called seriality is also a major prerequisite for reading with understanding. Should this capacity be weakened, the following phenomena may occur (Bednářová, Šmardová, 2007):

- confusing the order of letters,
- incorrect perception of sequencing in a text,
- Slow-pacedautomatization of a specific process related to reading.

In the context explained above, it is important to acknowledge that one specific error in an error-oriented reading analysis may represent ***issues in multiple partial cognitive functions.*** In order to systematically stimulate reading competences in students with mild intellectual disabilities, it is therefore essential to define the specific weakened cognitive function which, in turn, must be stimulated if the corresponding deficit in reading competences is to be gradually improved.

Partial cognitive functions and school-related skills have been a prominent topic among experts, especially abroad. Copious research has been carried out in the field, most of it involving students suffering from specific development-related learning disabilities. Among the most notable research has been Perfetti, Lesgold (1977, In: Blachman, 1991), Siegel (2003), Roloff (1989, In: Sindelarová, 2008) and Stanovich (1986, In: Pokorná, 2010a).

We have also come across research that analysed auditory differentiation as a prerequisite for the development of communication competences in students with mild intellectual disabilities (Zezulková, 2011). Based on our research, we have reached the conclusion that a better level in this area is achieved by students with mild intellectual disabilities who have been exposed to relatively more frequent stimulation related to auditory differentiation. More specifically, the students participating in the research have achieved higher levels in assignments requiring concrete thinking (analysing words into syllables, syllabic synthesis, isolating first sounds/syllables, sound synthesis). Their performance was weaker, in contrast, in assignments requiring complex cognitive operations (rhyming, analysing words into sounds, omitting syllables/sounds). This being said, it is important to mention the absence of multiple sources that would deal with the topic of partial cognitive functions in students with mild intellectual disabilities in the context of reading competences development.

Psychodiagnostics in Slovakia works mostly with a method considered the most comprehensive of the diagnostic-therapeutic methods that is the ***method T-254 Deficits in partial functions*** (Sindelarová, amended by Černý, 2008). The method is designed to identify in detail which perceptive and cognitive functions a student of primary

school exhibits deficits in. An individualised therapeutic plan is consequently implemented as the student does not suffer from the diagnosed deficits as such but rather its symptoms on the level of school skills. The methodology comprises detailed training materials that help stimulate specific partial cognitive functions, while respecting the natural development and coherence of a student's cognitive development (Sindelarová, 2008).

The fact that cognitive stimulation is by no means a new phenomenon is also indicated by scientific studies that compare the results published to date with experimentally validated cognitive programs. Their primary objective is to foreground the positive and negative aspects of the respective cognitive approaches and present the resulting recommendations for practical application. A case in point was the research method applied inter alia by Peat et al. (1997), a comparative study of the effect of two cognitive programs: The Strategies Program for Effective Learning/Thinkin (Mulcahy, Marfo, Peat, Andrews, 1987) and Instrumental Enrichment (Feurstein, Rand, Hoffman, Miller, 1980). Jitendra et al. (2011), who focused on comparing studies presenting results of cognition-based education designed to stimulate reading with understanding in students suffering from learning disabilities, was another team concerned with comparative analysis of verified cognitive programs. Browder et al. (2006) summarise cognitive stimulation programs focused on reading acquisition, mostly with students suffering from severe intellectual disabilities. Their contribution is especially valuable in that they define effective tools that help boost reading acquisition in students resorting to mostly non-linguistic forms of communication.

These studies conclude that cognitive theory disproves obsolete hypotheses which proposed that students with intellectual disabilities could not develop complex thought processes and cognitive functions. This is also confirmed by Sindelarová (1996, 2007), Pokorná (2010b) and Medina (2012) who argue that brain damage manifesting as decreased intellect (under-average IQ) does not necessarily and exclusively lead to under-average quality of cognitive processes (concentration, perception, memory). These studies have shown, in contrast, that it is the partial cognitive functions that play a more important role as predictors of school performance than intellect, this with regard to the fact that reading as a key competence, is not primarily related to intellect but to the development of cognitive functions. This argument is further corroborated by Kovalčíková (2017), Kožárová and Makajiová (2019), Stanovich (1986), Perfetti, Lesgold (1977, In: Blachman, 1991), Siegelová (1999, In: Pokorná, 2010a), Wagner (1986), Wagner, Torgesen (1987), Williams (1986) (In: Pokorná, 2010a) and Feuerstein et al. (2002, 2008, 2009, 2014).

