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The Stimulation of Children's Linguistic Activity in Preschool and Early School Education

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Reports and Reviews

Editorial

The sixth issue of our journal is devoted to the topic of children's linguistic activity stimulation. The problem is interdisciplinary: it involves psychology, pedagogy, linguistics, methodology, and literature sciences. It is a crucial issue for effective education and even for the very existence of societies and nations. The seven papers presented in this journal show this interdisciplinary and international character of the topic. There are different points of view presented by scientists and researchers from Bulgaria, Poland and Slovakia. Their articles and conclusions should be an inspiration to both theoreticians and practitioners working with children.

The papers lead the readers from the most general of problems, to more detailed ones, from theory to practice. They deal with issues that can be applied to the youngest of children as well as 8–9-year-olds. Marzena M. Szurek writes about basic facts concerning the human brain that have recently been established, especially by neurobiologists. She shows how knowledge of structural and functional asymmetries in human brains helps us to understand children's speech development and special difficulties in this process. It is mainly lateralization that influences language acquisition and, as the author states: "any measures taken with a view to help overcome language difficulties cannot ignore the need to stimulate lateralization". She goes on to present the results of neurobiological research on the human brain, emphasizing the different tasks of the two hemispheres, with focus on the left one (as it is responsible for speech, reading and writing abilities). The attention is paid here to the problems that may occur because of mixed laterality or ambidexterity, and the importance of recognition and treatment when a child is over 3 years old (i.e. in the beginning of pre-school education). In conclusion, M. Szurek claims: "Information on the dominance of hand, eye, ear and foot is important in evaluating the level of speech development in a child."

The problems of diagnosis are also at the centre of the paper by Miriam Valášková, *Diagnosis of Literacy by the Applications of Digital Technologies*. The concept of understanding literacy based on recent research is innovative. The author presents a stimulative computer program, "Phonemes – our friends", which aims to develop children's phonemic awareness, especially in kindergarten. It is proved that phonemic awareness is very important for a child's linguistic activity and, what is more, it even appears to be "a predictor of school success". It is worth mentioning that new digital technologies are engaged in the processes of diagnosis and stimulation. Nowadays, computers are one of children's favourite tools and "toys" which can be easily used for the purpose of education, even for 4-year-olds. In the paper, the results of pedagogical research on children under the age of 5 are presented. The experiment proved that the development of phonemic awareness is essential for children's linguistic skills. The program proposed by the author not only expands children's vocabularies, but also promotes the strategy of global reading.

Whereas the first three papers focus on the linguistic activity stimulation of preschool children or first grade pupils, the following ones consider the problems of second- and third-graders (or even older). The paper entitled *The Quality of Deductive Reasoning in Inferring Words from Context: Compariosn of the Performance of Standard and Talented 9–10-year-old Pupils,* was co-prepared by six authors: Iveta Kovalčíková, PhD., Ivan Ropovik, Ján Ferjenčík, Monika Bobáková, Miriam Slavkovská, Marta Filičková. They present interdisciplinary research focused on the ability of children to develop hypothetical-deductive thinking and to decode words from context. This is essential for teaching in primary schools as it provides for effective diagnostics and gives hints for the stimulation of pupils with special educational needs. The conclusion of the research (and the paper) is interesting and inspiring: it shows the importance of the teaching climate in classes and its effect on children's self-perception and, therefore, their willingness to solve linguistic problems. Of additional value is the paper's very rich, up-to-date bibliography, consisting of scientific magazine articles written in English.

The next paper also discusses problems of reading literacy and text comprehension. Ľudmila Liptáková and Dana Cibáková claim that there is no "systematic and conceptual development of reading literacy in primary education in Slovakia". The result of this is the rather poor comprehension of informational texts by Slovak students. The article, *Stimulation of Children's Text Comprehension in Primary Education – on One Educational Strategy,* presents one possible solution to the problem. In the paper, the authors describe their experiment, which was a four-month stimulation programme for children in the second grade of primary school. The results were satisfactory. The article concludes with the educational implications for all phases of the stimulation (input, elaboration, output).

Teachers need effective new strategies not only for reading comprehension, but also for developing children's narrative skills. This is the focus of the paper by Martin Klimovič, *Stimulation of Narration: from Examining Preconceptions to Education*. It deals with productive text competence, i.e. "complex skills and strategies of a human which enable him to achieve a communication plan through speaking and writing". The author enumerates the elements of children's narrations according to his own research and then analyzes Slovak textbooks to answer the question of how the narration is taught. The conclusions are not optimistic: the author finds "the current state" unsatisfactory. The last part of the paper is devoted to the presentation of research on a student's ability to create a narrative text in the second grade of primary school. Finally, the researcher describes his contribution to the transformation of the curriculum, proposing a didactic system for three years of early school education (starting from the second year).

The last paper in this issue is concerned with children's ability to understand allegory. Rozalina Engels-Kriditis sees the didactic and educational potential in sayings and proverbs. In her essay, *Children in the World of Allegory: the Key Role of Comparison Skills and Abstract Thinking,* psychological-pedagogical research on the interpretation skills of 5–7-year-olds is presented. The experiment lasted eight months and was conducted in Bulgarian public kindergartens. It shows that the majority of the children studied could not understand even the literal meaning of chosen sayings

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and proverbs. But after stimulation exercises, the number of such pupils decreased dramatically. Therefore, the author claims that it is essential to develop comparison skills and elementary abstract thinking in pre-school education.

The authors of the papers, as well as the editorial board, hope that all of the texts will inspire teachers to use new methods and strategies in education, and inspire scientists to look for better solutions. The importance of language competence for children's future lives and education is indisputable. It is worth recognizing and making efforts to help preschoolers and pupils in early school age to develop their linguistic skills in speaking, reading and writing as well.

Krystyna Zabawa

Articles

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Structural and Functional Asymmetries in the Brain in the Light of Lateralization and Development of Language Competences

Introduction

The need to stimulate speech development in pre-school children, including in particular children with verbal functions development problems, is indisputable now. Language competences are some of the most valuable skills affecting the intellectual and social progress of a human being. However, despite the broad range of stimulating and therapeutic tools available, we still too rarely make use of the achievements of neurobiological research on the development of the human brain. The brain controls all the cognitive functions which make it possible for us to learn new things. Some of the aspects connected with these processes include the asymmetric structure of the brain and functions phylogenetically assigned to each of the cerebral hemispheres. They manifest themselves, among other things, in lateralization of paired organs, especially in handedness. Educators who work with pre-school children should pay particular attention to lateralization, because it is closely connected with speech development. Delayed lateralization is in many cases accompanied by speech disorders. Therefore, any measures taken with a view to help overcome language difficulties cannot ignore the need to stimulate lateralization. It is also important that the preference a child shows for one side of the body over the other is correctly recognised and evaluated.

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Asymmetry in the structure and chemical composition of cerebral hemispheres as a factor affecting lateralization

Every human body is asymmetric to a greater or lesser extent. The same is true of the human brain. It is made of two cerebral hemispheres, which are connected by nerve fibres and which seem pretty much alike. However, the similarity is only superficial. In fact, the two halves of the brain differ not only in their structure, but also in terms of cytoarchitectonics, chemical composition and, most primarily, their functions (Cieszyńska, Korendo, 2008, p. 266). "There is plenty of evidence showing that the left and right hemispheres of the brain are not identical in function and structure, and that the differences between them lie in these higher mental processes that cognitive neuroscience is most concerned with. It has been shown, for example, that the asymmetry in how the cerebral hemispheres function manifests itself in the different ways they produce and comprehend language or process complex spatial relations" – free trans. (Springer, G. Deutsch, 1998, p. 16).

The Sylvian fissure, which divides the frontal lobe and parietal lobe from the temporal lobe, is a good example of how asymmetric the brain is. In the left hemisphere of the brain it is straighter and about 1 cm longer than in the right hemisphere, where it is, additionally, hooked upwards (Cieszyńska, Korendo, 2008, p. 270). An especially important role in language processes is played by the asymmetric *planum temporale*, a small cortical area in the temporal lobes on both sides of the brain in the back of the Sylvian fissure. It is an auditory association area involved with language expression, as well as with visual and spatial functions (Bednarek, 2002, p. 4; Cieszyńska, Korendo, 2008, pp. 266–269). In normal brains, the *planum temporale* is clearly larger in the left cerebral hemisphere already in the prenatal period, which helps it specialize in sequential language processing later on. However, as physiological and anatomical studies show, individuals with dyslexia have symmetric *planum temporale*, and in some cases the structure is even larger in the right hemisphere than in the left one (reversed asymmetry) (Bednarek, 2002, p. 4).

In terms of cytoarchitectonics, the difference between the cerebral hemispheres lies in the distribution of various cells (Cieszyńska, Korendo, 2008, p. 268). The two halves of the brain also show different chemical compositions – they have different types and numbers of neurotransmitters and neural encoding and decoding programs (Budohoska, Grabowska, 1994).

All these features have an influence on the complementary specialization of the right and left cerebral hemispheres. In other words, each hemisphere has evolved to perform different but complementary functions, which altogether form our overall psychological activity (Springer, Deutsch, 1998, p. 28). The results of the latest research on brain asymmetry confirm that this fact is associated with cognitive consequences (Kenneth Hugdahl, Richard J. Davidson, 2004; Kenneth Hugdahl, Rene Westerhausen, 2010).

Specialisation of cerebral hemispheres and language organisation

A majority of the human population have language faculty, responsible for speech, reading and writing abilities, located in the left cerebral hemisphere (Bragdon, Gamon, 2006, p. 57; Cieszyńska, 2005, p. 26). It is connected with the sequential, analytical and relational functioning of this part of the brain. Specialist literature on brain lateralization says that the **left cerebral hemisphere** (quote by: Cieszyńska, Korendo, 2008, p. 271–272 and Cieszyńska, 2005, p. 26–27):

- works analytically and relationally;
- arranges information sequentially – bit by bit;
- compares stimuli by making relations between them;
- records the time from the internal clock;
- is guided by logic in identification of stimuli;
- holds memory with general knowledge of the world;
- processes familiar stimuli.

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All of these have an influence on language processing, which is dominated by the left hemisphere. This part of the human brain:

- receives, identifies and differentiates sounds of speech;
- processes information in silent reading;
- recognises rhymes;
- performs complex verbal activities.

The right cerebral hemisphere specialises in:

- receiving and processing stimuli globally and holistically;
- processing new stimuli;
- identifying stimuli on the basis of the physical resemblance of the entire stimulus rather than its individual elements;
- processing visuo-spatial information, e.g. recognising faces;
- processing and storing mathematical and musical information;
- recognising geometric shapes;
- recognising basic features of stimuli (colour, contour, brightness);
- perceiving emotionally-charged stimuli (reading social kinesic signs and verbal emotional behaviour).

Although not totally excluded from language processing, the right hemisphere does it a bit differently from the left hemisphere. Because the holistic aspect dominates its functioning, it:

- comprehends globally heard or read concrete nouns (in nominative);
- identifies and differentiates vowels;
- controls intonation, accent and rhythm of speech;
- helps understand the context of a message;
- reads metaphors;
- controls the culture-bound direction of text (left-to-right in our culture).

In view of the above, it is easier to understand the problems of people suffering from dyslexia, as this disorder is usually caused by malfunctions of the left hemisphere of the brain (Bragdon, Gamon, 2006, p. 57), as well as people with difficulties in linear processing of the language, which is so important in reading and writing (Cieszyńska-Rożek, 2010, p. 40). "The left cerebral hemisphere is more prone to underdevelopment during foetal life, because it develops later and far slower than the right hemisphere; furthermore, it is more susceptible to various factors, such as increased testosterone levels, twin sibling rivalry, drug abuse by the mother, or breech delivery" – free trans. (Bragdon, Gamon, 2006, p. 58). These facts lead to another important conclusion. As many experts emphasise, both sides of the brain participate in our cognitive processes. They are integrated and cooperate with each other, and the fact that they specialize in different areas of the processes is necessary for us to function properly.

Brain asymmetry and lateralization

The pathways from cerebral hemispheres to the body are crossed, or contralateral. Therefore, left-handedness indicates that the right hemisphere of the brain dominates in controlling the muscles, movements of the body and psychological functions, whereas right-handedness indicates a dominant role of the left hemisphere of the brain (Bragdon, Gamon, 2006, p. 64). The functional asymmetry of paired organs is physiological in nature and is called *lateralization* (Kurowska, 2011, p. 33). There are three models of lateralization (quote by: Kurowska, 2011, p. 33):

- unilaterality (dominance of either the right or the left side of the body) – the preference to use the hand, foot, eye and ear on the same side of the body, caused by the dominance of the opposite hemisphere of the brain;
- mixed laterality (also called cross laterality) – mixed preference for using motor organs and sense organs (e.g. right hand but left eye);
- ambidexterity – lack of dominance in any paired organs.

Mixed laterality and ambidexterity are frequently connected with disorders like dyslexia, indicating malfunctioning of the brain. This phenomenon was noticed by S. Orton. He noted that children who tended to swap letters while reading or to do mirror writing usually did not have a definite handedness (Orton, 1937, after Springer, Deutsch, 1998, p. 280). Similarly, looking for the causes of autism, researchers point to the relations between autism and brain dysfunctions. There are also hypotheses that autistic people demonstrate atypical cerebral hemisphere asymmetry (Springer, Deutsch, 1998, p. 289). Research published in 1984 in "Psychological Bulletin" shows that about a half of autistic children have undetermined handedness or are left-handed (Fein, Humes, Kaplan, Lucci, Waterhouse, 1984, p. 258–281). Bilateral activation of the brain hinders language learning. Therefore, children who continue to show no definite symptoms of either right- or left-handedness after the age of 3 need treatment, as such a situation is considered abnormal (Korendo, 2010, p. 55). Cross laterality (but also left-handedness) may also cause problems in the development of cognitive functions and – very frequently – language abilities. According to J. Cieszyńska and M. Korendo, cross laterality featuring dominance of the right hand and the left eye is particularly unfavourable (2008, p. 280).

Studying left hemisphere dysfunctions and their influence on learning in children, M. Korendo arrived at the conclusion that "if the left hemisphere of the brain does not become dominant for language functions during natural development or as a result of therapy, the child (…) may have development problems and difficulties in using a language system, which will eventually affect other cognitive spheres too" – free trans. (Korendo, 2010, p. 56). As a confirmation of her statement, the author quotes the following negative consequences of left dominance of paired organs (quote by: Korendo, 2010, p. 57):

Consequences of left-eyedness:

- confusing the direction in which a person analyses space (and also the direction of reading and writing);
- confusing the direction of making signs (e.g. drawing from bottom to top);

- neglecting the left side of space;
- difficulty in focusing on a given material;
- reluctance to make drawings;
- hyperactivity.

Consequences of left-handedness:

- delayed development of manual skills (clumsiness in movement, low precision);
- reluctance to perform manual tasks;
- confusing the direction of making signs;
- difficulty in using tools;
- hyperactivity.

Consequences of left-earedness:

- impaired phonemic hearing (difficulty in differentiating speech sounds);
- longer time needed to process verbal messages;
- tendency to experience negative emotions;
- difficulty with reading comprehension;
- speech disfluency;
- speech impediments.

Consequences of left-footedness:

- motor problems (e.g. delay in walking);
- reluctance to ride a bicycle;
- difficulty repeating a sequence of steps (dance routines);
- reluctance to play team games (e.g. football);
- awkward movements.

Measuring lateralization

When working with a child who has language problems, whether phonetic, phonologic, morphologic, syntactic or lexical, it is very important to

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know what laterality the child developed. It is a prerequisite for appropriate treatment and is particularly important in the case of children with ambidexterity. Therefore, if possible, the laterality of paired organs should be measured and assessed. The table below sets forth three items for determining the laterality of each hand, eye, foot and ear and shows how to record the results. When compiling the table, the author of the paper relied on the suggestions made by J. Cieszyńska and M. Korendo (2008, p. 279–280).

Table 1. Measuring laterality

Hand dominance	**RH**	**LH**	**BH**	**Notes**
putting beads into a bottle				
drawing a circle				
cutting sticks of Plasticine with a plastic knife				
Eye dominance	**RE**	**LE**	**undetermined**	**Notes**
looking into a bottle				
looking through a keyhole				
taking pictures with a camera				
Foot dominance	**RF**	**LF**	**undetermined**	**Notes**
kicking a ball (child should stand in one place rather than run up to the ball)				
jumping on one leg				
jumping on one leg into a circle				
Ear dominance	**RE**	**LE**	**undetermined**	**Notes**
listening to a clock ticking (without touching the clock with your hands)				
listening to the swooshing sound in a seashell (without using your hands)				
listening to knocks on the door				

Conclusion

Information on the dominance of hand, eye, ear and foot is important in evaluating the level of speech development in a child. Not only is it connected with the functional asymmetry of the cerebral hemispheres, but also with the holistic approach to how the human body works. A prolonged lateralization process means that speech and other psychological functions will need more time to develop. Delayed lateralization implies delays in the development of motor skills. Motor skills are primary to the ability to process visual and auditory stimuli or perceive and express language (Kamińska, 2011, p. 88). Furthermore, functional asymmetry, which manifests itself in laterality, is connected with the motor skills of speech organs. "Clinical research confirms that the left hemisphere is very involved in copying the articulatory movements (…). Other data confirms that within Broca's area of the brain there are certain sites which control speech muscles, e.g. lip muscles, and sound production" – free trans. (Kamińska, 2011, p. 89). In patients with ambidexterity or cross laterality, the left cerebral hemisphere does not usually develop a strategy to process stimuli. As a result, such patients do not have the ability to join movements (including articulatory movements) into sequences or to think and remember sequentially, which is necessary in reading and writing (Kamińska, 2011, p. 89; Cieszyńska, Korendo, 2007, p. 294). In such cases, a therapy should include exercises stimulating the choice of the dominant side of the body (Kamińska, 2011, p. 92).

Handedness is a phylogenetically-determined feature. That is why a significant majority of the population is right-handed. It is, of course, connected with the division of functions between the right and left hemispheres of the brain (Springer, Deutsch, 1998, p. 126). The experience of therapists and researchers shows that left-handed children have problems with the sequential processing of language more frequently than right-handed children (Kamińska, 2011, p. 88). The way they process language information may be similar to the strategies adopted by people with ambidexterity or cross laterality. However, a left-handed child should never be told to use the right hand as the dominant one. Empirical studies make it

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clear that "any attempts to convince (…) a child to use the right hand or foot may cause even more difficulties with school education, may be a source of negative emotions for the child and may lead to low self-esteem" – free trans. (Cieszyńska, Korendo, 2007, p. 282). If a child is diagnosed with left-handedness, we should start working on developing the correct patterns for space analysis, in accordance with the culture-bound direction of reading and writing (from left to right) (Kamińska, 2011, p. 92). The therapy should also cover all the mental functions necessary to achieve competence in language use (i.e. memory, concentration, analytical, synthetic and sequential thinking, development of motor skills, visual and auditory perception).

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Abstract:

The article presents the issue of the development of linguistic competence in the context of neurobiological research which points to the functional asymmetry of the brain. A reflection of this asymmetry is, among other things, lateralization of paired organs of the body. The author presents the results of studies indicating a connection between the development of lateralization and the development of language. She also emphasizes the need for therapeutic intervention for children with ambidexterity, cross or left-sided laterality. Moreover, the aim of the article is to sensitize people working with pre-school children to the issue of delays in dominance of paired organs. This is because delayed lateralization is in many cases accompanied by speech disorders.

Keywords: brain asymmetry, lateralization, handedness, left-handedness, ambidexterity, language development, developmental disorder, learning disability.

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Diagnosis of Literacy through the Application of Digital Technologies

1. Introduction

At least a decade ago in Slovakia, the need for innovative approaches to the development of pre literacy as well as digital literacy in kindergarten was declared. There are a number of publications on this issue (Kalaš 2011, p. 28–29; Kostrub, Tothová, Severiny, Kikušová 2014). But we found (Petrová 2005, p. 176, Valášková 2008, p. 177–182) that in educational practice, the innovative approaches are applied by the teachers to a modest degree. Teachers have superficial knowledge of them and do not know how to apply them in kindergartens. They prefer using the behavioral method of education (see the results of the studies, for example (Gašparová 2011, p. 74). The purpose of this article is not to search for and analyze the causes of the absence of high-quality, scientific and professional literacy stimulation (see example Zápotočná, Petrová 2010, p. 91). Rather, it is our goal to find a starting point. We have decided, therefore, to present one possible method for the development of literacy, which in both research and in practice was proved to be functional (see Section 3). Of the total quantity of options available to stimulate literacy through digital technologies, we decided to focus on those that can positively affect the kindergarten preparation of conventional reading in first year of elementary school. Specifically, we created the first pilot version of activities aimed at the development of phonemic awareness. We have created a stimulative computer program called "Phonemes – our friends", with one part used for the diagnosis of the player's level of phonematic

awareness. We thereafter conducted a stimulus program in a study (see Section 3). There were three basic reasons to develop this program, which we present in the following chapter.