Therefore, the following section of the paper is dedicated to the design of a systematic cognitive stimulation program focused on stimulating reading competences and diagnosed deficits in partial cognitive functions in students with mild intellectual disabilities educated within individual integration programs in classes of Slovak Language and Literature in the fourth grade of primary schools.

2.1 Background and context of the cognitive stimulation program

The cognitive stimulation program of reading competences can be viewed as a supplement within the curriculum of the subject Slovak Language and Literature designed for students with mild intellectual disabilities educated within individual integration programs in the fourth grade of primary schools. The objective of the program is to provide a maximum stimulus to the development of partial cognitive functions. These are considered the core prerequisites of reading acquisition which is a key skill for the subject Slovak Language and Literature and a necessary condition for mastering the curricula of other subjects by students with mild intellectual disabilities.

The content of the cognitive stimulation program is based on the current knowledge of and research into partial cognitive functions (visual distinction capacity - character versus background, visual distinction capacity of shapes, visual memory, auditory distinctive capacity - sound versus background, auditory distinctive capacity of speech, auditory memory, intermodal relations, perception of time sequence, tactile-kinaesthetic perception, orientation in space) and reading competences (the techniques and modes of reading, understanding of text) in students with mild intellectual disabilities as monitored by a selection of tests.The goal in this case was to produce a systematic cognitive stimulation program that would build upon the respective cognitive developmental phase of each student suffering from mild intellectual disability and stimulate those partial cognitive functions that are not fully developed and thus cause deficits in the reading technique and mode as well as understanding. A collection of recommended content was consequently designed to serve as the basis of the cognitive stimulation program (Chart 1) which was then applied in a series of classes involving a group of students with mild intellectual disabilities in the fourth grade of primary schools in the region of Prešov.

Stimulation objective	Content of the cognitive stimulation program
Stimulation of reading competences (reading technique and method, understanding text)	The program defines the curriculum of the subject Slovak Language and Literature in accordance with the official national curricula for students with mild intellectual disabilities ISCED 1 – primary education (2009, 2016) in 3rd and 4th grades at primary schools for students with special needs, education variant A: **3rd grade:** - learning and training of remaining letters of the alphabet (f, F, g, G, ä, ch, Ch, dz, Dz, w, W, x, q), diphthongs (ia, ie, iu, ô) and syllabic consonants (r, l, ŕ, Ĺ); - reading the alphabet; - training of fluent reading of newly learned syllables running parallel to the acquisition of new syllables; - training students to read and understand text, to read fluently entire words and simple sentences in short texts; - reproduction of a read text in the form of answers to questions related to the text; **4th grade:** - correct reading and understanding of short easy texts; - training of correct accent and natural intonation; - training of orientation within a text; - improving the culture of spoken expression, training breathing, proper articulation and pronunciation.
Stimulation of spoken word	- training of verbal expression and pronunciation; - denomination and description of items and phenomena; - expressing oneself in structures ranging from simple to complex sentences; - training of communication situations: asking, informing, excusing and thanking; - proper articulation, lucidity of speech and proper breathing in speaking; - verbal expression and description of personal and social experiences; - description of environment at home, at school and the like.
Stimulation of visual perception	
Stimulation of visual distinction capacity (figure versus background)	- distinction of shapes in a picture; - distinction of shapes behind lines; - distinction of shapes drawn across one another; - distinction of letters and numbers written across one another; - distinction of words written across one another; - searching for template objects in a picture; - drawing shapes according to a template; - writing words according to a template; - looking up letters/words in a sequence of letters/words;
Stimulation of visual distinction capacity	- colour distinction (primary and secondary colours, shades); - shape distinction (round shapes, square shapes, rectangular shapes, cylindrical shapes); - proportion distinction (small - big, low - high, short - long, narrow - wide, big - bigger - the biggest, etc.); - distinction of pictures that only differ in details; - searching for two identical images in a sequence; - distinction of inversive images, figures and letters; - distinction of similar words; - diagnosing errors in words according to a template; - diagnosing errors in a text according to a template; - searching for word pairs that differ by font type;
Stimulation of visual memory	- memorising objects, images, structures and letters; identifying an item missing in a sequence; - memorising viewed images, structures and letters; - placing images, structures and letters into correct positions according to a template; - filling in syllables and words according to an example viewed prior to reading the assignment; - deciding whether one has already seen a given image, shape or letter;
Stimulation of auditory perception	
Stimulation of auditory perception (distinction of figure versus background)	- localisation of sound direction; - recognising objects on the basis of their sound; - repeating words set in a specific auditory background (the voice of a radio, female/male voice, foreign language, a famous song, etc.); - phonetic isolation of a given phoneme at the beginning, in the middle and at the end of a word; - distinction of a sound among other sounds; - distinction of a given word within a text;

Stimulation of auditory distinction of speech	- distinguishing types of sounds (objects, animal sounds, human voices, etc.) - distinguishing similar words and words that sound different; - development of auditory analysis and synthesis of speech (sounds, syllables); - isolating specific words within a text; - breaking words into syllables; - distinction of a given prefix in words in a text; - distinction of words in a sentence; - distinguishing between i-syllables (di, ti, ni, li) and y-syllables (dy, ty, ny, ly); - distinguishing the length of a syllable; - filling in missing similar letters in a text on the basis of listening;
Stimulation of auditory memory	- repetition of 3 - 5 words, sentences and more complex structures; - repetition of semantically unrelated words; - memorising words spoken out loud (3, 4) and distinguishing them within a group of other words; - thematic expansion of a word (according to an example, f. ex.: hen = egg, cock, lay); - answering questions related to a story read out loud;
Stimulation of intermodal relations	- making movement according to a verbal instruction; - connecting a word with an image; - connecting substantives with images of varied shapes (nonsensical substantives); - connecting substantives (names of animals) with a melody played on a piano; - connecting letters with numbers so as to break a code; - connecting letters with signs so as to break a code;
Stimulation of time sequencing capacity	- remembering items (images, the game of pairs) in a set order; - determining where an item was before; - naming and filling in days of the week, months of the year; - remembering sequences of numbers; - filling in dozens in a sequence of numbers; - filling in shapes into a grid according to an example; - filling in numbers and letters into a grid according to an example; - deciding what activities are typical for morning, noon, afternoon and evening; - recollecting a daily routine; - organising one's duties, arranging them in a time sequence; - understanding the difference between the following terms: early, later, at the latest; - understanding the difference between the following terms: yesterday, today, tomorrow, the day before yesterday, the day after tomorrow; - reproducing a series of movements; - reproducing a series of movements of the right and the left hand; - reproducing a series of movements and words;
Stimulation of tactile-kinaesthetic perception	- sorting out tiny items by touch; - sorting out items that differ in surface / material by touch; - sorting out geometric shapes by touch; - sorting out items that differ in size, weight, temperature and shape by touch; - modelling geometric shapes by touch;
Stimulation of orientation in space	- understanding and knowing the difference between: up, down, at, to, in, below, above, in front, behind, next to, in between, close, far; - understanding and knowing the difference between: the first, the last, the middle, in the middle, one but last; - understanding and knowing the difference between: right before, right after; - knowing the difference between right and left on one's body; - reproducing movements of the right and the left hand; - telling the difference between right and left on different items; - telling the position of an item on the basis of two parameters such as up on the right; - telling the difference between right and left on another person; - following images from left to right; - orientation and navigation in the immediate vicinity - the student knows how to get to school, to the grocery store, etc.; - orientation within a row; - building bricks according to instructions; - filling in words/letters/numbers into an image according to a template image;
Stimulation of motor skills	- development of gross motor skills; - development of fine motor skills; - development of graphic-motor skills - holding a pen, the position of the hand, hand relaxation, pressure exerted during writing, fluency of drawing/writing; - development of visual-motor skills - drawing according to a template, lines between lines

Chart – 1: *Recommended content for the cognitive stimulation program of reading competences and partial cognitive functions*

2.2 Application of the cognitive stimulation program of reading competences in students with mild intellectual disabilities

The cognitive stimulation program is designed in the form of stimulation exercises related to literary text analysis (In: Čižmarovič, Kalná, 1991) focused on partial cognitive functions in accordance with the recommended content (Chart 1), especially the methodological material T-254 Deficits in Partial Cognitive Functions (Sindelarová, amended by Černý, 2008). Lastly, the material includes my own ideas and incentives. Working mostly within groups of students and indulging in the exercises for at least 10 minutes per day is recommended. Individual exercises focus on stimulating the diagnosed deficits in partial cognitive functions so as to build on the students' strong points that is fields in which no deficit has been diagnosed.[3]

Stimulation assignments in literary analysis

E. Gašparová: The Red Handbag

1. Assignment: Read the story The Red Handbag.

A handbag lies on the pavement, glittering in the sun. A boy named John runs onto the pavement, sees the handbag and picks it up.