2. Justification

2.1. Phonemic awareness and its position in the context of a complex development of literacy as the first reason.

It is a well- known fact (Adams 1995, p. 494; Stanovich 2000) that the phonological skills of children are a prerequisite for successfully learning conventional reading. Phonemic awareness is the most important aspect of phonological awareness. They both present a kind of developing sequence, which has its own patterns (Adams 1995). While lower levels of phonological awareness may develop in children spontaneously (creation of rhyming words , differentiation of words to sounds which are not carriers of meaning, i.e. the differentiation of words to syllables), the higher levels of phonemic awareness (differentiation of words to phonemes and manipulation of them) need to be regularly and systematically developed. This kind of development should be ensured and actively supported, especially in kindergarten. But the reality is different in many kindergartens in Slovakia. On the basis of research findings (Valášková 2008, p. 177–182) it can be stated that the activities aimed at developing phonological skills are done unsystematically and these are also limited to trivial "distinction" or even "the perception of sound" activities. Already on the basis of the terminology, it is evident that in such cases the educational activities occur only in the context of behavioral approaches. In this type of education there is no space for an individual and cooperative approach which applies techniques and strategies that would lead the child to learn not by drill or memorization, but with understanding. In developing phonemic awareness it is basically unrealistic to stick to the frontal teaching method only. There should instead be a systematic complex of educational activities developed with regard to the developing sequence of this awareness, with a view to the development and formation of cognition of the child,

as well as with regard to his social and cultural environment. The bottom line is that the child begins to be consciously oriented in the sound structure of language, to understand the structure of language (see example: Mikulajová, Dujčíková 2001, p. 83; Petrová, Valášková 2007, p. 65). And this can be achieved not only through he use of natural language, but also by conscious, explicit teaching. Phonemic awareness alone is a prerequisite for the understanding of the abstract of grapheme and phoneme correspondence (Adams 1995), which is necessary for teaching reading and writing techniques (decoding) in the first year of elementary school. In Slovakia this is (unfortunately) used only with an analytic-synthetic method. But for children (especially preschool) it is very hard to understand this abstract system. So far, phonemic awareness has been dealt with in the framework of scientific disciplines outside pedagogy. A number of studies by speech therapists and cognitive psychologists have shown that phonemic awareness is a predictor of school success (see example: Carroll, Snowling, Hulme, Stevenson 2003, p. 913–923) as well as a precursor of learning disorders, especially dyslexia (Caravolas, Mikulajová, Vencelová, 2008, p. 98). At present, the systematic development of phonemic awareness is finally considered to be very important in pedagogy as well (see example: Petrová, Valášková 2007, p. 65). Although phonemic awareness is not enough to teach a child to read with understanding, it is a prerequisite condition for the introduction of the techniques of reading, as we have already pointed out in the introduction. If we want to develop different levels of phonemic awareness, it is necessary to first diagnose the individual phonemic awareness level in each child.

2.2. The absence of a diagnosis of phonemic awareness in kindergarten as a second reason

A diagnostic tool for nursery schools has yet to be developed for the diagnosis of early literacy, and also for the diagnosis of phonemic awareness. It was drawn up only for practice (see example logopedics diagnostic : Mikulajová 1995, p. 39–67; Nádvorníková 1995, p. 122–145). But, there are differences between logopedics and educational diagnosis. Speech therapy diagnosis is mainly focused on children with special

needs; looking for particular deficiencies and deviations from the norm; particularly trying to quantitatively analyse performance. It is implemented primarily through a battery of tests; the therapeutic diagnostic and the diagnostic therapy are usually strictly separated. The view of the educational diagnosis changes (see example: Gavora 201, p. 9–25). Traditional diagnosis is replaced by a dynamic diagnosis (Pupala 2001, p. 201), which focuses on the monitoring of progress and the process of changes in a child. In fact, there was no diagnosis in Slovak kindergartens. Now there are training materials available which can be used in the framework of pedagogic diagnostics in kindergarten (Valachová 2009, p. 45). But, the diagnosis of phonemic awareness here is reduced to general recommendations for practice, without more specific and systematically arranged examples. In our incentive program, "Phonemes – our friends", we have created a specific diagnosis of phonemes. Diagnosis is part of the stimulation process and it has a "developing" character (Pupala 2001). It is carried out before, during and even after the promotion has finished. Otherwise, the educational intervention would not have the desired effect. We used computer and other digital resources for the construction of the incentive program – "Phonemes – our friends". We have tried to encourage the development of digital literacy as part of early literacy.

2.3. Digital technologies as tools to promote the development of phonemic awareness as the third reason

Digital technologies are currently being used by children at an early age and are already part of their lives. This is evidenced by a survey (Lacková 2008, p. 155): the computer is actively used not only by 6 year-old children, but by four-year-old children as well. Children before joining the first class of elementary school know how to turn the computer on and off, and know how to use the mouse. Parents support and endorse their interest in computers (Lacková, Valášková 2011, p. 1–8). Based on our surveys and observations in practice, we agree with the views of experts (Gašparová 2011, p. 74; Kalaš 2011, p. 28–29; Kalaš 2013, p. 256 etc.), who consider it to be necessary to have children in kindergarten learn to work with computers and other digital resources in a systematic way. We

have verified that children of preschool age (Lacková 2011, p. 142), on the basis of targeted stimulation, can handle the use of computers on the elementary level. We have tried therefore to encourage the interest of children in digital technology and use it to stimulate phonological awareness in preschool children. In our incentive program "Phonemes – our friends" (see Section 4), the use of the computer is essential. Therefore, if we want to develop digital literacy among children, it is also necessary for the educators to have this competency, and also to develop it further. One of the reasons why we created an incentive program through computer use, was an effort to inspire nursery school teachers to work with computers. Also, from a practical point of view, we saw the attempt to stimulate phonemic awareness through audiovisual means as useful and functional. Our program is based, in particular, on the spoken language. It is mainly based on listening, rhyming, dividing words into syllables and, later, the allocation of phonemes. Children can perceive abstraction (like the syllable and the annoucement) not only in audio form, but also visually through so-called placeholders, which are later replaced by the letters.

3. Research verification of the pilot program "Phonemes – our friends"

The pilot version of the incentive program we´ve created includes 15 interactive presentations (Lacková, Valášková 2011a, p. 1–8; Lacková, Valášková 2011b, p. 298–308). We have also created a pilot version of the diagnostic tool, which is a set of diagnostic tasks. When compiling, we respect the levels of phonemic awareness development (see sub-section No 2.1). Tasks are sorted by difficulty (from lowest to highest, rhyming identification-the ability to manipulate with phonemes). The diagnostic tool we used as a research tool.

3.1. The methodology and realization of the research

The basic aim of the research was to diagnose the level of phonemic awareness among children in kindergarten, before and after the

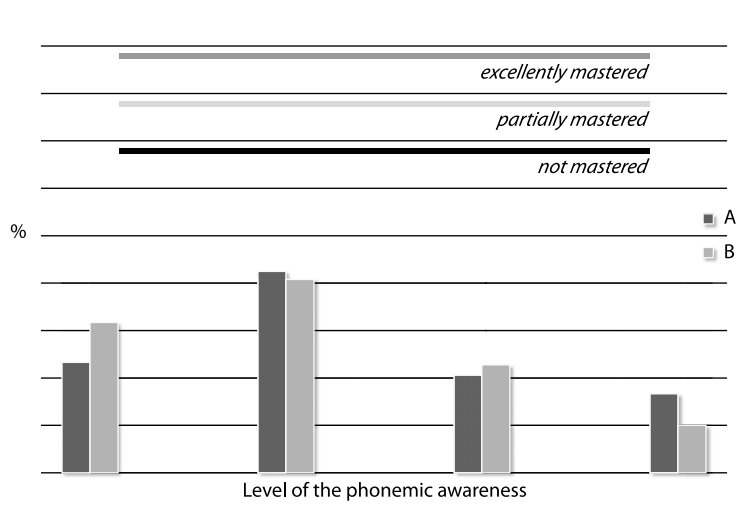
application of the pilot version of the educational program – "Phonemes – our friends". The research method was an experiment. We wanted to verify the stimulus program in kindergarten and at the same time determine the effectiveness of the research (diagnostic) instrument. The research sample consisted of 30 children. In one class, we created an experimental group (A), where we used our program, and in the second class we compiled a control group (B), where the children's education continued without this stimulus program, as well as without further deliberate stimulation of phonemic awareness. Each of the two groups consisted of 15 children under the age of 5. Our aim was to determine the progress (or subrogation) in phonemic awareness in children in kindergarten, and not only in the group where we applied the program, but also in the group where this program was not used. Therefore, we established two basic assumptions (hypotheses): 1. the level of phonemic awareness will be higher among children (experimental group) after the application of the program, compared with the level before the application. 2. The level of phonemic awareness among children (experimental group) who worked with the program will be higher than the level of children (the control group), who worked without it. The diagnosis was carried out in two stages, with a 2.5-month break. In both groups (A, B), we used the same method of diagnosis, both before and after the experiment, i.e. pre-test and post-test. When phonemic awareness is being diagnosed, each child works on the tasks separately and can choose from a number of options. The pre and post-test diagnostic data obtained was entered onto the recording sheet, assessed, and comprehensively evaluated, based on prepared assessment categories. We further processed the data into tables and graphs (see more: Lacková, Valášková 2011).

3.2. The results of the pretest of pilot studies

We diagnosed 4 levels of phonemic awareness with a pretest: a) the ability to identify rhymes, b) the ability to divide words into syllables, c) the ability to divide words into phonemes, d) the ability to manipulate the phonemes (see Graph 1). Concerning the identification of the rhymes, we found that in the experimental group, only 1 child was able to find all

the words that rhymed. Other children rather accidentally solved the task and, when talking with them later, they could not distinguish or create a simple rhyme. Therefore we complexly consider this level as not mastered. We saw similar results in the control group as well (see Graph 1). It was a surprising fact for us as we assumed that the children would be able to identify rhymes, since they repeat various rhymes on a daily basis in kindergarten. However, in line with other research (see Section 1), we found that they are not able to create rhymes, this should be systematically and purposefully taught. Therefore, our software includes these types of tasks. Regarding the tasks aimed at diagnosing the ability to divide words into syllables, we found that only 5 children from the experimental group (A) were 100% successful in syllabizing. This was an interesting finding for us, because in kindergarten such activities are carried out, but clearly without the desired effect, as is also confirmed by other studies (see Section 1). Since some of the children solved at least part of the tasks, we considered the level of dividing the word into syllables in this group as partially mastered. In the control group (B), the results were similar to those in the experimental group (see Graph 1). Only four children from all

Graph 1: Comparison of the pre-test results of the control (A) and experimental (B) groups.

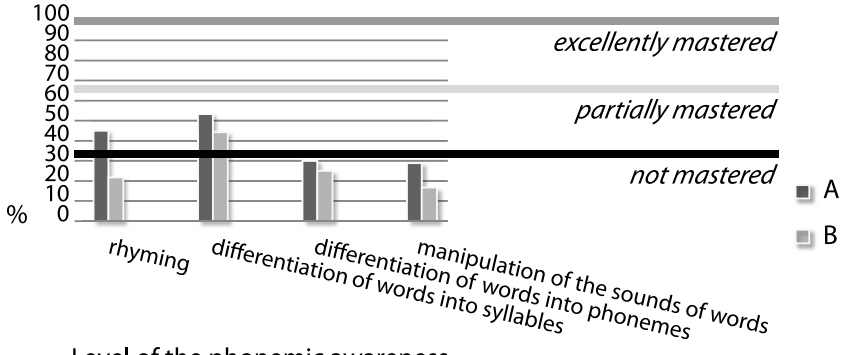


groups successfully completed the tasks on syllabizing. These results make us sure that activities of this type should be systematically and thoughtfully included in kindergarten education. Therefore, we also included systematic activities on syllabizing in our incentive program. Through the tasks aimed at diagnosing the ability to divide the words into phonemes we found that in the experimental group (A), no child had a 100% success rate. Only 3 children successfully identified the phoneme at the beginning of the word. The whole group was unable to identify the phoneme at the end of the word and assign the graphic symbol to the phoneme. Some of the children gained points by accidentally solving the task and 11 children (73%) could not solve tasks of this type at all. Therefore, we diagnosed the level of spelling as not overmastered in the experimental (A) as well as in the control group (B). Both groups had very similar results (see Graph 1). We assumed such results before the application of the program. The reason was that the vast majority of children did not know how to syllabize or assign the appropriate graphics scheme (see results below). And a mastered level of conscious syllabizing is an obvious precondition for completing such tasks. It should be noted that the division of words into phonemes is a very difficult task for children of preschool age, if they are not deliberately prepared for this activity. We have therefore included tasks on spelling-the division of the words into phonemes in our incentive program. We assumed that the experimental group would be more successful in solving the tasks on spelling in the posttest. Based on diagnosing the most difficult level of phonemic awareness – the ability to manipulate with phoneme, we evaluated this level as not mastered both in the experimental and control group (see Graph 1). Again, we expected such a result, since such educational activities are not implemented in kindergartens. It has been confirmed that achieving the highest level of phonemic awareness is not spontaneous and there is a need for a systematic stimulation in kindergarten, and continued stimulation in the first year of elementary school. So, children in both groups had nearly the same results in the pretest. Almost all of the children managed to solve only some of the tasks aimed at syllabizing and were unable to solve the tasks of a greater difficulty together with the tasks aimed at rhyming.

3.3. The results of the validation of the pilot posttest

After comparing the values in pretest and posttest in both groups for the level of identification of rhymes, we found that the children in the experimental group (A), which worked with the stimulus program, reached a higher score in the posttest. There has been progress. In contrast, among children in the control group (B) we could see the stagnation to subrogation (see Graph 2). The results of the research show that in 2.5 months there was no progress in kindergarten without the systematic stimulation of phonemic awareness. However, we observed progress in 2.5 months in the experimental group (A), solving the tasks aimed at dividing the words into syllables. In posttest they reached a higher score and were more successful than the children in the control group (B), (see Graph 2). These children, after the educational program "Phonemes – our friends", began to understand the concept of long and a short syllables, and mastered the matching of graphic schemes to words. In the control group, there was no progress. Once again it is confirmed that without intentional stimulation, children may prove to divide words into syllables. But, they are doing it rather intuitively and not with understanding, because they do not know how to work further with syllable schemes. Also, in the evaluation of the tasks focused on the division of words into

Figure 2. Comparison of the post-test results of control (A) and experimental (B) groups.

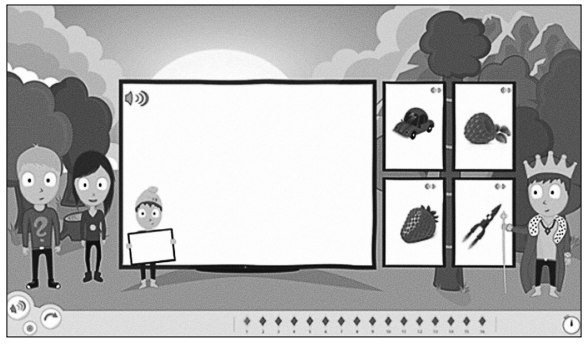


phonemes, we saw progress in the experimental group (A). In comparison with the control group (B), they were more successful (see Graph 2). Again, we expected improvement. It is confirmed that in order to achieve the highest level of phonemic awareness there is a need for a longer term of phonemic stimulation. Even though for many of the children the tasks were difficult, some of the children solved them. It was confirmed that even the most difficult tasks can be included in kindergarten programs.

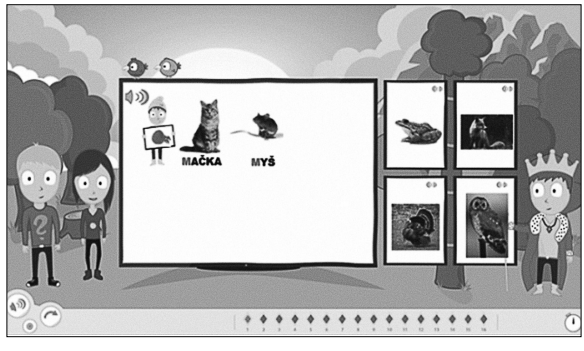
4. Characteristics of an upgraded program "Phonemes – our friends"

In our research, we found that some of the children in the experimental group refused to deal with the tasks that they failed to solve in the pretest. Therefore, we have modified the pilot version of the program before its further use in practice in kindergartens. We have prepared proposals for improving the technical and graphic quality of the digital content of the educational program (see examples below), but we have also enriched it with other activities outside the virtual environment. They are funny and they serve to eliminate the stress of failure, which therefore encourages the stimulation. Our goal is to enable children to deal with the tasks collaboratively and with understanding. We have extended the stimulus program (see more Lacková, Valášková 2014) by: 1. Including additional activities carried out by other digital means (e.g. programmable toys: Bee-Bot, a digital camera, a digital microphone, etc.), as well as activities without using a computer (e.g. games with building blocks, plasticine, combining tangrams), which should support more comprehensively the systematic development of phonemic awareness through the "collaborative learning" (see more: Kostrub 2008, p. 171). We have accepted the progress of phonemic awareness. In a modified version of the program, the activities are also arranged systematically – from the simplest to most difficult, and are put into three files (A. the identification of the syllables and rhymes, B. identification of phonemes, C. dealing with phonemes). There is no requirement that all the tasks with the highest difficulty must

Examples of a computer program



Sample 1: Identification of the messenger - introductory scene to identify the first sounds in a word.



Sample 2: Successful solution in the first section of the activity - assignment of words (names of animals) beginning with phoneme using the placeholder- phoneme M

be mastered by all children. Due to their individual abilities, we assume that many children will be able to successfully resolve the most difficult tasks only after entering the first year of primary school. Therefore, the program is designed not only for preschool children, but also for children in preparatory year of elementary school. It could also be of help to pupils in the first grade of elementary school, mainly in the initial stages of the teaching of reading. In addition, the stimulus program primarily develops the phonemic awareness in a framework of a complex stimulation of

preliteracy, secondarily, it develops the digital literacy of preschool children. Interactive activities are drafted into the form of the game with a story. The characters are of a "linguistic" world. We have created them specifically as material tools to assist in the modeling of mental activity in the light of the principles of mediated learning. Another aim of the program is to expand the vocabulary of children by implicitly exploring (meta) linguistic terms (the phoneme, question mark, syllable, sentence, verse, rhyme, dot). At the same time, children have the opportunity to expand their vocabulary learning the names of animals, as the program is monothematically aimed at this issue. Through the program, we implicitly support the development of written language. Almost all of the activities contain tasks in which we purposely place the entire words in written form written in capital letters. Our goal has also been to promote a strategy for global reading. Some of the more cognitively difficult activities therefore require the child to link the individual phonemes with graphemes. Through this computer program the kids work without the help of the educator and at their own pace. They must find the correct solution separately. The child may check the success rate in solving tasks themself, through the responses of the characters he also receives feedback. The child advances from an easier to higher level of activity only when it is meaningfully completed. Scoring is recorded in the final table, which is displayed at the end of the session (see more: Lacková Valášková 2014). This assessment may also serve as an individual diagnosis for the educator.

Conclusion

Kindergartens in Slovakia lack a program created with the help of computer and digital technologies, which would systematically develop phonemic awareness of children. Therefore, we tried to create this type of educational program accepting current theoretical basis, but also the needs resulting from practice. We hope the final version will be applied in teaching practice in kindergartens.

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Abstract

Here's one option for the diagnosis of literacy which is appropriate for use by children in pre-primary and primary education. At the same time, we present the results of research aimed at diagnosing literacy, which we have implemented for children of preschool age. The diagnosis is based on an innovative concept of understanding literacy and diagnosis, which is in Slovakia so far very little-used. We built a diagnostic tool through the application of digital technologies. We consider this a most effective and entertaining possibility for the diagnosis of children.

Keywords: diagnosis of literacy, primary and pre-primary education, digital technologies, phonemic awareness, Slovakia, research. Innovation, technology, research projects, etc.

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The Quality of Deductive Reasoning in Inferring Words from Context: Comparison of the Performance of Standard and Talented 9–10 Year Old Pupils

Introduction

In this paper we present an example of interdisciplinary research using expertise in four academic fields with the purpose of the *implementation of cognitive approaches in education* in order to restructure the teacher-training curriculum. Since 2012, this research project has been supported by the Agency for the Promotion of Research and Development at the Slovak Ministry of Education[1] (APVV MŠ SR). The research is orientated towards the diagnostics and stimulation of the cognitive and executive functions of primary school pupils (ISCED 1) and the research team is made up of 14 experts from two Slovak universities.
Research aims include the following:

1. Exploring the possibilities of a child's cognitive performance assessment;
2. Studying the executive and cognitive functions of a child in relation to the ability to learn;

[1] This work was supported by the Slovak Research and Development Agency under the contract *No. APVV-0281-11: Executive functions as a structural component of ability to learn: diagnostics and stimulation, project leader Iveta Kovalčiková, University of Prešov, Slovak Republic.*

3. Defining and specifying the underlying processes that affect cognitive performance;
4. Creating a cognitive and executive profile of gifted children;
5. Identifying the peculiarities of executive functioning in children from socially disadvantaged environments;
6. Analysing how to prescribe the remediation of deficient cognitive functions.

In the paper we present and analyze the partial data from the above research. Our attention is directed to the analysis of the differences between the selected cognitive characteristics of pupils 1. educated in standard school conditions, and 2. pupils categorized as talented who are educated in special classes for talented pupils. We focus on the following cognitive characteristics of the pupil: 1. hypothetical-deductive thinking/reasoning, and 2. the ability to decode/infer words from context.

1. Delimitation of concepts

In the following section we analyze the key concepts of the research objective. We focus on cognitive processes: *1. deductive reasoning, 2. hypothetical thinking*, which is in conjunction with deductive interference manifested in 3. the *ability to derive the meaning of words from the context in which they appear.*

Reasoning

"Reasoning is a process of thought that yields a conclusion from precepts, thoughts, or assertions" (Johnson-Laird, 1999, p. 28). According to The *Cognitive Atlas,* reasoning is a process of *"drawing of inferences or conclusions through the use of reasons"*[2]. This paper is concerned with one sort of reasoning, *deduction*. Psychologists have been studying reasoning for a century, however the study of deductive reasoning has been one of

[2] <http://www.cognitiveatlas.org/concepts/r>, available 22.3.2014

the major fields of cognitive psychology for only the past 40 years or so (Evans, 2002; Evans, Newstead, & Byrne, 1993; Manktelow,1999). The field (of deductive reasoning) has its origins in philosophy, within the ancient discipline of logic. Logic is proposed to be the basis for rational human thinking. The psychological study of deductive reasoning has become an established field in psychology, especially reflecting the theories of Jean Piaget (Evans, In Holyoak and Morrison, 2005).

Deductive logic or essence of deductive reasoning

The Cognitive Atlas offers the following definition of deductive reasoning: *"is reasoning which constructs or evaluates deductive arguments"*[3]. Deductive arguments are attempts to show that a conclusion necessarily follows from a set of premises or hypotheses. According to Stalnaker, deduction yields valid conclusions, which must be true given that their premises are true. In other words – deductive reasoning is a logical process in which a conclusion is based on the concordance of multiple premises that are generally assumed to be true. Deductive reasoning is sometimes referred to as top-down logic. In deductive reasoning, if something is true of a class of things in general, it is also true for all members of that class. For example, *"All men are mortal. Harold is a man. Therefore, Harold is mortal."* For deductive reasoning to be sound, the hypothesis must be correct. It is assumed that the premises, "All men are mortal" and "Harold is a man" are true. Therefore, the conclusion is logical and true. Inductive reasoning is the opposite of deductive reasoning. This is sometimes called a "bottom up" approach. Where deductive reasoning proceeds from general premises to a specific conclusion, inductive reasoning proceeds from specific premises to a general conclusion. Even if all of the premises are true in a statement, inductive reasoning allows for the conclusion to be false. Here's an example*: "Harold is a grandfather. Harold is bald. Therefore, all grandfathers are bald."* The conclusion does not follow logically from the statements (Zimmerman – Pretz, 2012).

[3] <http://www.cognitiveatlas.org/concept/deductive_reasoning>, available 22.3.2014

The questions raised in the deductive reasoning research are as follows: 1. what is the mind computing when it makes deductions, 2. what are the accounts of deductive competence, 3. How does the mind carry out these computations, that is, theories of deductive performance (Johnson-Laird, 1999, p. 29). Individuals differ in their capability of deductive reasoning, and those who are better at it – at least as measured by intelligence tests – appear to be more successful (Stalnaker, In Adler – Rips, 2008).

Deductive and hypothetical reasoning

Deductive reasoning in research literature is often connected with hypothetical thinking. This connection often appears in references to the *hypothetical-deductive method,* which is a very important method for testing theories or hypotheses, and is one of the most basic methods common to all scientific disciplines[4]. As Walker stated …*"reasoning involves starting with a general theory of all possible factors that might affect an outcome and forming a hypothesis; then deductions are made from that hypothesis to predict what might happen in an experiment. In scientific inquiry, hypothetical-deductive reasoning is very important because, in order to solve science problems, you need to make hypotheses".*.. (Walker – Kintsch, 1995; Walker, 2010). Hypothetical thinking itself as a substance, or rather manifestation of deductive reasoning, is defined "…*as the ability to reason about alternatives to the way the world is believed to be"* (Evans, 2007). This definition highlights three general components: recruiting the imagination, making inferences about imagined states of affairs, and interpreting the real world consequences of the states imagined. Hypothetical thinking as the process of generating hypotheses, arguments, alternative event sequences, or pretend scenarios involves the imagination. Wilson and Conyers suggest that hypothetical thinking is a "Cognitive Asset," which they define as skills that are related to thinking which are of extraordinary value (Wilson – Conyers, 2006, p. 6). The ability of children to

[4] iSTAR Assessment, Inquiry for Scientific Thinking and Reasoning, <http://www.istarassessment.org/?s=deductive+reasoning)>, available 22.3.2014

develop hypothetical-deductive reasoning has considerable educational manifestations. Hypothetical-deductive reasoning is important in concept construction because students typically do not come to a learning situation without a previously built conceptual system. Rather, they come with alternative conceptions (i.e. hypotheses) that must be modified or replaced by scientific conceptions. Thus, concept construction often engages hypothetical-deductive reasoning skills (Lawson, Abraham & Renner, 1989; Lawson & Renner, 1975; Lawson & Thompson, 1988; Lawson & Weser, 1990; Lawson et al., 2000). Through hypothetical-deductive reasoning and experimentation, students can test their preconceptions against scientific concepts and find out which match experimental results. This promotes conceptual change.

Deductive inference and inferring word meaning from context

Deductive inference is an application of the principles of deductive reasoning when working with cognitive material. *"Deductive inference is a type of inference in which the conclusion always follows from the stated premises. If the premises are true, then the conclusion is valid"*[5]. The cognitive process of deductive inference is also activated in the process of deriving the meaning of words from their context. Context, when applied to decoding or word recognition from their context, refers to the use of syntactic and meaning clues to help to identify an unknown or difficult word in a text that is being read. The process of deriving the meaning of words from their context can be delimited as follows: if an individual is unable to semantically decode a word in a text because he does not yet have its meaning stored in his memory, he must use some strategy that will enable him to gain its meaning from the text. There are at least two ways of coping with the situation. The first option orients the individual towards using an external source (such as a dictionary or somebody else´s explanation). The second option consists of mobilizing the individual´s own mental capacities, whereby he decodes the meaning of the text 1. from

[5] <http://www.cognitiveatlas.org/concept/deductive_inference>, available 22.3.2014

the information which is already stored in his memory, and 2. from the input provided by the context. Sternberg (1996) states that we deal here with the use of context-sensitive keys. Werner and Kaplan (1952) some time ago claimed that people acquire a large part of their vocabulary indirectly, i.e. without the use of external resources, but through ´grasping´ the meaning of the word from the overall information that surrounds it. Sternberg (1996) points to the results of the research by Van Daalen - Kapteijns and Mohr (1981) as well as to the results of his own research (Sternberg, 1982) in which it was found out that the ability to infer and learn the meaning of words from a sentence's context is connected with the overall range of an individual´s vocabulary. Subjects with a large vocabulary were able to analyze the possible meanings of a new word at a deeper level than those with a small vocabulary. Moreover, subjects with a rich vocabulary used well-formulated strategies in revealing the meaning of a word, while subjects with a small vocabulary utilized the trial/error procedure without applying the strategy of task solving, i.e. without inferring word meaning from the context. Based on further research into cognitive aspects, relations between performance in reading and the ability to infer word meaning from context were detected. For example, McKeown (1985, In Khun, Stahl, 1998) found that struggling readers are significantly less efficient at deriving words from context. They have a more difficult time separating the meaning of the word from the meaning of the context as a whole and have greater difficulty finding overlaps in the information derived from more than one context. The initial approaches to teaching children to use context more efficiently involved the development and direct teaching of taxonomies of context clues (e.g. Ames 1966; Quealy, 1969, In Khun – Stahl, 1998; Goerss et al.'s, 1994).

2. Research problem, hypothesis, variables

Since 2012, we have been carrying out research into the nature of the cognitive and executive processes of primary school pupils. Know-

ing these processes is important in terms of: a) effective diagnostics amongst the primary school population generally; and b) stimulation of pupils with special educational needs.

This contribution describes and analyses part of our research and presents the results of our study of differences in pupils' *levels of hypothetical-deductive reasoning and the ability to decode words in context between standard or average pupils and gifted pupils.*

We formulated the following questions as part of our research:

What is the relationship between levels of hypothetical-deductive reasoning and the pupils' 'intellectual abilities?

What is the relationship between the ability to infer the meaning of words (decoding) in context and the pupils' 'intellectual abilities?

On the basis of these questions, we make the following hypotheses:

We assume that there is a relationship between the pupils' intellect and level of hypothetical-deductive reasoning.

We assume that there is a statistically significant difference in the level of hypothetical-deductive reasoning between a) gifted pupils and b) standard (average) pupils.

We assume that there is a statistically significant difference in the ability to infer the meaning of words in context between a) gifted pupils and b) standard pupils.

Operational definition of variables in the hypothesis:

Dependent variable no. 1: *level of hypothetical reasoning:*

The operational definition of the first dependent variable is the score achieved in the WORD CONTEXT TEST- WCT, DKEFS test battery, see more info about the battery in part 4 of this paper (D-KEFS; Delis, Kaplan & Kramer, 2001). With this variable, the key score is in the primary measure: WCT Total Consecutively Correct - Consecutively Correct Raw Score.

Dependent variable no. 2: *level of ability to infer the meaning of words in context:*

The operational definition of the second dependent variable is the score achieved in the WORD CONTEXT TEST (WCT, DKEFS test battery). With this variable, the key scores are those in the secondary indicators:

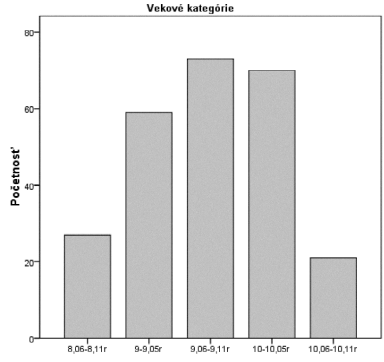
- Secondary indicator: WCT First Sentence Correct Raw Score
- Secondary indicator: WCT Consistently Correct Ratio
- Secondary indicator: WCT Repeated Incorrect
- Secondary indicator: WCT No/Don't Know Responses
- Secondary indicator: WCT No/Don't Know Responses.

Independent variable no. 1: as a measure *of general intelligence,* a factor score based on one's performance in all the subtests of the Woodcock-Johnson International Edition was used. To reduce the data into a single dimension reflecting a principal component, analysis was carried out. We extracted a single factor (component), accounting for 32% of variance in all WJ test indicators. The acceptable value of the Kaiser-Meyer-Olkin measure (.79) and a significant Bartlett test implied the adequacy of such an extraction. A regression factor score was computed, checked for normality and then used as an overall indicator of intellectual functioning. In the case of this independent variable, we differentiate between pupils taught in a standard school and pupils from classes created purposely for gifted learners. For more details about the selection of the two samples, see the next section.

3. Research sample

Research was carried out: a) on a sample of pupils attending the fourth year of ordinary primary schools; and b) on a sample of gifted pupils attending the fourth year of special classes for gifted pupils. The first sample was made up of 250 fourth-year pupils from standard primary schools in the Prešov and Košice regions. Gender distribution: 41.20 % boys, 52.80 % girls.

Graph no. 1: The age distribution of the sample of pupils from standard schools



The second sample was made up of 33 gifted students chosen on the basis of their academic records and a complex psychological examination. At the time of testing, these pupils had been attending a special class for four years. Age and gender distribution was approximately the same as with the sample of pupils from standard schools. The children were identified as gifted and subsequently admitted to the special class on the basis of fulfilling certain conditions, one of which was an above-average IQ measured using a standardized IQ test (specifically the WAIS-III test and Raven standard matrices). The required score had to be a value beyond two standard deviations (with an average of 100 and SD of 10, this was an IQ score of 130). The children also had to demonstrate their intellectual abilities in separate reading, writing and mathematical tests. Through an interview both with them and their parents, the children had the opportunity to discuss any special interests they might have (animals, outer space, transport, technology, etc.) as well as show their level of willpower and motivation.

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4. Methods

The WCT - WORD CONTEXT TEST was used for measuring the two dependent variables (level of hypothetical thinking and ability to infer the meaning of words from context). This test is a separate part of the Delis Kaplan Executive Function System test battery (D-KEFS; Delis, Kaplan & Kramer, 2001). This is a standardized battery for the complex evaluation of higher mental or executive functions. The battery is made up of 9 separate tests assessing a wide range of executive functions in both verbal and non-verbal domains. Most D-KEFS tests are adaptations of tests frequently used in neuropsychological diagnostics. The test has extra sensitivity in diagnosing cognitive (executive) deficiencies and was developed both for clinical use when diagnosing disorders of mental functioning and for school psychodiagnostics as a complementary method to intelligence tests. The D-KEFS battery is also suitable for identifying gifted children together with assessing their psychometric IQ. Levels of hypothetical reasoning and the ability to infer the meaning of words from context were both assessed using the WCT test (part of the DKEFS battery). According to the designers of the test, its diagnostic implications can be formulated as follows: success in this test requires basic receptive and expressive language skills. One's performance indicates the level of executive functioning in verbal modality, levels of hypothetical-deductive reasoning, the ability to integrate several sources of information, cognitive flexibility, levels of verbal abstraction and the testee's ability to infer the meaning of a word from the context given (D-KEFS; Delis, Kaplan & Kramer, 2001). The inference of words from context depends on several capabilities: a) obtaining access to the meaning of words through context, b) creating a mental model of the text, c) grasping the key relevant information from the text, and d) deriving word meaning from context.

The main task of the testee is to discover the meaning of the artificial or invented word (e.g. *krafať*) with the help of the clues given – sentences in which the invented word is given context. For each word there are five sentences. The administrator reads out these sentences one by

one and points to the sentences written down at the same time (in the test booklet). While the first sentence gives only a vague or general indication of what the word might mean, each subsequent sentence gives more clues and more detailed information to help the testee deduce the meaning of the word. The testee tries to deduce the meaning of the invented word from the given context using the least number of sentences. The test is made up of one practice item and ten test items. (Each item is made up of one invented word and a set of five clues in the form of sentences.)

The primary achievement measure of WCT is *Consecutively Correct Raw Score (CC)*.The score is based on the first correct response to a clue sentence of an item that the examinee provides and continues to provide for all the remaining clue sentences for that item.

Optional processes and error measures are represented by the following indicators:

WCT First Sentence Correct Raw Score (FSC). Reflects the first sentence to which the examinee provides a correct response, regardless of whether or not this response is consistently reported for the remaining clue sentences.

WCT Consistently Correct Ratio: This score is a kind of index of response consistency. In most cases the CC and FSC will be the same, and the CCR will be 100%.

WCT Repeated Incorrect: The measure reflects the number of incorrect responses that are repeated within the same items.

WCT No/Don't Know Responses: This measure is the number of clue sentences to which the examinee provides either a "no" response or a "do not know" response, after being prompted by the examiner to take a guess.

WCT Correct-To-Incorrect Errors: Sometimes the respondent responds correctly in the previous sentence, however as a consequence of set-loss error he/she provides an incorrect answer. This measure indicates how often this response pattern occurs.

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5. Data analysis

We use the data obtained to do the following:

1. Analysis of the relationship between a pupil's intelligence and: a) level of hypothetical reasoning; and b) level of ability to infer the meaning of words from context among pupils attending the fourth year of standard primary schools;
2. Analysis of differences in: a) level of hypothetical reasoning; and b) level of ability to infer the meaning of words in context between gifted pupils and pupils attending the fourth year of standard primary schools;
3. Analysis of differences in: a) level of hypothetical reasoning; and b) level of ability to infer the meaning of words in context between gifted pupils and pupils from classes of standard primary schools[6] who scored higher than 115 on an IQ test.

Table no 1: Descriptive statistics:
WCT Primary and secondary measures (standard children)

	WCT Total Consecutively Correct	WCT First Sentence Correct	WCT Consecutively Correct Ratio	WCT Repeated Incorrect	WCT No/Don't Know Responses	WCT Correct-to--Incorrect Errors
Mean	15.7	18.1	86.7	4.9	3.1	0.8
Median	16.0	18.0	89.5	4.0	1.0	1.0
Std. Deviation	5.2	5.1	15.2	3.5	5.3	0.9
Range	28.0	26.0	63.2	16.0	35.0	4.0

[6] In the presented paper used also as a "standard" pupils, without any additional connotation.

Table no 2: Descriptive statistics:
WCT Primary and secondary measures (gifted children)

	WCT Total Consecutively Correct	WCT First Sentence Correct	WCT Consecutively Correct Ratio	WCT Repeated Incorrect	WCT No/Don't Know Responses	WCT Correct-to--Incorrect Errors
Mean	20.7	22.5	91.9	5.5	0.8	0.6
Median	20.0	22.0	92.9	6.0	0.0	1.0
Std. Deviation	4.3	3.9	9.3	2.9	2.3	0.7
Range	18.0	15.0	30.0	9.0	11.0	2.0

The relationship between a pupil´s intelligence and (1) the level of his/her hypothetical thinking and (2) the level of his/her ability to infer word meaning from context – standard children.

There was a moderate-to-strong relationship between the primary performance indicator of the WCT (Total consecutively correct answers) and IQ, r_S (249) = .43, $p < .001$ (see Table 3). Regarding the secondary measures, a significant low-to-moderate relationship with IQ was found in all of them except for the "Repeated Incorrect" indicator with null correlation.

In other words: it can be stated that the level of a pupil´s hypothetical-deductive reasoning represented by the primary WCT indicator is related to IQ. Secondary WCT indicators (four indicators of the total of 5) that address the level of ability to infer words from context reveal a similar relationship with the psychometric IQ. Pupils with a higher psychometric IQ - in our research - were able to decode unknown words from the context more quickly.

Table no 3: Spearman's correlations

	IQ	WCT Total Consecutively	Correct WCT First Sentence	Correct WCT Consecutively Correct	Ratio WCT Repeated Incorrect	WCT No/Don't Know Responses
WCT Total Consecutively Correct	.427**					
WCT First Sentence Correct	.329**	.833**				
WCT Consecutively Correct Ratio	.241**	.434**	-.064			
WCT Repeated Incorrect	-.045	-.171**	-.253**	.145*		
WCT No/Don't Know Responses	.129*	.022	-.086	.201**	-.285**	
WCT Correct-to--Incorrect Errors	-.151*	-.246**	.217**	-.875**	-.157*	-.210**

**. Correlation is significant at the 0.01 level (2-tailed).

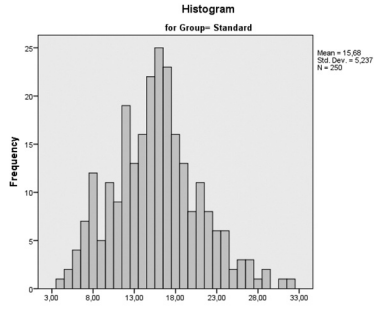
*. Correlation is significant at the 0.05 level (2-tailed).

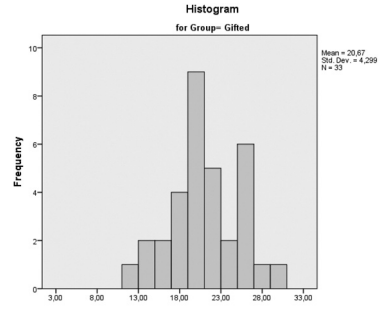
Listwise N = 249

The differences (1) in the level of hypothetical thinking and (2) in the level of ability to infer word meaning from context among talented and standard pupils.

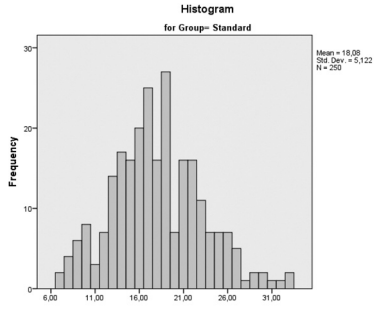
Below we present the histograms in order to graphically represent the distribution of scores in the primary as well as secondary indicators in WCT, both standard and gifted group (histograms are equally scaled).