"Oh, what a lovely handbag. Pity it's for girls! Never mind, I'll use it for my pebbles."

John walks around his flat, the handbag in his hand, with the pebbles rattling softly. They have their own house now. A girl is walking on the pavement, crying. She is looking for a red handbag. People stop and feel sorry for the little girl. No one has seen the bag. The girl cries and cries, the handbag doesn't hear her. The pebbles keep rattling inside.

2. Questions examining the understanding of the text

Assignment: Answer the following questions. If you don't know the answer, try to find it in the text.

a) What did John find running on the pavement?

b) What colour was the handbag?

c) Who did the handbag belong to?

d) Why didn't the handbag hear the girl cry?

e) What are we supposed to do when we find something that isn't ours?

3. Visual distinction (figure versus background)

Assignment: A boy has collected 3 stones in his bag. Focus and circle all the numbers 3 in the sequence. Do not circle the numbers 33. Write down how many of the numbers 3 you have found.

139862532569853321546932532569835123321532153741243002303222453368953245698312546733215467936554331243125631245763124569312456367582334256321042532104253124579331245965321546931242954331245965933124245933232565489533214556325632154733214321325478325 3

4. Visual distinction

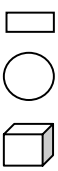
Assignment: See below the order in which John's things are arranged on a shelf in his room. Look at them carefully.

a car

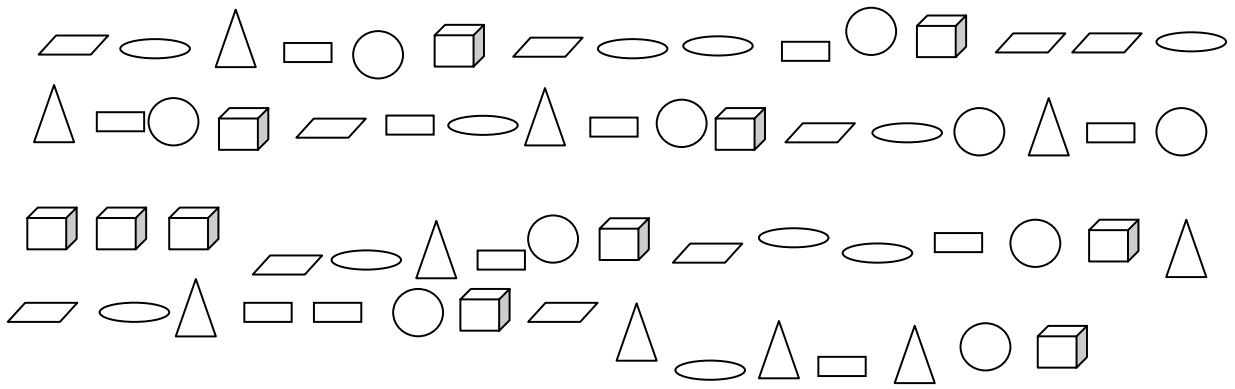
a basket

a triangle

3 In more detail In: Hlebová, Ďorďovičová, Palková (2015a).



Assignment: In the following assignment, you can see the objects arranged correctly, the way you could see them on the shelf in John's room. However, a few objects that do not belong on the shelf have been included. Can you find them and cross them out?



5. Tactile-kinaesthetic perception

Assignment: Close your eyes. I'll place three little balls in your hand. Place the ball that is different on the table.

Methodological instructions for teachers: Get a set of little balls. Give the student a pair of identical balls and one ball that is different. The student is supposed to determine which ball differs from the other two, with his or her eyes closed. Start with easily distinguishable balls and continue with balls that are increasingly similar.

6. Evaluation.

Assignment: Tell us what you succeeded in and what was difficult for you in today's work.

Stimulation-driven assignments in a literary analysis

L. N. Tolstoy: Old Grandfather and Grandson

1. Assignment:Read the story below:

The grandfather had become very old. His son and his son's wife no longer allowed him to eat with them at the table. One day they gave him his food in a bowl. He tried to move the bowl closer and it fell to the floor and broke. His daughter-in-law scolded him. She told him that he spoiled everything in the house and broke their dishes, and she said that from now on he would get his food in a wooden dish.