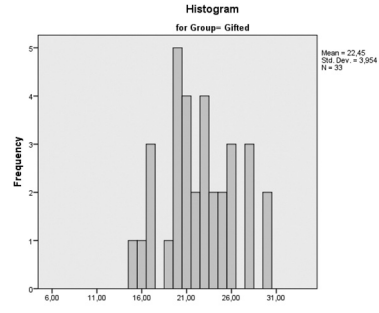
Graphs no. 2 and 3: Distribution of scores in the indicator WCT Total Consecutively Correct – standard and gifted



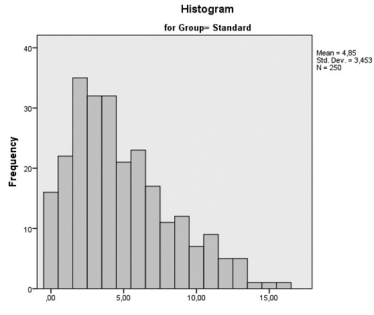


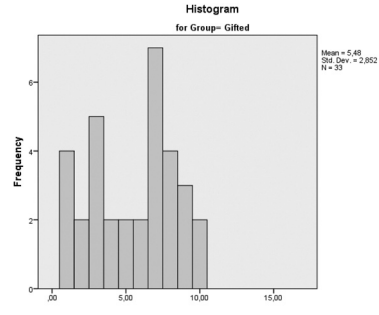
Graphs no. 4 and 5: Distribution of scores in the indicator WCT First Sentence Correct – standard and gifted



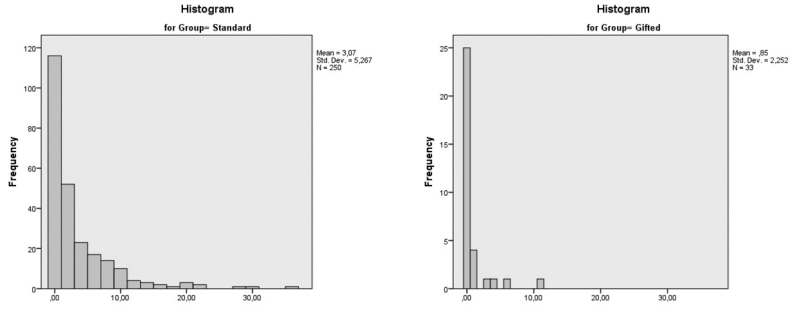


Graphs no. 6 and 7: Distribution of scores in the indicator WCT Repeated Incorrect – standard and gifted

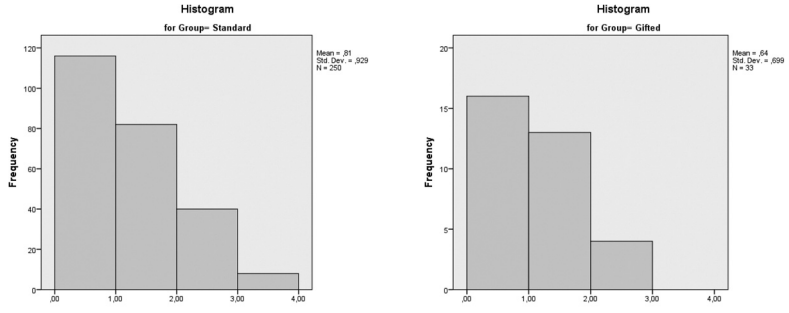




Graphs no. 8 and 9: Distribution of scores in the indicator WCT No/Do not Know Responses – standard and gifted



Graphs no. 10 and 11: Distribution of scores in the indicator WCT Correct- to-Incorrect Errors – standard and gifted



The indicators "WCT Total Consecutively Correct" and "WCT First sentence correct" for the standard population were slightly positively skewed. However, since the skew was statistically significant at $p < .05$, it was not appropriate to interpret means and standard deviations. The other secondary indicators reflecting the errors are highly positively skewed and/or leptocurtic by their nature, and parametric distribution could not be expected. The distribution of IQ scores was normal (skew = 1.63). The performance in the gifted population was far less variable (given the differences in range) than the performance of standard children, where the individual differences among the children were more pronounced. Since the variables were not normally distributed, statistical comparisons between groups had to be based on a nonparametric test,

namely the Mann-Whitney U-test. Regarding the "WCT Consecutively Correct" indicator, the performance of gifted children (*Mdn* = 20) differed significantly from the performance of the standard children (*Mdn* = 16), $U = 1859$, $z = -5.1$, $p < .001$, $r = -.30$. The effect size can be considered moderate. Apart from the primary measure, gifted children performed better in the indicators "WCT First Sentence Correct" and "WCT No/Don't Know Responses" (*Mdn* = 22 and *Mdn* = 1, respectively) than the standard population (*Mdn* = 18 and *Mdn* = 0, respectively), $U = 2022$, $z = -4.8$, $p < .001$, $r = -.29$ and $U = 2780$, $z = -3.3$, $p < .001$, $r = -.20$, respectively. The effect sizes of the differences were of low-to-moderate magnitude. The differences in other variables were not significant and those minor differences between the groups could have arisen due to sampling error effects.

To sum up, gifted children show a higher level of primary indicator, which refers to the level of deductive reasoning. They require fewer prompting sentences to identify word meaning from context. A significant difference was also detected in using the "I do not know" answer. Gifted children almost never used this option and tried to identify the unknown word in the way required by the task. It can be concluded that gifted children are not afraid to take risks, even if their response may not be correct. This phenomenon is in accordance with the affective characteristics of gifted students which is presented in the literature. Gifted pupils are characterized by a higher degree of confidence and impulsiveness in responses, and hence also by a lower level of their fear of failure.

The differences in: a) the level of hypothetical reasoning; and b) the level of ability to infer the meaning of words in context between gifted pupils and pupils from standard classes who scored higher than 115 in an IQ test.

When comparing the children placed in special gifted classes and children with IQ beyond 1 SD (i.e. IQ 115 and more) schooled in standard classes, there was no difference in the primary WCT indicator, nor in the secondary indicators, except for the "No/Don't Know Responses", where the gifted children made significantly fewer such responses than the children from the standard population with an IQ beyond 1SD, $U = 2780$, $z = -3.3$, $p = .001$. However, the effect size of the difference was rather low,

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at r = -.21. The data adduced above suggests that no difference was observed in the primary indicator between the performance of pupils in classes for gifted pupils and those with the measured IQ over 115 from standard classes. No difference was recorded in the level of deductive reasoning and the ability to infer word meaning from context. The higher rate of the "I do not know" answers among standard pupils (even with psychometric IQ over 115) points more to differences in affective, rather than cognitive, characteristics between gifted and standard pupils. It is probably the teaching climate in classes for the gifted, parents´ and teachers´ attitudes which influence gifted pupils´ self-perception and their willingness to respond in any situation without the fear of failure.

Discussion

The primary intention of the presented paper is to contribute to the understanding of what is deductive reasoning and what is deductive inference, manifested in the ability to decode and learn words from context.

Our objective is to present a WCT DKEFS diagnostic procedure to identify levels of pupils´ deductive reasoning. On the basis of the results obtained in the process of the administration of the tool on the sample of 9–10 year-old pupils attending standard schools and pupils educated in classes for gifted, we explored the level of hypothetical-deductive thinking in both groups of pupils.

The research suggests the following directions of discussion: every teaching text devoted to teaching theory emphasizes that the teacher, while working with instructional material, is to develop pupils´ deductive and hypothetical thinking. Less has been written about how this should be done, how the teacher should proceed when assessing levels of deductive reasoning, what kind of pupils´ performance addresses their capability of deductive inference, and what the procedures are for the development of logic that go beyond the framework of a mathematics curriculum.

The discussion also poses the question: what do we actually know about the cognitive profile of a gifted pupil? How can the differential di-

agnosis of gifted pupils be enhanced? On the basis of what criterion are pupils currently assigned to classes for the gifted? Our intention is also to reflect on the ways to identify talent in general, on the methods for the education of gifted pupils. Personality specifics of gifted pupils currently belong to interesting areas of psychology and pedagogy. While defining talent and characterizing a cognitive profile of gifted pupils, several authors claim that talent is a multidimensional concept. Talent is the result of the interaction of personality factors, environmental factors and other variables, such as luck and chance. In almost every model available, a domain of cognitive traits of a gifted pupil is presented. Most often these properties of talent are presented within the cognitive domain: intellectual skills, which include general communicative, verbal, spatial, memory capabilities and reasoning factors in the framework of basic mental functions. The higher rate of the "I do not know" answers among standard pupils (even with psychometric IQ over 115) points more to differences in affective, rather than cognitive, characteristics between gifted and standard pupils. It is probably the teaching climate in classes for the gifted, parents´ and teachers´ attitudes which influence gifted pupils´ self-perception and their willingness to respond in any situation without the fear of failure. We may pose the question: what performance profile is valuable in school settings? Impulsive, although not necessarily correct (recorded in the sample of gifted pupils) or more reflexive, although the correct answer may be formulated later (recorded in the sample of standard pupils)?

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Abstract:

The primary intention of the presented paper is to contribute to the understanding of 1. what deductive-hypothetical reasoning is and 2. what deductive inference is, manifested in the ability to decode and learn words from context. The WCT - WORD CONTEXT TEST (D-KEFS; Delis, Kaplan & Kramer, 2001) was used for measuring the two dependent variables (level of hypothetical thinking and ability to infer the meaning of words from context). This test is a separate part of the Delis Kaplan Executive Function System test battery (D-KEFS; Delis, Kaplan & Kramer, 2001). On the basis of the results obtained in the process of the administration of the tool on a sample of 9–10 year-old pupils attending standard schools and pupils educated in classes for the gifted, we explore the level of hypothetical-deductive thinking in both groups of pupils. We use the obtained data to make the following analysis of the relationship between a pupil's intelligence and: a) level of hypothetical reasoning; and b) level of ability to infer the meaning of words from context among standard pupils; analysis of differences in: a) level of hypothetical reasoning; and b) level of ability to infer the meaning of words in context between gifted pupils and standard pupils.

Keywords: deductive reasoning, hypothetical reasoning, deductive inference, decoding words in context

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Stimulation of Children's Text Comprehension in Primary Education – On One Educational Strategy

Introduction

Since the thematic focus of this issue is on *The Stimulation of Children's Linguistic Activity in Preschool and Early School Education*, our paper discusses the stimulation of text comprehension in primary education. Based on our expertise in the field of developmental linguistics and mother tongue pedagogy, we propose a language-pedagogy approach to developing a child's receptive ability[7].

The paper explores the possibilities for developing reading comprehension by a pupil in primary education in the Slovak Republic. The need for scientific research into developing reading literacy in Slovakia, with its educational implications, is growing as a result of the unsatisfactory state of the current educational context. All three previous surveys conducted by the Progress in International Reading Literacy Study (PIRLS 2001, PIRLS 2006, PIRLS 2011), an international study of reading achievement in fourth graders, indicate that the Slovak pupils achieved only average results. Particularly problematic is the comprehension of informational texts; the Slovak pupils scored worse in this discipline than in the comprehension of literary texts.

The results of the PIRLS study reflect the absence of systematic and conceptual development of reading literacy in primary education in

[7] The paper is an output of the project Encyclopaedia of Language for Children (National research grant scheme KEGA 023PU-4/2012).

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Slovakia. The education reform of 2008 declared that there was a need for the development of reading literacy, however, the state curriculum does not provide for a systematic programme for its development. There are only some partial programmes or initiatives of non-governmental organisations, e.g. the educational programme, Orava Association for Democratic Education, or the programmes for developing reading literacy implemented as a part of the school curricula. Paradoxically, there are relevant scientific studies on text comprehension in Slovakia (e.g. Gavora, 1992), but their results were not considered during the creation of a national educational policy, nor were experts from the given field invited to participate in designing the national curriculum. In this paper, we present an educational strategy focused on the development of comprehension of an informational text by primary school pupils. The strategy is based on the results of previous research on the effectiveness of developing text comprehension on the basis of parallel stimulation of linguistic and cognitive processes.

Reading Literacy and Comprehension Processes

The issue of developing reading comprehension in early school education is currently the subject of a great deal of foreign theoretical and empirical research. Very inspiring, when addressing the problem of developing text comprehension in Slovak pupils, is the research by Polish and Czech colleagues. They provide a valuable scientific stimulus in addition to the proximity of linguistic, cultural and educational contexts. Among many works published by Polish researchers, the studies from the special issue of *L1 Educational Studies in Language and Literature 2013–2014*, guest edited by Elżbieta Awramiuk & Grażyna Krasowicz-Kupis, *Early Literacy Research in Poland,* are especially inspiring in relation to our topic. Equally inspiring are the latest studies into the reading literacy of Czech children, which were presented in the publications by R. Wildová & V. Vykoukalová (2013) and R. Metelková Svobodová (2013).

Our approach to developing pupils' comprehension of text stems from the definition of reading literacy by the PIRLS study. For PIRLS, read-

ing literacy is defined as "the ability to understand and use those written language forms required by society and/or valued by the individual. Young readers can construct meaning from a variety of texts. They read to learn, to participate in communities of readers, and for enjoyment." (Framework and Specifications for PIRLS Assessment 2001, p. 3). We also take into consideration how PIRLS defines the purposes for reading (reading for literary experience and reading to acquire and use information), and the four levels of comprehension processes (ibid., p.5):

1. Focusing on and retrieving explicitly stated information.
2. Making straightforward inferences.
3. Interpreting and integrating ideas and information.
4. Examining and evaluating content, language, and textual elements.

For the purpose of designing educational strategies for developing the comprehension of informational text, we set the operational definition of reading literacy as the ability of a pupil to understand different types of text, respecting the multilevel characteristics of the processes of comprehension and, subsequently, the ability to use the processed information for learning and communication goals (Liptáková et al., 2011, pp. 191–195). The basic starting point for developing text comprehension is, for us, the stimulation of cognitive functions which are linked with hierarchical levels of text comprehension, and are thus essential for comprehension as such. The development of metacognitive processes which enable the pupil to transfer the strategies for obtaining, processing and using information into other contexts is also considered to be a component of developing reading literacy.

The theory of text comprehension and the psychology of reading clarify the cognitive processes on which the individual levels of text reception are based. In the psychology of reading (Stanovich and West, 1981; according to Clarke, S. – Dickinson, P. – Westbrook, J. (eds.), 2010, p. 149), processes of a lower and higher level are set apart. Processes of the lower level include the lexical and sentence level of decoding. The

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processes of the higher level operate on the text level; thus, knowing how texts are organised leads the reader to recognition of text models. The knowledge and experience accumulated by a pupil which relate to the world or to the context represented by the given text, facilitate the processes of inference, deduction, prediction, visualisation and thus comprehension of a text (ibid.).

Relation between Linguistic and Cognitive Processes in Text Comprehension

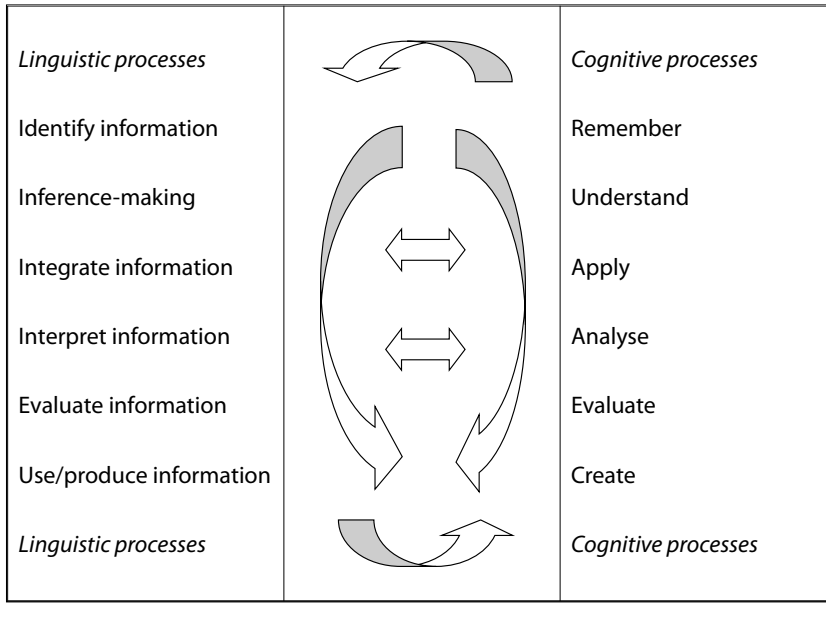
Apart from the abovementioned theoretical approaches, when designing educational strategies to develop text comprehension, we also rely on some other theories on the basis of which it is possible to analyse the relationship between the processes pertinent to language and cognition. At the same time, we start from the findings of cognitive sciences on the inseparable relationship between language and cognition and do so in the framework of a holistic understanding of the relation between general cognitive and linguistic principles (according to Piaget's cognitive theory; Piaget & Inhelder, 1997), as well as in the framework of a modular approach to the relation between language and cognition (according to the theory of universal grammar and the theory of parameters of N. Chomsky, 2007). We likewise link to our previous research, in which we found an association between linguistic and cognitive structures in the speech ontogenesis of children (Liptáková & Vužňáková, 2009). We similarly use the results of the research on the relation between cognitive and linguistic capabilities of a pupil, during which we started from the theory of social constructivism of L. S. Vygotskij (1970; Liptáková, Klimovič, Hlebová & Kresila, 2010).

With the levels of cognitive processes, we start from the cognitive process dimension of the revised Bloom's taxonomy of educational aims (Bloom, 1956), that is, from the cumulative understanding of cognitive processes which are applied when learning and with the processing of information from a text: remember, understand, apply, analyse, evaluate

and create (Anderson, Krathwohl et al., 2001). In the projection of an educational strategy for text comprehension, we attempt to look for answers to the question of how it is possible to utilise the relation of linguistic and cognitive processes for more effective text comprehension by a primary school pupil. For example, how a focused stimulation of memory processes can help a pupil identify information in a text and recall it from memory, or, how stimulation of the inferential thinking of a pupil can produce better inferences of a particular type during text comprehension, etc. We consider this relation to be reciprocal, however. Just as cognitive processes are essential during text comprehension, receptive linguistic processes, when processing the information from a text itself, require a pupil's cognitive activity, and thus activate the particular levels of cognitive processes.

The relationship between linguistic and cognitive processes when comprehending a text is indicated in the following diagram:

Diagram no. 1 – The relation of linguistic and cognitive processes when comprehending a text



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Empirical Findings on the Relation between Linguistic and Cognitive Processes in Text Comprehension

The aim of this paper is to present a model of the educational strategy for developing comprehension of informational text in primary school. The model is based on the intentional utilisation of the relationship between language processes and cognitive processes. It is the utilisation of the results of the qualitative research into the relationship of linguistic and cognitive processes during stimulating text comprehension of the pupils in the 2nd year of primary school. The conducted research is described in detail in the book, *Language and Cognition in Text Comprehension Development of Pupil at the Primary School* (Cibáková, 2012). In this paper, we are listing only basic information about the research design and its results.

The research was of a qualitative character. By applying an inductive research approach we tried to understand the relation between linguistic and cognitive processes through which a pupil goes during comprehension of an informational text. We created an educational model consisting of 14 stimulation units. The stimulation units contain instruments for stimulating the relevant cognitive functions when comprehending a text (attention, memory function, inferential thinking, comparison, categorisation, orientation in space, etc.) and a structured didactic approach which leads to local and global comprehension of an informational text by a child. The participants in the research consisted of eight pupils from the 2nd year of primary school with an equal level of school performance, whom we selected in cooperation with the class teacher. The pupils went through a 45-minute stimulation unit once each week. The pupils worked in pairs, which in the pre-research phase showed to be a suitable strategy since they proceeded according to the instructions of the administrator, but at the same time learned the sequential steps from each other when resolving tasks. Not all of the pupils participated in every stimulation unit, a fact reflected in the observed results of the impact of stimulation. For the development of text comprehension, we used a set of informational texts for children which were associated thematically. These served to

motivate the pupils when reading and allowed them to create inter-text connections and thus create different types of inferences.

Through the participatory observation of the stimulation unit phases, subsequent analysis of the observed results (the course of the stimulation unit was recorded on a DVD) and through content analysis of the pupils' post-reading activities, we collected qualitative data on the impact of stimulation on the linguistic, cognitive and metacognitive processes of each pupil. The analysis of the collected qualitative data showed that focused and systematic parallel stimulation of linguistic and cognitive processes during text comprehension is reflected in the greater success of processing information from the text by a pupil, thus in the creation of more permanent memory tracks, and in the activation of inferential and interpretational processes. This was also confirmed by a cloze-test, which was given to pupils after the completion of the stimulation programme. The cloze-test was compiled from the text which the pupils knew from the stimulation unit they had participated in. The cloze-test was designed and evaluated qualitatively; the pupils had to fill in the key words of the text or a synonymous variant of them. The pupils who took part in the entire four-month stimulation programme achieved better results in the cloze-test than the pupils who took part in only some of the stimulation units, and they did so despite an equal starting level of school performance in their mother tongue.

The research also brought an interesting finding relating to the metacognitive knowledge of a pupil. After administering all of the stimulation units, we conducted research on how pupils reflected the strategy used for text comprehension. The Pupils were invited, after reading a text, to answer the following questions: *What was the text about? What kind of questions would you ask a friend to find out if he/she understood the text? What would the friend have to sketch to better remember the information which is mentioned in the text? Think of some fun task for your friend which would help him/her better understand the text.* The questions were intentionally formulated so that they were related to the different levels of text comprehension. With pupils who regularly took part in the stimulation units, the repeated use of similar strategies was reflected such that they

also used them in their tasks in regard to the text, they even proposed their own strategies for processing information. Again, a difference appeared between the pupils who participated in the entire stimulation programme and those who took part in only a number of the stimulation units. Thus, it appears that systematic stimulation reinforces a pupil's systematic exploratory behaviour and develops the ability of the pupil to transfer the algorithm learned during the reception of a text to new situations.

Design of an Educational Strategy for the Stimulation of Text Comprehension

Based on the observed effect of stimulation, we adopted the design of the stimulation units from the above research to serve as the model of educational strategies for developing comprehension of informational text in primary education.

When designing the stimulation unit we relied on the theory of mediated constructivist learning and on the diagnostic and stimulation programme, *Mind`s Ladder* (Jensen, 2009)[8], which emerges from Feuerstein's theory of cognitive modifiability (2002). On the basis of the abovementioned theoretical approach, we structured a stimulation unit according to the phases of mental action (*input–elaboration–output*) and according to the *knowledge construction functions* system. The Mind Ladder knowledge construction functions are divided into intellective functions (cognitive functions), non-intellective functions and performance functions. The intellective functions are subdivided into reception, transformation and communication functions according to three phases of the mental action (Jensen, 2009).

The **input phase** (reception phase) is, according to the cited source (ibid.), characterised as the phase of obtaining information (what goes

[8] We are acquainted with this theory and the program thanks to participation on the research project APVV-0073-06 *The Dynamic Testing of Latent Learning Capacities of Children from Socially Disadvantaged Environments*, led by Iveta Kovalčíková.

in); i.e. the phase of activating both the existing knowledge schemes and knowledge constructing functions (cognitive functions). In our stimulation unit, this phase contains an evocation of the child's general knowledge and linguistic knowledge which are related to the theme and the content of the text, to the given text model and to the verbal tools of the text. We activated the abovementioned knowledge through the method of mind-mapping and structured discussion with the pupil. A separate part of the input phase was tasks for stimulating cognitive functions which are relevant during processes of text comprehension, namely in that they are thematically connected with the text which the children read afterward. The given activities work as motivation and at the same time help pupils in concentrating on further work with the text. We consider it particularly important, in the early years of schooling, to stimulate memory and the inferential processes which are based on the lower levels of text comprehension and which are at the same time an essential foundation for later development of the higher processes of comprehension. Therefore, within the framework of instruments for stimulation of cognitive functions, we focus particularly on *memory* and *inferential processes*. We applied our own instruments as well as the instrument *Logic Boards* (Jensen, 1998–2007), which was modified so that it corresponded thematically with the informational text read by the children during the stimulation unit.

Example. In the framework of developing *inferential thinking* and at the same time *orientation in space,* the task of the child is, for example, to arrange cards according to the instructions of a teacher so that all of the formulated conditions were satisfied (*If – then thinking*): Arrange pictures of fruits the way I tell you to: *The banana and the apple are to the left. The banana is not next to the pear*. The difficulty of the task is increased from the specific to the abstract, so that the pictures of fruit are replaced by cards with words and later cards with the beginning letters of words.

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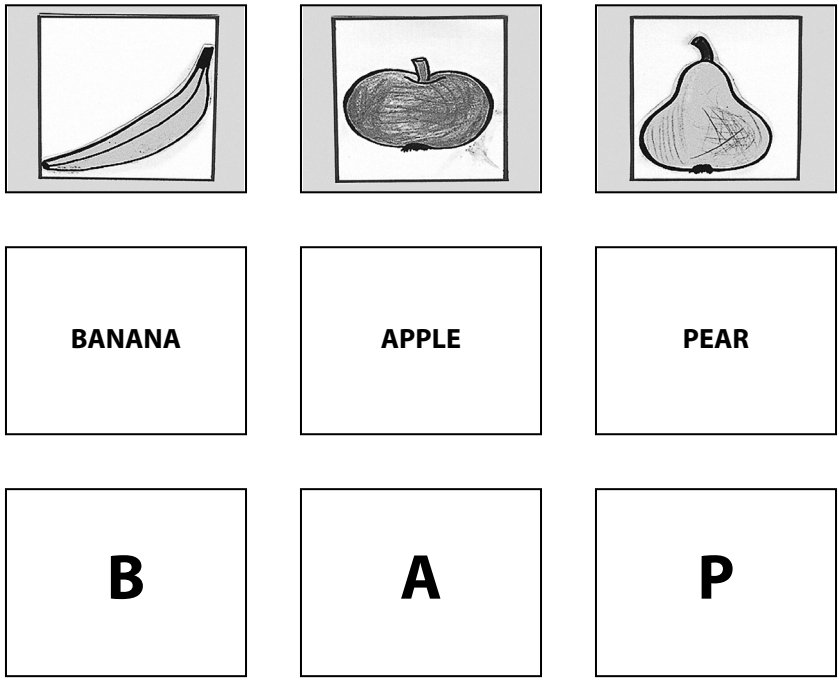
Figure no. 1 – Example for stimulation of inferential thinking



The **elaboration phase** is also called the transformation or processing phase. This phase involves the creation of relations of new information with information already contained in the knowledge and experience acquired by the pupil (what is put together). It is the transformation of knowledge schemes and the development of knowledge constructing functions according to the educational content and process. In the stimulation unit, this phase follows after the activation of the pupil's knowledge and the stimulation of cognitive functions in the input phase. It begins with *the phonological-perception processes* when the text is decoded by the pupil. The reading of a text involves questions for local comprehension, whose function is to hold the attention of the pupil. From the *words and sentences comprehension level,* we gradually progress to the *text level*. The centre of the elaboration phase is a set of *probe and prompt*

stimuli, that is, tasks through which the pupil has to identify explicit information in a text, further deduce implicit text associations and create different types of inferences. With *inferences*, that is, partial deductions which connect previous knowledge with new information, we start from these types of inferences: *bridging and referential inferences* are directly deduced and it is possible to find them in the text; *coherent inferences* are more complex and originate by connecting information between lower and higher levels of text comprehension; *elaborative inferences* emerge out of a text and connect information from the text with knowledge about the world or other texts (Clarke S., Dickinson P. & Westbrook J. (eds.), 2010, p. 163).

Success in solving the tasks in the scope of the processes of reception depends on activation of the cognitive processes of memorisation and inferential thinking. Therefore, we deliberately "trained" them in the input phase. And in contrast, tasks based on the given cognitive processes are a means of further development of these cognitive processes.

The **output phase** (communication phase) involves communicating the results of thinking (what comes out). During the reception of a text, in this phase the reader should have a global comprehension; the comprehension of the idea of the text and knowledge of how I can use the obtained information. Therefore, in the output phase of the stimulation unit, we apply *probe and prompt stimuli* focused on the ability of the pupils to clarify, account for and connect information with their own current knowledge and experiences and use it in their own productive activities, e.g. through drawing a picture or diagram, telling of the experience, etc. In this phase, the pupils can return to the mind-map created in the input phase and fill in the new information which they learned from the text.

During all phases of the stimulation unit, we tried to support the *metacognitive processes* of the pupils and to provide the pupils space for obtaining metacognitive experience through tasks which stimulate deliberate thinking, planning of the process and its evaluation (Larkin, 2010, p. 8–15).

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Educational Implications

The presented stimulation programme offers a model for school education and for teachers how to proceed with the systematic development of comprehension of an informational text, particularly in the situation where no national education strategy exists in the given field in Slovakia.

On the basis of a conceptual starting point and our own research findings, we have formulated recommendations for systematic work aimed at developing comprehension of an informational text as a part of the linguistic-communicative component of teaching a mother tongue in primary education (Liptáková, 2012):

1. To develop the ability of a pupil to understand different textual models of spoken and written language, thus, a text differentiated by: *continuity* (linear – nonlinear), *perception channel* (optic, acoustic, combined), *mode* (print – electronic) and *communication intention* (operational, informational, narrative, descriptive, persuasive etc.).
2. To strive for such intertextual connections, when selecting texts, that offer more opportunities for understanding the relational character of comprehension and increase a pupil's interest in reading/listening to a text.
3. To utilise different receptive strategies: the strategy Know – Want to Know – Learned, the strategy I.N.S.E.R.T (Interactive Notating System for Effective Reading and Thinking), mind-mapping, structured reading, creation of predictions etc. (Steele, Meredith, Temple, 1998, 1999).
4. To structure work with a text according to the phases of mental acting:

   4.1 **At the start of text reception (input phase)**:

   To activate general and linguistic knowledge associated with the subject and content of a text, with the given text model and with expressive means used in the text.

To stimulate the cognitive functions necessary during text comprehension (especially attention, memory function, inferential thinking, etc.) through tasks thematically associated with the text.

4.2 **In the course of text reception (elaboration phase)**:

To perceive read/listened to text on the basis of visual-perceptive/ /audio-perceptive processes and phonological processes.

To decode the lexical and syntactic units of a text.

To structure a received text with questions for local comprehension and for holding the attention of a pupil.

To understand a text with the help of probe and prompt follow--up stimuli operating on the different levels of text comprehension (gradually, according to the age of the pupils, from a lower to higher level).

To plan and monitor the engagement of relevant cognitive processes: identification of information explicitly presented in the text; deducing implicit text associations (inferences); clarifying, explaining and substantiating information; connecting information with the existing knowledge and experiences of the pupil; evaluation of information according to certain criteria.

To classify information depending on the type and purpose of the text (organising, selection, outline).

To generalise the obtained information, its meaning and uses (summaries, overviews, proposals).

4.3 **After completion of text reception (output phase)**:

To verify the global comprehension of the text, for example with a cloze-test.

To use the obtained information in the pupil's productive activities (verbal and non-verbal).

5. To stimulate metacognitive processes of the pupil during text comprehension:

- questions before reading/listening to a text: *Why is this text good to read/listen to? What can I learn from it? What kind of plan can I choose for this?*

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- questions during reading/listening to a text: *What will happen next in the text? Why do I think so? What proof do I have?* To support *posing questions by the pupil* at the different levels of text comprehension.
- questions after reading/listening to a text: *What did I learn from the text? How can I use it? Where and how can I obtain additional information?*
- metacognitive language: deliberate use of vocabulary which is associated with metacognitive processes, e.g. *verba cogitandi*, vocabulary from the semantic field of *memory, thinking* (Larkin, 2010, p. 7).

Discussion

The presented model of an educational strategy for developing text comprehension, which is based on empirical findings about the possibilities of simultaneous stimulation of linguistic and cognitive processes, is proposed as one possible way to enhance the reading literacy of Slovak pupils in primary education.

The pedagogical findings were also utilised in designing curricula for the teaching of the Slovak language for primary education in the area of comprehension of an informational text as a part of the development of reading literacy (Liptáková et al., 2011). We offered the curriculum as a proposal to the representatives of the national educational authorities in the form of a school educational programme. Another impact of the research is the project of *Encyclopaedia of Language for Children* (a national research project of the Cultural and Educational Grant Agency of the Slovak Republic 023PU-4/2012), whose aim is to prepare an encyclopaedia of language as a tool for comprehending an informational text and as well as a source of discovering and obtaining linguistic and metalinguistic knowledge and the development of linguistic awareness of a junior school child. At the same time, we offer the presented strategy for developing the reading literacy of a pupil for comparison with educational strategies in different countries.

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Abstract

The paper explores the possibilities for developing reading comprehension by a pupil in primary education in the Slovak Republic. The need for scientific research into developing reading literacy in Slovakia, with its educational implications, is growing as a result of the unsatisfactory state of the current educational context. In this paper, we present an educational strategy focused on the development of comprehension of an informational text in primary school pupils. The strategy is based on the outcomes of previous research on the effectiveness of developing text comprehension on the basis of parallel stimulation of linguistic and cognitive processes. The presented stimulation programme offers a model for school education and for teachers how to proceed with the systematic de-

velopment of comprehension of an informational text. At the same time, we offer the presented strategy for developing the reading literacy of a pupil for comparison with educational strategies in different countries.

Keywords: text comprehension, reading literacy, mother tongue, primary education, linguistic processes, cognitive processes, informational reading, educational strategy.

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Stimulation of Narration: from Examining Preconceptions to Education

Introduction

One of the main tasks of linguistic-communicative education in primary school is the gradual refinement of a pupil's intuitive understanding of what text is and what functions different kinds of texts perform in communication. This mission is in conformity with the need to develop pupils' functional literacy, thus to acquire skills for addressing instructional or life situations by means of textual information. It is obvious that a child's intuitive conceptualisation of text and its functions and features is present at the beginning of junior school age, both in the reception and production of text.

Text production and productive textual competence in junior school age

Production is generally regarded as the transmission of intended contents into utterance. Production processes of spoken message and written message are explained separately, however, when compared, it is clear that the mental activity of the producer first passes through the phase of conceptualization or *content specification,* in which one mentally selects the contents pertaining to the topic, communicative intention and communication situation. This is then followed by the phase of lexicalisation, or *semantic specification*, in which the producer assigns specific lexical units to mental content. Parallel with the above two processes, the *syntax*

specification phase is activated, in which the producer organises selected semantic units into language structure (more: Flower & Hayes, 1981; Levelt, 1989, Levelt, 1992; Scovel, 1998; Schwarzová, 2009).

For further explanation it is useful to draw attention to the two features of text production:

- production is *intentional* human activity – the producer enters into communication only if sufficiently motivated, i.e. if s/he intends to change something in objective reality through communication;
- production is *selective* human activity – the producer chooses what will be verbalized in the text, but also chooses how (by which means of communication and what arrangement) the communication plan will be achieved.

The complex skills and strategies of human beings which enable them to achieve a communication plan through speaking and writing are called *productive text competence*. Productive text competence is developed intentionally and unintentionally. A certain developmental level is a prerequisite for the successful usage of spoken and written language in instructional and life situations. The existing cognitive linguistics research on the composition of text in junior school age (Bereiter & Scardamalia, 1987; Kellogg, 2008), suggests that a key role in production is in:

a) pupils' knowledge of and experience with the *topic*,
b) pupils' knowledge and experience concerning the *text models*.

The role of school is to stimulate the productive text competence in several areas. An important component in the cognitive and metacognitive area of developing a pupil's productive text competences is:

- acquisition of basic awareness of text patterns in spoken and written language (narration, description, argumentation, information, forms of social contact);

- awareness of compositional characteristics of information, narration and description, and, exploration of the ways of using them in text (more Liptáková et al., 2011, p. 250–251).

Narration as a text model

The text model of *narration* is common in communication for preschool and junior school age children. It is one of the first models acquired by a child, not only at the level of understanding, but also at the level of production. Several qualitatively differing stages can be recognized in the narrative development (see Westby, 1984). It is therefore quite natural that storytelling is reflected in the primary school curriculum. Attention should be paid to acquiring the terminology and concepts related to narration; i.e. awareness of the compositional characteristics of narration and mastering the process of creating narrative text in school.

What do we know about children's narration? Empirical findings on a pupil's ability to produce a narrative text are essential for setting the optimum development of production in junior school age. For this developmental stage (the stage of true narratives; chains oriented at the character of the story, *focused chains*) certain characteristics are typical. The elements of a child's written production of narratives stated below are the result of our own research aimed at detecting qualities of narrative text from text-linguistic (coherence and cohesion) and psycholinguistic (the very process of creating text) aspects:

- range of narrative text is between 70 to 90 words,
- motifs of the stories are centred around the character,
- stories are usually without conflict, are graded according to the dramatic arc, events follow from each other only by temporal and logical relationships,
- deliberateness of the characters' acts is not present yet,
- stories oscillate between detailed and austere expression,

- from the aspects of the morphology of a story (so called story grammar; see McLaughlin, 2006) it is characterized by the presence of the initial event, the trial and consequence and, later, the components of the story are expanded by circumstances and internal response or internal intention and evaluative reactions of the characters,
- narratives are predominately syntactically monotonous with typical theme-rheme sequence of statements,
- central group of binding and attaching connectors includes conjunctions and coupling terms that, in the above sentence level, function as coupling particles: attaching *and*, consequential *and so* and adversative *however, but*,
- temporal relationships are expressed by the adverbs *then, and then, so* (in temporal meaning *then*),
- co-reference relations are expressed most often by literal lexical repetition or deliberate repetition (more: Klimovič, 2010b; Harčaríková & Klimovič, 2011).

How is narration taught in the textbooks of primary school? Our analysis of the current Slovak language textbooks for the 2nd , 3rd and 4th year of primary school written by Dienerová, Nosáľová, Hirschnerová (2009), Hirschnerová, Adame (2011a) and Hirschnerová, Adame (2011b), focused on the following aspects: creating a concept of narrative text model, the presence of narrative texts in the textbooks, interconnectedness of content and form of narrative texts with the tasks aimed at acquiring linguistic communicative and compositional skills, the methods of instruction, the activities of pupils and the type of tasks related to the reception and production of a narrative text. The following findings emerged from the analysis of the textbooks:

- narrative texts in textbooks occur in two basic positions – as motivational texts and as a part of linguistic and communicative--compositional exercises; the latter position occurs in the textbooks in much higher proportion while narrative texts are only

linguistic material without proper accentuation of the content of the text (the textbook encourages the learner to identify certain linguistic phenomenon, but does not work with the theme of the story, the theme stands as if outside the interest of the learner),

- due to the nature of the tasks that utilise narrative text, it is surprising that the inclusion of the instruction on how the story is built up comes relatively late,
- the textbooks do not provide guidance on how to work with the story events and characters,
- a cross-combination of the kinds of texts in compositional tasks (apologising and story, felicitation and story, letter and story, and, description and story) appears problematic; in Slovak pedagogy, the requirement has been promoted for several decades that a pupil should learn first the so called "pure compositional approach", narration without elements of description or reflection (cf. Betáková & Tarcalová, 1984, pp. 242–243) – such an approach facilitates the acquisition of narrative text models,
- in working with the narrative skills of pupils, receptive and reproductive exercises and tasks prevail, the number of production-oriented tasks is lower in each successive year, the textbooks only sporadically encourage the pupil to produce his/her own story,
- analysis of the types of production tasks includes the following instructions for the creation of a story (sorted by frequency, the most frequent instruction is first): tell a story from a picture (series of pictures), create a story from your own experience, invent a story and use the selected words in it, finish the story, invent a story on the topic, outline a story content from its title.

Based on the above confrontation of knowledge from cognitive linguistics, text linguistics and psycholinguistics of text production with the school reality manifested through the textbooks, the weak points in stimulating narration in primary school can be identified. It turns out that in the future the instructional resources will have to be focused more on activating higher cognitive processes in the acquisition of text models.

Reproductively oriented learning topics should be reduced. The integration of language, composition, reading and literature should be consistently implemented. The communicative use of acquired knowledge from language and composition should be connected with the efficient working with a literary and factual text. Thus, the scientifically substantiated conception of teaching Slovak language and literature through the integration of cognitive-communicative and experiential approaches should be applied (Liptáková et al., 2011). The current situation of acquainting pupils with text production is unsatisfactory in the basic teaching resources.

From examining preconceptions to stimulation of narration – overview of the methods used

Constructivist theories in didactic research re-route the attention of experts to the study of the content structures of children's knowledge. If a pupil in the learning process is to internalise new knowledge and skills into his/her own knowledge scheme (the assimilation-accommodation principle), s/he must necessarily rely on his/her previous knowledge. In this study, we use the term preconceptions as "inner intuitive forms of existence of an objective concept in the subjective world" (Doulík & Škoda, 2010, p. 9). By examining pupils' preconceptions, we want to better understand the "interpretive tools of the mental elaboration of relevant topics" (Pupala 2001, p. 214).