A few days later, the old man's son and his wife were sitting in their hut, watching their little boy playing on the floor. They saw him putting together something out of small pieces of wood. His father asked him, "What are you making, Misha?"

The little grandson said, "I'm making a wooden dish. When you and Mamma get old, I'll feed you out of it."

2. Questions examining the understanding of the text

Assignment: Answer the following questions. If you do not know the answer, try to find it in the text.

a) Read the text together with the narrator

b) Who are the characters in the story?

c) What happened to the old grandfather?

d) How did the son and his wife treat the old man?

e) Why was Misha putting together the small pieces?

f) How are we supposed to treat old members of our family?

3. Visual distinction (figure versus background)

Assignment: Misha is playing with pieces shaped as letters. They get all mixed up and he would like to know how many he's got of each letter. Try to count how many times the following letters are in the grid below: A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z.

B E E S G
A G I
A L L
U A J Z
D
A C X O I T M
O I E B
A C K B F
H F W B H G
NE Y
I A Q E F p M D I C
D H E R L V D

A____, B____, C_____, D_____, E_____, F____, G_____, H_____, I_____, J_____, K___, L____, M____, N____, O____, P___, Q____, R____, S_____, T____, U____, V____, W____, X____, Y____, Z_____ .[4]

4. Visual distinction

Assignment: If you combine the numbers below and the order of grids with letters, you will find two names of towns and a name of one river. Write them down on the empty lines.

K	**L**	**S**	**M**	**O**	**A**	**N**	**V**	**Í**

Grids in the following order: 5325 _____

Grids in the following order: 453186 _____

Grids in the following order: 792 _____

6. Tactile-kinaesthetic perception

Assignment: Close your eyes. Your task is to find pairs of identical corks. Place the pairs on the table.

Methodological instructions for teachers: Get some corks (they should differ in surfaces). The student is supposed to find pairs of identical corks with his or her eyes closed.

7. Evaluation.

Assignment: Tell us what you succeeded in and what was difficult for you in today's work.

[4]Solution: A: 6, B: 5, C: 3, D: 3, E: 6, F: 3, G: 3, H: 3, I: 6, J:1, K: 1, L:3, M:2, N:1, O: 2, P:1, Q:1, R:1, S: 1, T: 1, U: 1, V: 1, W:1, X: 1, Y: 1, Z: 1

Stimulation-driven assignments in a literary analysis

M. Ďuríčková: A Feast

1. Assignment:Read the story:

Every summer, there's a feast in our village. I love the feast because it also means merry-go-rounds and swings. People get dressed real nice, it's warm and you can buy yourself an ice-cream.

"Randy, what do you like about the feast?" my grandfather asked me.

"The swings," I replied, getting on one of them.

"I'll build one for you in the garden so you can swing the whole year round."

I was happy. I couldn't swing all the time though. I had to go to kindergarten and do lots of things. But I still go to the garden for at least a few swings every day.

2. Questions examining the understanding of the text

Assignment: Answer the following questions. If you do not know the answer, try to find it in the text.

a) Who are the characters in the text?
b) What is the feast like in the village?
c) What is it that Randy likes about the feast?
d) What has Grandpa built for Randy?
e) What do you think Randy's days are like, how does he spend his time?
f) Tell us about your daily activity.

3. Visual distinction (figure versus background)

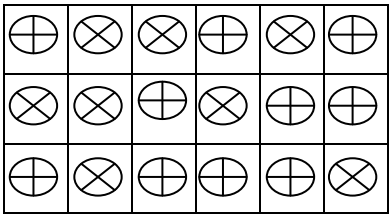
Assignment: Randy loves to play at being a little detective. Today, his task is to find all the syllables *di.* And you get the same task - circle all the syllables *di* that are hidden in the grid.

mmnkjdhfdimghgjfhgjhjdjhzdhfjfkdiksjsdimdndinvvhiiindjdgssbndidnvnvhsndkshfgdhdjhgdifjfhdinjvhvgybdiahjdjf
hdjfhdismnmnmngfdibshsgsmbihdgccmbindhsfdadimfcdfdgsdinhjdhdiahgsdhdincvcjhfbihdhfgdijhfdjdialljhgfdsfvjf
dierwtwiriprogfcvxjxcvbisdshjfdkbighasdjfkditrzuiodihgjhdihjkdiertzudibnmbifghjkbifghjpighjkdighjkpixfcgvhbjdi
dghdijkhgvcxdikjhgcvbnmpixfcghjbidfghjdiwertidfghjdifghjkdifghdiacvxvxdinjcjcjbdikljgdpighjdihjkjsdjkdihjkdiqw
erdighjkpiertzdidfghjbighjkdighjdilkjhdipoiuztdighjklbipoasdijkbiasdfdiqwerdighuidikkkjhdi

4.Visual Distinction Assignment: This sign ⊗ will help you find the name of the merry-go-round which Randy liked. Your task is to:

a) find the sign in the grid on the right;
b) find the position of the window where the sign is;
c) find the letter that is in the same window, only in the grid on the left;
d) write the letters down on the empty line, together they make up the answer.