We will gradually introduce three methods conceived as part of broader research into developing the ability to create a narrative text in the second year of primary school. These are (1) the structured interview method, (2) a productive textual task for creating a story from a picture (picture of rabbit which looks in the mirror and sees the reflection of an elephant), and, (3) an intervention program to promote self-regulation in the process of constructing narrative text. The methods were applied in 42 pupils from an urban elementary school during two weeks. At the time of collecting data, the age of the samples ranged from seven years and

eight months, in the youngest participant, to eight years and 10 months in the oldest respondent. The mean age of the sample of 2nd year pupils was eight years and two months.

a) *Interview with pupils*. The structured interviews included five questions. In this study, given the limited space, we focus only on the first four questions:

1. What is a story?
2. How is a story created?
3. How do you create a story?
4. How do you know that the story is finished?

When interpreting the responses, we were aware of the fact that the purpose of non-numerical qualitative analysis is not to quantify the data, but to create semantic categories and explain their existence (cf. Šeďová, 2007). The aim of the analysis of the responses is to generate a framework of the pupil's conceptual and procedural knowledge of the narratives.

b) *Creating narrative text from a pictorial prompt*. The method was used to determine the current level of written narrative of the pupil according to the criteria of N. Stein. Written narratives differed in the studied sample in the degree of completeness (complexity) of the story. Based on the research of N. Stein (Stein & Albro, 1997, p. 9), it is possible to assess the narrative text by means of the following criteria arranged in ascending order:

- *time in the story* (temporal relations) – this is a basic requirement of the story, time is kept if it is directly stated in the text that the time goes by, the events follow from each other on the basis of time sequence; the criterion relates to the marked development of themes, namely entering into the middle of events (i.e. in medias res);
- *causality* (causal relations) – there is a clear relationship between cause and effect in text, for example an action of the character

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leads to a different narrative event, or, an action of the character results from a change in the events;

- *orientation on goal* (goal-based) – a character in the text acts to achieve something; when reading, it is clear what the character intends in the story;
- *obstacle* – a figure acting to achieve his/her own goal must overcome some obstacle, succeed in something, resolve a problem or intricate plot;
- *point* (ending) - the text culminates and directly refers to an imaginative and surprising unravelling of the story, it is linked to the main character and his conduct, it may be expressed as the main idea or moral lesson.

The resulting text created by each pupil was assessed by two independent assessors. Based on the assessment criteria, it can be accurately determined in what aspect the quality of the individual stories of the children varied. The quality of the produced text also, to some extent, indicates the child's cognitive level in the area acquainted with the general characteristics of the narrative text.

c) *Intervention program*. The starting point of the intervention pro gram was the conception of K. Harris and S. Graham on developing self-regulation in junior school aged writers (Self-Regulated Strategy Development; more in Harris – Graham, 1996). The goal of the program was to teach students to form a narrative text (developing from background knowledge through discussing, modelling, supporting, and the memorization of story-writing strategies to independent performance). The program consisted of 6 sessions (each lasting about 45 minutes) during a two-week period. The focus of the lessons:

- Lesson 1: basic knowledge of the story (based on the findings from the interviews, supplemented and corrected if necessary) and deducing the learning strategy by mnemotechnic aid;

- Lesson 2: setting individual targets for each pupil on the basis of the quality of the narrative text produced prior to the program; a debate about the use of strategy and deduction of the order of activities in creating text (didactic analogy of the phases of text making process using mnemotechnic aid);
- Lesson 3: modelling strategies and collective utilisation of mnemotechnic aids;
- Lesson 4: creating the story based on collectively applied strategies;
- Lesson 5: implementation of the strategies and feedback to the learner;
- Lesson 6: individual application of the strategies in the development of the story (after the sixth Lesson we included one more control task on the creation of narrative text from a picture).

From examining preconceptions to stimulation of narrations – analysis of findings

Individual findings on preconceptions of children and on the level of their ability to create story text are presented as a more detailed description of the findings. The selected pupils (Martin, Tomáš, Eva, Tamara and Emma) represent different quality benchmarks of narrative competence in the sample of Year 2 pupils of primary school.

a) *Interview with pupils.* Based on interviews with all the pupils in the sample, we have created a framework of conceptual and procedural knowledge of pupils. Conceptualisation of a story in the age group of 8-year-olds will appear clearer on the simplified scheme of the communication process. Explanation of the concept moves along the axis, author – text – recipient. The *author – text* relation produces the expression as *someone says, writes, invents or creates a story*. The *text – recipient* relation is represented in the expressions as *somebody reads a story to somebody*. Text in

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the communication process scheme is represented by the response as *a story is some article, fairy tale or actual message*. The responses outside the scheme, and therefore the least apt, were as *a story is the words and phrases*. Those types signal that the story is, in the mind of 8-year-olds, both product and process, or, that the pupil has not acquired such concept of story that is close enough to the actual content of this notion. Pupils' responses to the question of how the story originates cover two of the three stages of producing a written message (Flower & Hayes, 1981) – planning (responses as *someone invents a story*, preparation for creating seems, however, a more appropriate term than planning) and generating (responses as *someone writes a story*). Since the generating phase means "translation" of ideas into linguistic units, the following answers can also be included in it *a story arises from the words and sentences*.

1. The question focused on the concept of story in the minds of the pupils: What is a story?
   Martin: *"Fairy tale."*
   Tomáš: *"Fairy tale."*
   Eva: *"A story is a fairy tale."*
   Tamara: *"Some article."*
   Emma: *"A story is, if there is something written, some sentences, it starts with a capital letter and the story reads in the book."*
   While the answers of the first three pupils indicate a clear natural inclination towards fairy tales as their mental representation of a story, in Tamara's case a story is some type of text (response type *a story is some type of text*). Emma has a different concept of story in her mind. She first suggested that a story contains sentences, then (probably under the influence of education) she mentioned sentence grammar, but finally she related the story to her personal experience, characterised by text – reader relation, and her response was classified under the type, *somebody reads a story to somebody*.

2. The question focused on the pupil's conceptualisation of creating a story text: How is a story created?
   Martin: *"From a fairy tale, from the book."*
   Tomáš: *"From a fairy tale? From the words? "*
   Eva: *"Writer somehow writes it."*
   Tamara: *"When a writer writes it."*
   Emma: *"Some writer first invents it and then writes it on paper."*
   Martin's and Tomáš's responses build on the previous statement about fairy tale as a representative of story text. Both responses indicate that the boys either have no idea about the origin of story, or cannot verbalise their ideas. The responses of Eva and Tamara show that their concept of creating a story is based on the idea of generating text (response type *someone writes a story*). Emma expanded her reply with the aspect of planning. In her statement, she combines the two phases of generating text. From this point of view it seems that her idea of creating a story is more complex in comparison with the other pupils.

3. The question focused on the awareness of intrinsic rules for creating a text (metacognition): How do you create a story?
   Martin: *"I do not even know."*
   Tomáš: *"By writing words."*
   Eva: "I write it on paper."
   Tamara: "When I write it on paper."
   Emma: "For example, I invent a couple of sentences, then I write them and then translate it."
   Martin cannot answer, perhaps because he lacks the metacognitive abilities to name the steps of shaping his own story. Eva and Tamara emphasize the very act of writing, but rather in terms of graphical coding of content. Emma realizes that writing has certain steps (first she thinks over the sentences then writes them), but from the answer it is not clear what she meant by *I then translate it*.

4. The question focused on the awareness of completeness of a story (metacognition): When do you know that the story is finished?
   Martin: *"I do not know when, perhaps in an hour a story is done, I do not know."*
   Tomáš: *"When I put a full stop at the end?"*
   Eva: *"When I finish everything."*
   Tamara: *"When I finish it in some way."*
   Emma: *"When I think that there is enough pages and it all ends up well."*
   Martin did not respond adequately, time is not an issue. Tomáš is aware of the formal rules of writing sentences, but his answer does not refer to a story. Eva and Tamara suggest the need to aim at some story ending. Emma realizes the requirement of some extent or length and is aware, following her experience with the fairy tales, of the need for a good ending.

b) *Creating narrative text from pictorial prompt*. When discussing the findings after applying this method, it would be best to introduce an authentic text by a particular pupil, but given the fact that the texts are written in the Slovak language, the literal translation into English is not feasible (if interested in the issue see the studies by Klimovič, 2013, with the full details of pupils' texts in Slovak). Therefore, in the discussion on the second method, we offer only the analysis of narratives according to the criteria of N. Stein. Martin, in his text, made incoherent statements about different things that he noticed when observing the picture, but without a hint of the story, without any time sequence, even without cor-relation between the details of the picture. Martin created a text that does not fulfil the most essential requirement for narrative text, i.e. time in the story (temporal relations). Such types of text are referred to by N. Stein as *a message without structure* (no structure). Based on Martin's text, it can be assumed that he has not formed in his mind a concept of a narrative text model, or at the time of creating the text, he neither activated the required text model in his mind nor organised his ideas around the central theme.

Tomáš's text also does not fulfil the criterion of time, but unlike Martin's text, it is focused on one topic. Tomas describes the prompting picture in the text. The description of the situation in the picture is however, not ordered; the observed phenomena are repeated several times in almost identical linguistic terms. Such types of text, with no apparent presence of temporal relations, are referred to by N. Stein as *descriptive sequence*.

Eva's text stands qualitatively higher then Martin's and Tomáš's texts. Eva managed to indicate temporal relationships in her story (using numerals in conjunction with a noun or by repetition of the verb sleep, thus indicating the duration of the plot). However, cause-effect relations or the causality of the protagonists cannot be retrieved from the text). This type of narrative is referred to by Stein as *a simple temporal sequence* (action sequence).

Unlike Eva, whose text did not evidence the category of causality, Tamara clearly applied temporal and causal relationships between the events (actions of the protagonists of the story in response to a story event is consistent with the intentionality of human actions - the protagonist is frightened when he does not see his own image in the mirror, but the image of someone else). The text, however, does not reveal what the main character wanted to achieve in the story and what motivated him to further actions as the story proceeds. The text is thus missing the character's orientation on target. Such types of narrative are, according to Stein, *reactive sequences*.

The text by Emma is qualitatively at the highest level. It has all the features of *episode* (goal-based episode). Episode is the central unit of story in which a certain story event is developed and the text demonstrates a clear target orientation of the characters. Emma's story possesses a point (the rabbit is ashamed for boastful acting and the point is, therefore, a moral lesson), but there is no obstacle.

The summary of findings from the qualitative analysis of the complexity of narratives is shown in Table 1.

Table 1. Presence of N. Stein's criteria in the narratives of 8-year old pupils

Author of Text	TR	CR	G	O	E	Complexity of Narrative
Martin	no	(–)	(–)	(–)	(–)	no structure
Tomáš	no	(–)	(–)	(–)	(–)	descriptive sequence
Eva	yes	no	(–)	(–)	(–)	action sequence
Tamara	yes	yes	no	(–)	(–)	reactive sequence
Emma	yes	yes	yes	no	yes	episode

Legend: TR – temporal relations, CR – causal relations, G – goal-based, O – obstacle, E – ending, yes/no – presence/absence of observed criterion, sign (–) – criterion is not probed.

c) *Intervention program*. The stimulation which we used was based on the data from the first two methods. In the course of the 6 lessons, we worked with the pupils so that they realized which components were missing from their story and were able to implement those in their texts by the gradual grasping of the individual process of creating a narrative text. During the program, the self-regulation of the writers was ensured by the following elements:

- self-monitoring – each pupil set the goal of writing individually based on a sound knowledge of his/her abilities and previous performance;
- self-instructing – each pupil was supported by graphical support, single instructions in the stage of text formation had to be adapted to his/her way of thinking or achieved level;
- self-reinforcement – is a positive perception of one's own efficacy; support from the immediate environment and cooperation in a qualitatively similar working group brought a degree of writers' self-reinforcement;
- metacognition - represents awareness of the steps in the strategy, supported also by visual aids;

- self-assessment – the pupil was able to analyse his/her own text according to the criteria of complexity of the story, obviously without using the established terminology, however expressing it in the didactic language pertinent to the communicative-com positional and literary education.

The intervention program succeeded in developing the narrative skills of those pupils in particular whose entry ability to create narratives was qualitatively weaker according to the degree of complexity.

In the last phase of intervention, Martin repeatedly created narrative types of action sequences; which means that he mastered the criterion of time. In further development of his capacity to produce a narrative text, emphasis should be put on raising his awareness of causative relations in the actions of characters, especially through projecting such events in the actions of characters that can be considered goal-oriented.

Tomáš and Eva, in their stories, demonstrated identically their ability to create an episode. In further development of their narrative skills, such experience should be strengthened so that the gradual and irreversible process of forgetting would not affect their individual disposition for narrating texts.

The intervention program did not induce a qualitative improvement in Tamara and Emma. Tamara repeatedly created reactive sequences after the intervention, thus she remained at the same level as prior to stimulation. Emma benefited the least from the stimulation; the story written after the completion of the program can only be assessed as a reactive sequence, which is, compared to the pre-intervention episode, a decline. These findings may indicate three things:

1. Intervention must be more consistent in its preparation and development stages for those writers who have developed a concept of a narrative text model,
2. The distance between the ability to create a narrative of the reactive sequence type and the perceived ability to create an episode is, for some writers, too challenging to overcome just through short-term intervention,

1. An episode as a regular expression of text production should first be mentally mature since an episode is a central unit of narrative that the author consciously develops, which requires a certain degree of cognitive maturity.

Discussion and conclusion

In the introduction to the study we highlighted the inconsistency of pedagogic transformation of the communicative and compositional education curriculum in the 2nd, 3rd and 4th years of primary school. The notion of pedagogic transformation is perceived here in relation to the concept of didactic communication. If didactic communication represents "*the process of transfer and mediation of the results of scientific knowledge into the knowledge of individuals who have not participated in the creation of knowledge*" (Adamčíková – Tarábek, 2008), in other words, if the didactic communication is "*didactic bridge between scientific knowledge and mental representations in the mind of learners*" (ibid.), then pedagogic transformation is a pillar of this bridge. Pedagogic transformation however, does not mean the transfer of scientific content into a simplified, understandable-to-learners educational content. It is not a reduced knowledge, but, in terms of assimilation-accommodation principles, it is a reconstruction of knowledge, a specific way of learning. In view of the above, children's intuitive knowledge of text production is essential for teachers.

Based on the findings on children's preconceptions of story and pupils' ability to apply narrative text macro-strategy, we want our study to contribute to such a pedagogic transformation of curriculum that would respect the level of conceptual, procedural, and metacognitive knowledge of junior school aged children. We thus outline a didactic system (setting targets, content, process and outcomes) in the form of a proposal for content and performance standards of communicative and compositional education in the area of developing productive textual competence of the pupil (the knowledge of narrative text model, the ability to apply narrative text strategy):

a) Year 2:
- content standard - didactic concepts: storytelling, story;
- performance standard - pupil discerns central event (plot) in the story, applies temporal and cause-effect relationships between the events in story, creates own stories on the basis of prompts (pictorial and verbal), narrates a story based on own experience, explains what it means to tell a story.

b) Year 3:
- content standard – didactic concepts: narration, introduction/core/conclusion of narration;
- performance standard - pupil creates stories maintaining temporal and cause-effect relationships between the story events, can utilise intentional action of the main character when producing text, segments the story into introduction/core/conclusion, can explain what the terms introduction, core and conclusion mean, creates the continuation of the story based on the qualities of the characters and the course of events in the literary work.

c) Year 4:
- content standard - didactic concept: narrative;
- performance standard - pupil in storytelling expresses intentionality of characters' actions can apply descriptive parts (description of characters, environment), creates a story with conflict and its solution.

In presenting the findings, we are aware of the limitations of the study, which resulted from the methodology used and from other factors affecting qualitatively oriented research. These findings cannot be generalized for the population of 8 year-old pupils. When interviewing pupils, it appears more apt to use unstructured interviews instead of structured interviews. The researcher would thus obtain more detailed explanations of children's conceptualisations of stories. In determining the complexity of stories we are also aware that it is only a partial view on

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the ability to create a narrative text, taking into account N.Stein's research. Some other characteristics of the text should also be examined, at least those which are related to the linguistic features of the text, such as coherence and cohesion.

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Abstract

Meaningful development of productive text competence in pupils of primary school age should be based on a detailed analysis of their intuitive conceptualisation of particular text models (narration, description, explication,

argumentation), their characteristics and the method of creating text. In this paper we, therefore, focus on an analysis of 8-year-old children and their preconceptions of narration. The findings from the interviews with this group of 8 year-old children are presented in relation to the capacity of a particular pupil to create a narrative text. Utilising the intervention program Self-Regulated Strategy Development (Harris & Graham), we point out the pitfalls in developing the narrative competence of children. In doing so, it is essential to take into consideration the pupil's conceptual, procedural, and metacognitive knowledge of text production.

Keywords: text production, narration, stimulation, primary education.

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Children in the World of Allegory: the Key Role of Comparison Skills and Abstract Thinking

Introduction

The rising interest in the definition of "meaning" and its ever-increasing role in human behaviour are continuously paving the way for a transition towards a semantic way of thinking. Every passing day confirms the perception of the modern world as a vast system of signs, each of them bearing pieces of information which we have to know how to access and understand. In most cases, speaking allegorically allows the speaker to achieve maximum effect with minimum effort, i.e. we have a reduction, or "simplification", of a complex subject; economy, as a positive aspect, can often be one of the broader avenues towards creative decisions.

Sayings and proverbs, seen as short and clichéd signs that are poetic expressions of everyday situations, can be defined as super-economic ways of saying something which is not that simple. Their ability to integrate the wisdom and experience of our forefathers into a short expression makes them not only excellent moral templates for behaviour, but also primal cognitive matrices on which to build upon – at least for the people who can interpret them adequately.

Unfortunately, folklore nowadays is in danger of being forgotten. Modern individual art forms are pretentiously taking over from popular creative traditions. Having discovered the educational possibilities of sayings and proverbs, focusing especially on the allegory contained therein,

this publication will present the key moments of a psychological-pedagogical research project uncovering the potential of pre-school aged children to interpret the allegory in sayings and proverbs.

In the context of writing and publishing educational materials, several Bulgarian authors (Chichikova, 1998; Balabanova, 1999) have touched upon issues similar or close to the one under research here, but have left a number of questions unanswered. Even though teachers have attempted to use popular sayings and proverbs in pedagogical practice with regard to their allegorical meaning, there is a lack of a system for allegorical tuition that works well in both theory and practice.

Objectives and hypotheses

This publication presents some findings resulting from a psychological-pedagogical research project focused on the ability of children aged 5–7 to interpret of the allegory in sayings and proverbs. The paper aims to achieve two primary **objectives:**

- To uncover **the core essence of children's ability to interpret the specific allegory of sayings and proverbs;**
- To underline and prove **the role of comparison skills and abstract thinking** in successful allegory interpretation by children.

Establishing, developing and testing a pedagogical interaction model for building the ability to interpret the allegorical meaning of sayings and proverbs in children aged 5–7 years was also among the goals of a big research project conducted by the author (Engels-Kritidis, 2012), but the current publication will only make use of the results from the model's application in relation to achieving the aforementioned objectives.

Based on the purposive interpretation of the scientific literature, pedagogical observation and the experience of educational practice, the following main hypotheses have been formulated:

Hypothesis 1: It is assumed that there is a natural consistency in the process of building the skills under research: from not being able to understand even the literal meaning of the phrase, through the stage of understanding it, followed by an initially partial, eventually full, deduction of the metaphorical meaning, which is illustrated by giving an example of a particular situation to which it applies, or by formulating a general theoretical interpretation of the sentence's allegory. Each individual child starts from and reaches different stages when forming these skills.

Hypothesis 2: It is assumed that there is a connection between *comparison skills* and *allegory interpretation skills,* i.e. a child with better-developed comparison skills will display a higher *ability to interpret the allegorical meaning of sayings and proverbs.* With that in mind, the image-based way of thinking that is typical for the ages under research allows us to define visualization as a principal stage, which helps ensure an optimal transition towards the general theoretical interpretation of the allegorical meaning.

Hypothesis 3: It is assumed that there is a connection between the development of *the capability of abstract thinking* and *allegory interpretation skills,* i.e. a child with a better-developed abstract thinking ability will display a higher *ability to interpret the allegorical meaning of sayings and proverbs.*

Criteria and indicators for research of the ability to interpret the allegorical meaning of sayings and proverbs

One of the reasons for the deficiency of a theoretical and practical system for allegorical tuition is the lack of a clearly-structured system of criteria and indicators for assessing the different stages in the process of adequately interpreting the allegorical meaning of sayings and proverbs. In that regard, the author will attempt to fill the aforementioned void in a theoretical-practical aspect by introducing criteria and indicators which can be used for this kind of project, based on research of the relevant literature:

First criterion: ***Understanding the literal meaning of the saying or proverb***

Indicators:

1.1. The child cannot understand the literal meaning.

1.2. The child partially understands the literal meaning.

1.3. The child fully understands the literal meaning.

Second criterion: ***Rationalizing the metaphorical meaning of the saying or proverb***

Indicators:

2.1. The child cannot rationalize the metaphorical meaning.

2.2. The child partially rationalizes the metaphorical meaning.

2.3. The child can rationalize:

2.3.1. The child rationalizes the metaphorical meaning, giving an example of a similar situation.

2.3.2. The child rationalizes the metaphorical meaning by reaching a general theoretical explanation of the saying or proverb.

Third criterion: ***Utilization of the saying or proverb***

Indicators:

3.1. The child does not use sayings or proverbs.

3.2. The child can adequately use sayings or proverbs:

3.2.1. The child can adequately apply a saying or proverb to a given situation.

3.2.2. The child can adequately use a saying, proverb or other metaphorical speech form in order to explain another saying or proverb.

Additional criterion: ***Uniqueness of a child's interpretation of the allegorical meaning***

The above system of criteria and indicators is the basis of the stage--by-stage structure of the *ability to interpret the allegorical meaning of say-*

ings and proverbs (Engels-Kritidis, 2012), which has been schematically presented as a developing mechanism made of three main components: **understanding** the literal meaning of the saying or proverb, **rationalizing** its metaphorical meaning and, finally, **using** the saying or proverb adequately in speech. Working as a whole, this mechanism allows a level of adequate interpretation in any given situation. In other words, the *understanding, rationalization* and *use* represent different levels of interpretation of a saying or proverb and its application in relation to a specific or abstract situation.

When discussing the three main criteria levels, we indicate *understanding* of the literal meaning and *rationalization* of the metaphorical one. As already stated, the term "understanding" is used to indicate a comparatively elementary registration of the literal meaning of sayings and proverbs, whereas "rationalization" refers to the transfer process which the child can achieve based on his/her form-based way of thinking, as well as the elements of abstract and logical thought that the child has developed according to his/her age. "Rationalization" represents a level of achievement in the process of interpreting sayings or proverbs. The adequate use of a saying or proverb is the next step, which in addition to the aforementioned skills requires a higher level of language competence. Of course, for children aged 5–7 years, this last stage of using sayings and proverbs is not an objective in itself, but could be a natural consequence for some of the children of the application of a well-planned and executed program.

The general term "interpretation" is used here to indicate the process of understanding the allegory as a whole, regardless of the level of the child's "translation". In this regard, children's subjective and unique interpretations of the allegory are accepted as a possible, if not adequate, interpretation. For this reason, the uniqueness of a child's interpretation has been added as an additional criterion for the purposes of this research. As a theoretical basis for defining the essence of this criterion, this project uses the differentiation between the terms "meaning" and "significance", as introduced by Lev Semionovich Vygotsky (1983) in his book *Thinking and Speech*, first published in 1934, later on adopted and developed by Alexander Romanovich Luria (1984). Based on Vygotsky's and Luria's

concept, the term "meaning" indicates the system of associations that are connected with a word or phrase and have been created objectively in the course of history. Assimilating the meaning of words, we are assimilating the sum of human experience, reflecting the objective world in varying degrees of completeness and depth. Apart from the concept of meaning, Vygotsky and Luria define another concept, usually expressed via the term "significance". The "significance" of a word or phrase indicates its subjective meaning, separated from the objective system of its "meaning": significance is comprised of the associations that refer to a certain time or a certain set of circumstances. In other words, while "meaning" reflects the objective system of associations and connections, "significance" is an additional system of subjective aspects of the meaning for a given time or circumstance.

So, a child's own "unique interpretation of allegory" is a translation of the saying or proverb that does not fall within the social framework of its use, neither literally nor as a metaphor, but is nonetheless a self-contained explanation of the saying or proverb which captures a metaphorical meaning different to the objectively-accepted one, a meaning that represents the child's own view of the world, which is always unique in its own way. These unique interpretations need to be taken into account in every step of the stage-by-stage structure of building the researched skills. In essence, the unique interpretations form a kind of separate stage in this process, which could be necessary for some children as a way to reach the phrase's meaning. The importance of the application of a specific psychological and pedagogical process by the teacher at the right time for the child has been underlined; a process which is designed to help the child reach the objective and widely-known meaning of the allegory, starting from its own specific and unique interpretation. Therefore, in relation to developing tools for allegorical tuition, the *basic premise* in this research is that the process by which the child reaches an adequate interpretation of the allegory has to be divided into two levels: on one level, *the teacher leads the child from the literal to the metaphorical meaning* of the saying or proverb; on the other level (that of the allegory), *the teacher leads the child from the personal significance of the allegory for*

the child (which may be an inadequate, but at the same time possible, explanation of it) *to the socially-accepted* meaning.

Unfortunately, there is the language barrier to consider. The research was written and carried out in a language other than English, which is used for this publication. This means that only a handful of the multitude of unique interpretations can be presented here in order to illustrate this phenomenon. An example of this is the Bulgarian saying *"a hood after the rain is over"* (meaning something is too late to help) which children explained as "the hood that follows the rain is the rainbow" and "after it rains, the mushrooms that come out have hoods". Another example is the Bulgarian proverb *"the book has many eyes"* (meaning one can learn many things from reading books), which was explained as "the letter 'O' in the book looks like an eye".

The existence of such improbable form-based and artistic child interpretations of allegory is fully understandable and teachers should make active use of them when building the skills under research. The child builds upon his/her own everyday experiences to express the interpretation of metaphorical meaning, but he/she also makes use of imagination. As a result of his research on the connection between children's imagination and art, Vygotsky (1982) concludes that children's imaginary worlds are richer than those of adults because of the simple fact that children trust their imagination more. Also, children think in images that are not yet "culturally impregnated" enough to make them a part of the cultural codex of any given social environment. Children are only just stepping on the path to becoming integrated into society.

Diagnostic scale of skills for interpreting the allegorical meaning of proverbs and sayings by children aged 5–7 years

The separate levels in the structure of the skills under research are clearly illustrated in the author's own Skill Scale for diagnosing the ability to interpret the allegory in proverbs and sayings, which is also a hierarchical projection of the system of criteria and indicators the research uses.

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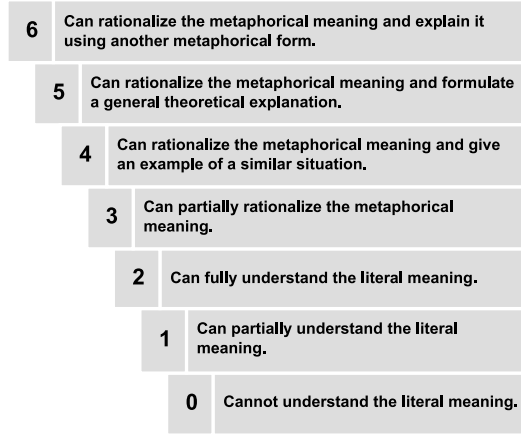
Figure A: Diagnostic scale of skills for interpreting the allegorical meaning of proverbs and sayings



The skill scale is an ordinal one – each level surpasses the previous one and represents a higher stage of development of the skills. The form of the scale allows each separate level to have its own rating (ranging from 0 to 6); reasonably, the higher levels are given higher ratings (values). This kind of scaling allows the use of more powerful statistical methods for analysis. (Regardless of the level, the uniqueness of the child's interpretation of the allegorical meaning is also taken into account when grading each case. Although unique interpretations are graded with 0 according to the scale, they are indicated with 0* and are subjected to further qualitative analysis.)

The scale represents the stage-by-stage process of building the skills for interpretation of the allegory in sayings and proverbs in a fragmented, but at the same time coherent and consistent way, bearing in mind that each child *starts from* and *ends at* different stages when developing said skills.

Methodology: methods of data collection and data analysis

The research methodology has been structured in accordance with the objectives and hypotheses of the research and has been directed towards

solving the problems laid out at the start. The methodology includes the following main methods, which are being applied to different stages of the psychological-pedagogical research:

1. Research and analysis of the relevant literature.
2. Pedagogical observation.
3. A non-disruptive psychological-pedagogical experiment was used as a basic research method; it was realized in three stages – Ascertain, Build, and Control.
4. For gathering "input" and "output" data concerning the level of rationalization of the metaphorical structures by 5–7-year-old children, a specially-designed **diagnostic procedure** was used during the Ascertain and Control stages of the experiment, consisting of an adapted *interview method,* during which twenty specially selected proverbs and sayings were shown to the children, who were asked for a verbal explanation; the answers were evaluated using the custom diagnostic skill scale created by the author.
5. In order to collect the information necessary for proving the connection between *comparison skills* and *ability to interpret allegory in proverbs and sayings* (second subhypothesis), the "Comparison" subtest of the Readiness for School Test was used. This test was developed and standardized by Felianka Stoyanova (Bizhkov & Stoyanova, 1997). The "Comparison" subtest consists of a comparison between ten pairs of pictures; the child is asked to find similarities and differences in each pair.
6. In order to collect the information necessary for proving the connection between the development of *abstract thinking* and *ability to interpret allegory in proverbs and sayings* (third sub-hypothesis), the author has used a modification of a method by A.Z. Zak, created by F. Stoyanova (1990); this method incorporates a collection of 19 syllogisms and in this article will be referred to as *"Zak's Test".*
7. *Discourse analysis* for evaluating the children's answers according to the Skill Scale.

8. Statistical methods for analyzing the results collected according to the Skill Scale.

Methodology: organization of the psychological-pedagogical experiment

Pedagogical observation is the main method for researching the key role comparison skills and abstract thinking PLAY in allegory interpretation skills; during the period from January 2000 – October 2012, the author had weekly observations of pedagogical situations and children's free choice activities in kindergartens during sessions with students preparing to be preschool teachers. In order to discuss quantitative data on the purpose of the research, the current paper uses some data and correlations from an older psychological-pedagogical experiment which have not been discussed or published in the proposed way. The experiment was performed over an 8-month period from September 2002 to May 2003, and involved a total of 104 Bulgarian children, aged between 5.4–7.3 years, divided into three Experimental Groups (EG1 and EG2 from Kindergarten No. 99 in the Bulgarian capital city of Sofia, and EG3 from Kindergarten No. 2 in the small Bulgarian town of Montana) and one Control Group (CG1 from Kindergarten No. 65 – Sofia). The experiment took place in three stages – Ascertain, Build, and Control.

In order to have a wider range of comparison available, the author included in the research an additional Control Group of 9-year-old children (CG2) taken from various Sofia city primary schools. This group was researched only in the initial stage in order to finalize the diagnostic instrumentation and to confirm some tendencies in the child's psychological development concerning the skills under research.

Each of the research groups consisted of 26 children. The group members were selected randomly, but all four groups of 5–7-year-old children had at least two things in common: they all came from public kindergartens, and they were all educated according to the "Educational Program for children from 2 to 7 years old", developed by Elena Rusinova

et al. (1993). The parents of the children participating in the research were informed of the experiment and gave their explicit consent beforehand. The experimental work was carried out by graduate students from the pre-school education speciality, while the skill-building programme was implemented by the Experimental Group children's tutors under methodological supervision of the author.

The objective of the Ascertain stage of the experiment was to ascertain the level of rationalization of the allegory of proverbs and sayings by the children under research before they underwent specific intervention towards this end, so that after the application of the Build stage, the same method and the same instrumentation could be used to determine whether the experimental pedagogical interaction has had any effect, and if so, how successful it has been. This allows comparison between the Ascertain stage and the Control stage using the same skill scale, in order to show the development of the skills under research.

It is important to note that, during the Build stage, the teachers were not allowed to make conscious, premeditated use of any of the 20 sayings and proverbs used in both Ascertain and Control stages.

During the Build stage of the experiment, the author's specially-developed model for pedagogical interaction towards building skills for interpretation of the allegory in proverbs and sayings by children aged 5–7 years was applied. The conceptual and technological details of this model will be the subject of a separate publication by the author.

Starting positions of the statistical analysis of the results

The numerical expressions of the results of this psychological-pedagogical research were further analyzed statistically using the *SPSS 11.5* and *Microsoft Excel 2000* software packages.

As a general **measure of central tendency** for this research with regards to the Skill Scale results, we are using primarily the **mean value.**

The statistical **null hypotheses** were the following:

1. Regarding the values on the Diagnostic Scale for allegory interpretation skills of children aged 5–7 years, **the distribution and mean value of results** obtained at the control stage are not different to the distribution and mean value from the ascertain stage. This hypothesis was further applied specifically to each experimental group, as well as three age subgroups within the range of 5–7 years.
2. There is **no connection between the mean value of the Diagnostic Scale for individual children and their results in the "Comparison test"** subcategory of the Readiness for School Test.
3. There is **no connection between the mean value of the Diagnostic Scale for individual children and their results in "Zak's Test".**

In order to examine the hypotheses, the following statistical methods were used:

1. **Chi-square goodness-of-fit test** and **Chi-square comparison of the distributions of the same variable in two paired or related samples.**
2. **Student's t-test for comparison of mean values** for related or independent samples.
3. **Dispersion analysis – ANOVA test** for comparing more than two mean values from independent samples.
4. **Correlation analysis** for investigating the connection between the Skill Scale mean values and the test ratings from the "Comparison test" and "Zak's test".

The application of the Chi-square method is always possible, regardless of the nature of the data. The other three methods are applicable only under certain circumstances. The most important prerequisite is **normality of the distribution**. Since the distributions under investigations are not normal (something that was ascertained by the Chi-square test), the question arises of how this fact will influence the results. From the rele-

vant literature, it is known that the t-criterion is only slightly affected when the normalcy condition is broken, so using the t-test is possible. Dispersion analysis, however, is strongly affected by this condition. Therefore, wherever dispersion analysis has been used, additional checks have been made on differences between mean value pairs using the t-criterion. Finally, breaking the normalcy condition when applying correlation analysis has been offset by using Fisher's Z-transformation method.

Presentation and analysis of the research project results

First of all, we checked the null hypothesis that the distribution and mean value of the results obtained at the control stage are not different to the ones from the ascertain stage. As is evident in *Fig. B,* the Ascertain stage Skill Scale mean value for all three experimental groups is 1.78, while the Control stage mean value is 3.43. The difference of 1.65 is a statistically significant one (the t-criterion level of significance is less than 0.01). This means that applying the program for skill building to the experimental groups has resulted in a statistically significant increase. By comparing results for each experimental group individually, we can see that this conclusion is still valid (results are presented in *Table 1*).

Figure B: Level of development of allegory interpretation skill

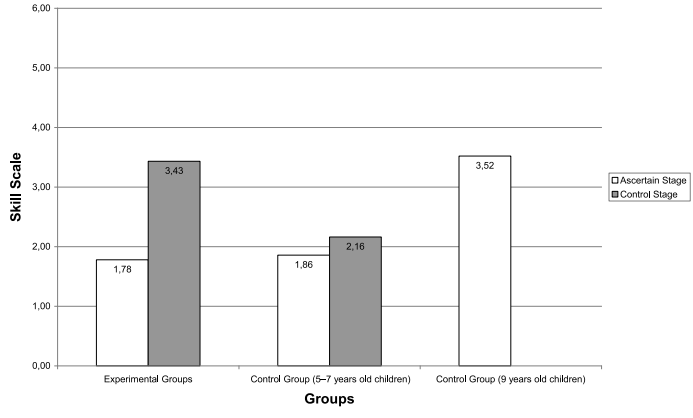


Table 1: Skill Scale mean values per group

Groups	Skill Scale mean values		Mean differences	Standard deviation of mean differences	Amount of interpretations (totals)	t	Significance level
	Ascertain stage	Control stage					
Experimental Group 1	2.28	3.48	1.20	1.91	520	14.38	0.000
Experimental Group 2	1.81	3.39	1.58	2.13	520	16.88	0.000
Experimental Group 3	1.25	3.43	2.19	1.88	520	26.58	0.000
Averages (Groups 1–3)	**1.78**	**3.43**	**1.65**	**2.01**	**1560**	**32.46**	**0.000**

The change in each of the three age subgroups from Ascertain to Control stage is also statistically significant (see *Table 2*). However, the dispersion analysis results indicate that all three age groups show a similar change ($F = 2.72$, Significance level = 0.066). Therefore, we can generally conclude that, for the Control stage, the Skill Scale mean value shows a statistically significant increase compared to the mean value from the Ascertain stage, which means the children have developed their allegory interpretation skills, regardless of their exact age (within the 5–7 years range) when starting the procedure.

Table 2: Skill Scale mean values per age subgroup

Average age at Ascertain stage	Average age at Control stage	Number of children	Ascertain stage	Control stage	Mean differences	Standard deviation of mean differences	Amount of intepretations (totals)	t	Significance level
6 years, 6 months	7 years, 3 months	25	1.92	3.43	1.51	1.97	500	17.12	0.000
5 years, 11months	6 years, 8 months	29	1.79	3.58	1.79	2.06	580	21.01	0.000
5 years, 4 months	6 years, 1 month	24	1.62	3.26	1.64	2.00	480	17.97	0.000
–	–	78	1.78	3.43	1.65	2.01	1560	32.46	0.000

The distribution of ratings for all three Experimental Groups is presented in *Fig. C* and *Fig. D.*

Figure C: Percentage distributions of children's interpretations on Skill Scale Experimental Groups in Ascertain stage

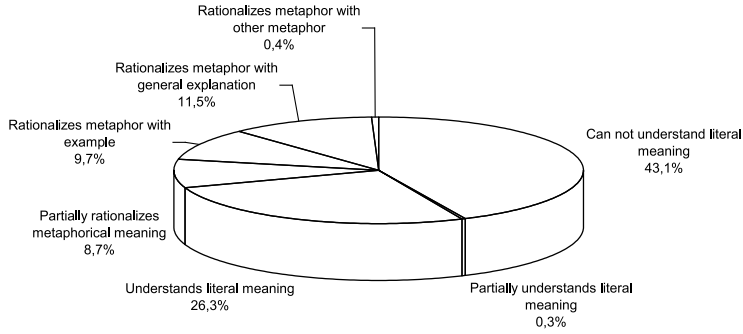
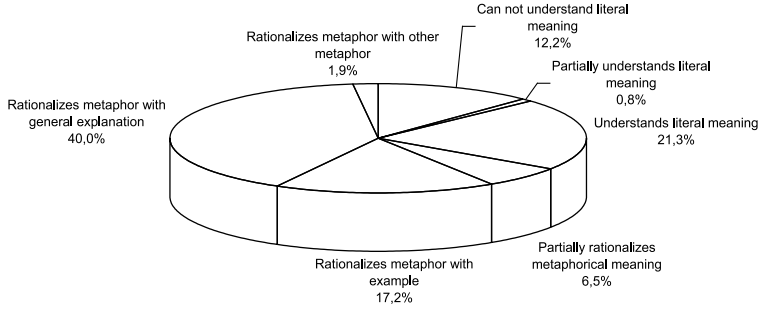


Figure D: Percentage distributions of children's interpretations on Skill Scale Experimental Groups in Control stage



The ascertaining experiment shows that the majority (43.1%) of 1560 total children's interpretations in the Experimental Groups (78 children interpreting 20 proverbial phrases) fall under Rank 0, or "Cannot understand

the literal meaning" *(Fig. C)*. This could be attributed to a lack of life experience, a factor that would have helped the child understand the literal meaning, at least. Even when this kind of experience is at hand, another cause for this could be a lack of understanding of the grammatical structure of the phrases and words. This is made possible because of the intricacies of artistic speech, and more specifically, sayings and proverbs, where there is often a balance between syntax totalities, separated by pauses or specific methods of spoken delivery in order to achieve a measure of rhythm. Some of the methods of poetic syntax used in proverbs and sayings, like intonation, inversion (i.e. changes in the customary position of speech parts), repetition etc., are hard for children to understand and are frequently a major obstacle in the child's way toward understanding even the literal meaning of the phrase, let alone the metaphorical one.

The Control stage *(Fig. D)* presents a very different picture. Here, the percentage of children's interpretations rated with the zero rank has decreased from 43.1% to 12.2%. The majority of answers this time are those that show adequate interpretation of the proverb or saying using a general theoretical explanation – the percentage of those answers has increased from 11.5% to 40%. In other words, it can be said that the inability to understand the proverbial phrases in the first stage has exchanged places with the ability to form a general theoretical explanation in the last stage. This can be seen in *Fig. C* (the dotted texture slice representing the "Cannot understand the literal meaning" percentage) and *Fig. D* (the brick texture slice representing the "Rationalizes metaphor with general explanation" percentage). As a whole, these two figures show that, while during the Ascertain stage the majority of answers fall under Rank 0 "Cannot understand the literal meaning" and Rank 2 "Understands the literal meaning" (decreased later from 26.3% to 21.3%), during the Control stage most answers are rated "Rationalizes metaphor with example" (increased from 9.7% to 17.2%) and "Rationalizes metaphor with general explanation". The same tendencies can be seen when examining each of the Experimental Groups individually, as well as in the Control Group of children from kindergarten. In all of the groups there are similar percentages of an-

swers rated "Understands the literal meaning", in both the Ascertain stage (around 26.3%) and the Control stage (decreased to around 21.3%, in most cases giving way to better-rated answers). On the whole, this confirms our theoretical supposition that understanding the literal meaning is the basis for building the ability to interpret the allegory, which means that during the formation of those skills, the literal meaning "organizes upon itself" the following stages.