H	A	U	I	T	S
O	D	X	R	N	G
W	Ó	Y	L	P	M



5. Visual Distinction Assignment: The sun ☼ ——————— will help you find the name of the author of the story. Your task is to:

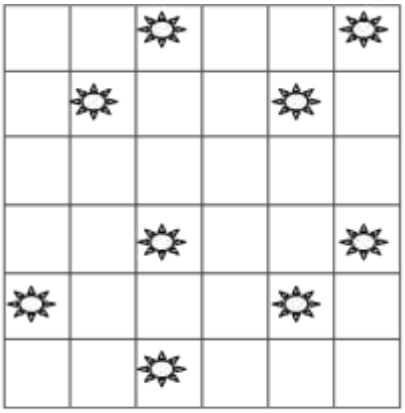
a) follow the sun in the grid on the right;

b) find the position of the window where the sign is;

c) find the letter that is in the same window, only in the grid on the left;

d) write the letters down on the empty line, together they make up the answer.

W	E	Ď	L	P	U
O	R	U	F	Í	C
X	S	A	M	K	T
S	D	Č	U	V	K
O	Q	X	V	V	P
G	I	Á	H	L	Y



_____

6. The body scheme

Assignment: I will be showing you some positions and movements. Please repeat them after me.

Methodological instructions for teachers: Sit next to the student so that they are looking in the same direction but are also able to look at each other. Place a rubber band (a string and the like) on your right wrist and also mark the student's right hand. Place both your hands on your knees. The student should do the same. If (s)he does, tell him/her "Correct" to confirm (s)he has done it right. If (s)he does not follow you correctly, tell him/her to look at you closely and try again. Repeat the instructions until (s)he gets it right. Practice the positions / movements described below. You may also come up with your own positions, just keep one thing in mind - your hand must not cross the vertical axis of the body.

Positions to be trained:

- right hand on the right knee and left hand on the left shoulder,
- right hand on the mouth and left hand on the left ear,
- right hand on the right shoulder, left hand on the left eye,
- right hand on the right hip, left hand on the left eye.

7. Evaluation.

Assignment: Tell us what you succeeded in and what was difficult for you in today's work.

3. CONCLUSIONS

Reading is defined as a key competence in the General Curricula for Students with Mild Intellectual Disabilities (*ISCED* 1, 2009, 2016) should the integration/inclusion education process of younger school-age children with mild intellectual disabilities be full-fledged and successful. Therefore we believe that it is of major importance to place the reading competence at the foreground of the education process while respecting the individuality of each student and the current developmental stage of their partial cognitive functions, this, for example, during the literary-analysis based exercises.

We consider our research inspiring and topical and believe that it will serve as a major source of inspiration, especially to teachers and special education experts. It is particularly important as there is very little research, both in the national and the international context, on the influence of the cognitive stimulation of reading competences in students with mild intellectual disabilities through the enhancement of partial cognitive functions.

ACKNOWLEDGEMENT

Study is the partial outcome of the research project ***APVV-15-0071Man with handicap in the literature for children and youth*** (2016 – 2020).

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AUTHORS' BIOGRAPHIES

Assoc. prof. Dr.BibánaHlebová, Ph.D. is an associate professor in the Department of Special Education, Faculty of Education, University of Prešov (Slovakia). In her research work she focuses on the students with intellectual disabilities, possibilities of their inclusive education, and particularly on the dynamic stimulation of cognitive functions in their education. Moreover, she is interested in the Roma identity and Roma literature.

Jana Kožárová, M.A., Ph.D., is and assistant professor in the Department of Special Education, Faculty of Education, University of Prešov (Slovakia). In her research work she focuses on the children with problem behaviour and conduct disorders. Particularly, she works on the interventions for challenging behaviour and conduct disorders elimination within the educational process in inclusive settings.