If we tabulate the differences between answer rankings from the Ascertain and Control stages and express them in percentages *(Table 3),* we can see that only 5% of the answers show a negative change, i.e. answers in which children have been ranked lower during Control. *Table 3* shows the same change in the number of children's answers – the ones who have lower ranks are shown in the black cells. This decrease could be attributed to many causes, some of which could be the following:

1. Although he has tried to rank the answers as objectively as possible, the experimenter might have made a mistake.
2. Some negative variations in ranks are considered normal and explainable; 16 answers have moved from Rank 5 (rationalizes metaphor with general explanation) to Rank 4 (rationalizes metaphor with example), while further 3 answers have moved from Rank 6 (rationalizes metaphor with other metaphor) to Rank 5. Regardless of the decrease, these answers still indicate an understanding of the metaphorical meaning.
3. There are 2 cases in which a child has given a Rank 3 answer (can partially understand the literal meaning) during the Ascertain stage, but has answered with his/her own, unique answer during the Control stage. This latter answer is ranked 0 (cannot understand the literal meaning).

Regardless of the cause, the percentage of negative differences is small enough to be explainable by some kind of mistake during the application of the pedagogical interaction in the Build stage.

Table 3: Distribution of the differences in children's answers between the Ascertain and Control stages

Experimental Groups (1–3)			
Difference	**Number of answers**	**Percentage**	**Cumulative Percentage**
–6	0	0%	0%
–5	6	0%	0%
–4	4	0%	1%
–3	11	1%	1%
–2	22	1%	3%
–1	30	2%	5%
0	591	38%	43%
+1	110	7%	50%
+2	300	19%	69%
+3	162	10%	79%
+4	96	6%	85%
+5	214	14%	99%
+6	14	1%	100%
Totals	**1560**	**100%**	

Even though 38% of all the answers show no change in rank, this should not be taken as an indication of the ineffectiveness of the skill-forming program, since this percentage includes answers indicating an understanding of the metaphorical meaning even in the Ascertain stage – in other words, they are answers given by children who have been ranked 4, 5 or 6 on the Skill Scale at the start and subsequently, during the Control stage, have given answers close to their original ones. As the grey cells in *Table 4* show, 69 of the children's answers have retained their Rank 4, while a further 141 of them have retained Rank 5.

As is evident in *Table 3,* 19% of the children's answers have gained 2 ranks; 10% have gained 3 ranks; 6% have gained 4 ranks, while 14% have gained 5 ranks! This means that in 14% of all the answers after the application of the skill-forming program, the children have developed

their skills from Rank 0 (cannot understand the literal meaning) to Rank 5 (rationalizes the metaphor with a general explanation) – this can also be seen in *Table 4,* where a total of 214 children's answers which have increased in rank can be seen in the white cells.

Table 4: Changes in Skill Scale rank of children's answers between the Ascertain and Control stages

Ascertain Stage	Control Stage							Total
	Rank 0	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	
Rank 0: Cannot understand literal meaning	165	10	160	16	93	214	14	672
Rank 1: Partially understands literal meaning	1	0	2	0	1	1	0	5
Rank 2: Understands literal meaning	13	2	152	18	81	142	2	410
Rank 3: Partially rationalizes metaphorical meaning	2	0	6	60	9	55	3	135
Rank 4: Rationalizes metaphor with example	4	0	4	2	69	68	4	151
Rank 5: Rationalizes metaphor with general explanation	6	0	9	5	16	141	3	180
Rank 6: Rationalizes metaphor with other metaphor	0	0	0	0	0	3	4	7
Total	191	12	333	101	269	624	30	1560

The data in *Table 4* actually proves one of the sub-hypotheses of this research – that there is a natural consistency in the process of building the skills under research: from not being able to understand even the literal meaning of the phrase (if there is one), through the stage of understanding it, followed by an initially partial, eventually full, deduction of the metaphorical meaning, which is illustrated by giving an example of a particular situation to which it applies, or by formulating a general

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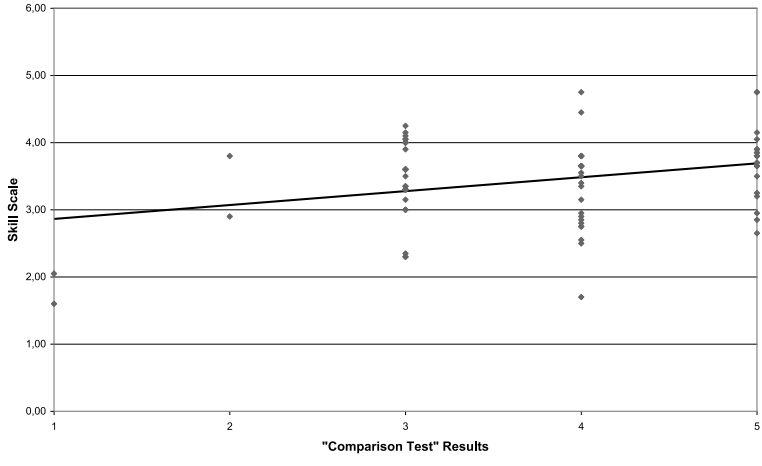
theoretical interpretation of the sentence's allegory. This is mostly evident by the fact that 57% of all the answers show a positive change, moving up one to six ranks. In addition to this, as already noted earlier, *only* 5% of the answers have decreased in rank, i.e. 5% of them (answers, not children) have not developed or remained in the same category, but have stepped backwards, while 38% of the answers remain unchanged in rank (but these are, as we have already shown, mostly answers from the higher ranks – a total of 274 answers that have retained their Rank 3, 4, 5, or 6, versus 317 answers that remained in Ranks 1, 2, and 3).

The second statistical null hypothesis states that there is no connection between the mean value of the Diagnostic Scale for individual children and their results in the "Comparison test" subcategory of the Readiness for School Test. Applying a correlation analysis can prove the existence of a connection between the skills for interpreting allegory in sayings and proverbs and the skills for comparison, as seen in *Fig. E.*

Figure E: Correlation between "Comparison Test" Results and Average Skill Scale Value

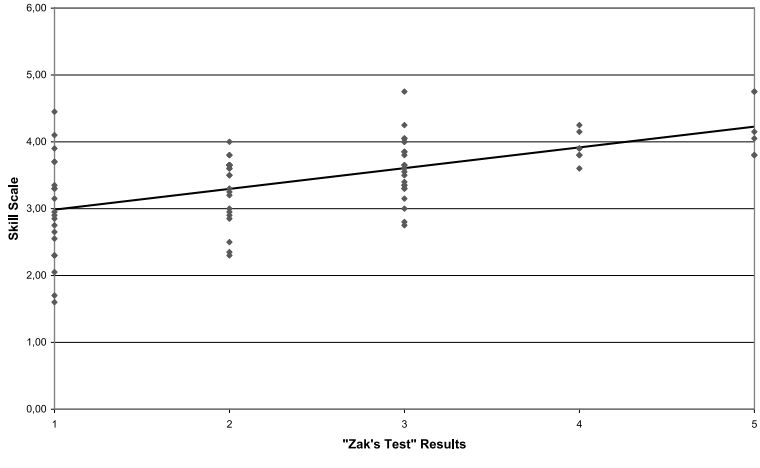


There is a statistically significant connection, whose level can be measured by the correlation coefficient R – in this case R=0.30. According to one of the measuring scales for interpreting the correlation coefficient

(Goev, 1996, p. 151), values of R between 0.00 and 0.30 indicate a weak correlation, whereas values between 0.30 and 0.70 suggest a moderate correlation. A more precise interpretation scale (Dimitrov&Yanev, 1998, p. 310) has values of R between 0.00 and 0.30 indicating a weak correlation, while values between 0.30 and 0.50 suggest a moderate correlation. The R-value sign shows that higher ratings in the Comparison Sub-test of the Readiness for School Test correspond to higher mean values in the Skill Scale and vice-versa (keeping in mind that the Test results are graded in 5 ranks, Rank 5 being the highest). In other words, there is a statistically significant correlation between the ability to interpret allegory in proverbial phrases and the skills for comparison that, according to the correlation coefficient interpretation scales, can be defined as a positive correlation bordering between weak and moderate in strength.

The third statistical null hypothesis was that there is no connection between the mean value of the Diagnostic Scale for individual children and their results in the "Zak's Test". The existence of a connection between the ability to interpret allegory in proverbs and sayings and the development of theoretical thinking can once again be shown using correlation analysis *(Fig. F)*.

Figure F: Correlation between "Zak's Test" Results and Average Skill Scale Value



There is, once again, a statistically significant correlation. In this case, R=0.56. According to the first of the aforementioned scales for interpretation of the coefficient, values between 0.30 and 0.70 indicate a moderate correlation, whereas according to the second scale, values between 0.50 and 0.70 suggest a strong correlation. The R-value sign once again shows that higher rankings in "Zak's Test" correspond to higher mean values on the Skill Scale and vice versa. In other words, there is a statistically significant connection between the ability to interpret allegory in proverbial phrases and the skills for theoretical thinking that, according to the correlation coefficient interpretation scales, can be defined as a **significant positive correlation**.

When analyzing the results, it is interesting to note that proverbs and sayings are not equally easy to interpret by children. In order to see if this can be proven statistically, we have formulated an additional statistical hypothesis: that proverbs and sayings are equally easy or difficult for children to assimilate, i.e. the mean Skill Scale value for the 13 proverbs is not significantly different from the mean value for the 7 sayings.

Table 5: Mean Skill Scale values for 13 proverbs and 7 sayings for all Experimental Groups.

Metaphorical sentences	Skill Scale mean values		Mean differences	Standard deviation of mean differences	Amount of interpretations (totals)	t	Significance level
	Ascertain stage	Control stage					
Proverbs	1.53	3.04	1.51	1.99	468	16.41	0.000
Sayings	1.89	3.60	1.72	2.02	1092	28.04	0.000
Averages (both)	1.78	3.43	1.65	2.01	1560	32.46	0.000
Statistical significance of the difference between sayings and proverbs						1.83	0.034

The change for both proverbs and sayings is statistically significant (see *Table 5*). At the same time, the change for proverbs is significantly

smaller than the change for sayings. This can be taken to mean two things: that sayings are harder for children to understand and assimilate, or that sayings are harder for children to assimilate verbally when spoken out of context. Since the latter is always true for this research method, and taking into account research into the relevant literature, it can be assumed that this is, in fact, the reason. In other words, this diagnostic procedure necessitates interpretation of metaphorical sentences spoken out of context and this, along with the differences between the two genres regarding their logical content and syntactic structure, means that a proverb has a better chance of being adequately interpreted by children than a saying, because the saying, by its very nature, is not a self-sufficient logical or syntactical whole.

Conclusions

By combining viewpoints from the areas of psychology, pre-school education, language tuition and literature theory, the psychological-pedagogical research project discussed in this publication has outlined the development of skills for the interpretation of the allegorical meaning of sayings and proverbs in children aged 5–7 years. A key moment in the skill development process was the adoption of Vygotsky's formulation of the differentiation between the concepts of *meaning* and *significance,* as well as the current psychological theory concerning the circumstantial nature of people's experiences.

The outlined psychological-pedagogical prerequisites for building the skills under research were sought in the development of the child's psyche in general, giving special attention to children's mostly visual comparison abilities, as well as early indications of abstract thinking in the ages under research.

While in the beginning we relied on the scientific literature in order to formulate the hypotheses, after completing this research project and receiving the experimental data analysis results, we can derive the following main **conclusions:**

1. This research project has proved the adequacy of the criteria and indicators used for it and hierarchically displayed in the *Diagnostic scale for interpretation skills of allegory in sayings and proverbs*. The natural development in the process of building the skills under research is the following: from not being able to understand even the literal meaning of the sentence, through the stage of understanding it, followed by an initially partial, eventually full, deduction of the metaphorical meaning, which is illustrated by giving an example of a particular situation to which it applies, or by formulating a general theoretical interpretation of the sentence's allegory.
2. The use of the uniqueness of each child's interpretation of the allegory as an additional criterion is necessitated by the need for observing and encouraging each child towards realization of the practical importance of pedagogical situations. The registration and research of those self-contained interpretations is valuable material which can assist not only the analysis of each child's thinking and speech processes, but also the detection of general tendencies in the mechanism of realization of the allegorical meaning.
3. By observing the process of pedagogical interaction and taking into account the results of this psychological-pedagogical experiment, the dynamic of building ability to interpret the allegorical meaning of sayings and proverbs in children aged 5–7 years was outlined. In relation to this, the process by which the child reaches an adequate interpretation of the allegory is divided into two main levels: moving, on one level, from the literal to the metaphorical meaning of the saying or proverb, while on the other level (that of the allegory), moving from the child's own personal *significance* of the allegory towards the commonly, socially-accepted *meaning* of the phrase. It is therefore apparent that the teacher has to *lead* the child in this process.
4. By taking into account the specifics of the saying's and proverb's genre, it was noted that a child with better-developed compari-

son skills exhibits better development of the *ability to interpret the allegorical meaning of sayings and proverbs.* Therefore, it is advisable to work towards developing children's comparison skills from the start of the pre-school period of their lives – in accordance with the typical way of thinking for that age.

5. The results of this psychological-pedagogical experiment have shown that, bearing in mind the image-based way of thinking which is characteristic for children aged 5–7 years, promoting visualization as a principal stage of the process of building skills for the interpretation of the allegorical meaning of sayings and proverbs allows for the transformation of those skills using basic forms of abstract thinking. In this aspect, it should be noted that restructuring the problem from a verbal form to a visual one facilitates the adequate interpretation of allegory. A pedagogical interaction process specifically aimed at developing the skills under research can be optimized by incorporating suitable visual material that illustrates allegory.
6. During the ascertaining stage of the experiment, the largest percentage of answers (43%) were those showing that the child does not understand the meaning of the proverb or saying, while during the control stage most of the answers (40%) displayed an adequate general-theoretical interpretation of allegory by the child. Therefore, when treating the problem of interpreting allegory in direct connection with the development of the child's cognitive structures, we can discern a predominant correlation between the development of *abstract thinking* and the development of *the ability to interpret the allegorical meaning of sayings and proverbs,* especially at the end of the pre-school period. The analysis of this two-way connection has confirmed the importance of the skills under research for pre-school age children, not only as an indication of language competence, but as an overall achievement in the child's cognitive development. Therefore, the importance of laying the foundation for development of the skills under research during the ages of 5–7 years is a result of all the

psychological-pedagogical basics acquired by the child during this period – especially the development of comparison skills and elementary abstract thinking.

7. Even though it is a rare occurrence, the adequate explanation of one proverbial phrase through the use of another (something more frequently seen during the control stage in comparison to the ascertaining stage) shows that, when interpreting certain sayings or proverbs, some children can reach the highest level of development of the skills under research, something closely related to those children exhibiting a level of language competence which allows the child not only to *rationalize* the metaphorical meaning of a saying or proverb, but also (and without any further prompt) to give an explanation of the allegory using a metaphorical sentence similar in meaning.
8. At the end of the pre-school period, the unique, self-contained interpretations of allegory have diminished in number by 1/3 and by the age of 9 years there are none. This confirms the necessity of using the originality and uniqueness found in children aged 5–7 years as a means of developing the skills under research. Originality can be found in children even before the age of 5, but in most cases the child's abstract thinking isn't developed enough to help the child *adequately understand or rationalize the meaning* of a saying or proverb. When children reach 8–9 years of age, they have a well-developed skill of abstract thinking, but their interpretations lack the originality and uniqueness present in earlier years. It is that uniqueness which, when properly directed by the teacher, can help the child "endure" the metaphorical mechanisms, so as to be able to adequately interpret them.
9. Regarding the differences between a saying and a proverb, sayings are considered harder to interpret by children, mostly because of their specific logical structure. Proverbs, being in most cases a *sentence of deduction,* are easier for children to rationalize, even when spoken out of context. On the other hand, sayings are *situational expressions* so understanding their metaphorical

meaning requires a deeper elaboration on the context, on more levels than just the verbal delivery.

10. As already stated, towards the end of the research period, the ability to interpret the allegorical meaning are ever more clearly correlated with the development of *abstract thinking*. Therefore, the proposed diagnostic skill scale could be used not only for evaluating children's levels of allegory interpretation, but also as a gauge for a more general cognitive development of the child.
11. While building the ability to interpret the allegorical meaning of sayings and proverbs, children also develop *the ability to adequately understand the metaphorical forms in both artistic and everyday speech*, not just in the folk genre under research.
12. The sensory experience, cognitive and behavioural strategies of 5–7 year-old children are an important basis for adequately interpreting allegory, but they can also be enhanced as a result of proper teacher intervention towards that goal. In other words, *building the ability to interpret allegory has a positive effect on the overall psychological development of children.*

The modern way of life has generated new educational ideas and new ways to implement them, sometimes for the better, other times for the worse. Understanding how to use our cultural inheritance as a starting point from which to spread our wings towards new horizons is a possible key to success. The current paper shows that we could use proverbs and sayings as guides for "teaching" children how to interpret allegory in everyday life. By combining traditional with modern elements, we can preserve our birthright while keeping pace with the dynamically changing world around us.

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Abstract:

This publication shows the potential of pre-school age children to understand and use allegory, focusing specifically on the core of the ability to interpret the allegory of proverbs and sayings. A connection between *comparison*

skills and *allegory interpretation skills* has been statistically proved, confirming that the image-based way of thinking is typical for the ages under research and allowing us to define visualization as a principal stage in the process of getting to the meaning of allegory. The publication also gives statistical arguments which support a connection between the development of *the ability for abstract thinking* and *allegory interpretation skills,* i.e. a child with better-developed abstract thinking ability will display a higher capacity for interpreting allegorical meanings.

Keywords: allegory, pre-school age, proverbs and sayings, comparison skills, abstract thinking.

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REPORTS & REVIEWS

Bożena Sieradzka-Baziur (reviewer)

Review of the publication: Krystyna Zabawa, The Story Begun. Polish Children's Literature after 1989 and Contemporary Culture

Last year, WAM Publishing House issued an interesting monograph by Krystyna Zabawa entitled, *The Story Begun. Polish Children's Literature after 1989 and Contemporary Culture*, which is a compendium of knowledge about children's literature written in the two decades from 1989 to 2009, analysed in the context of our rapidly changing modern culture with special emphasis on contemporary literature. The primary sources bibliography illustrates the abundance of poetry and prose literary texts aimed at readers aged between 3 and 10 years which were published in Poland during that period. In the bibliography, the author lists more than 150 titles by over 50 writers of texts for children, and she points out that she selected only some items to be included. K. Zabawa analyses children's literature by well-known authors such as P. Beręsewicz, B. Gawryluk, D. Gellner, R. Jędrzejewska-Wróbel, G. Kasdepke, A. Onichimowska and many others.

In Part I, the author discusses the contemporary children's book from the point of view of its integrity. It is an integral work comprising both text and picture, and sometimes also sound. K. Zabawa states that, "enriching a literary text with a picture and sound, and even adding a video to it, results in greater autonomy of child recipients. They are no longer totally dependent on adult intermediaries of literature" (p. 43). The monograph extensively describes illustrations in children's books. The images include forms such as collage, cut and paste picture, torn paper collage, linocut, contour drawing, and reproduction. K. Zabawa observes, "By analysing illustrations, readers have the opportunity to discover the plastic alpha-

bet, learn about a line and a point, a contour, a spot and chiaroscuro, a texture, primary colours, derivatives, broken, hot and cold colours…" (p. 62). An extensive description of the famous Polish illustration school definitely captures the reader's attention in the reviewed monograph.

The monograph also examines the issue of dual *address* in literature referred to as children's literature, which is also a subject of interest for grown-ups. Seeking the reasons for this phenomenon, K. Zabawa observes, "Perhaps more and more people are trying to write, as declared by some, for an 'inner child in themselves,' or, like C.S. Lewis, they put their 'adult' problems in a 'child' form, which they consider to be the only right form (pp. 100–101).

Part II of the monograph is an analysis of children's poetry in the context of contemporary poetic themes and phenomena. K. Zabawa discusses poetry by J. Kulmowa, M. Brykczyński, T. Ross, Z. Ożóg-Winiarska, J. Winiarska and many other poets. The monograph includes, among others, an analysis of poems targeted at children that explore existential issues such as suffering, evil in the world, transience, death, visions of the afterlife, and premonitions of "the other side." It is worth quoting one of the many poems targeted at children which are cited in the work:

a shiny window in heaven
what it opens to – ideas million and seven
to the world on the other side?
all silver and green dyed
in this strange world maybe
there are children and a baby
to ask it's not a blunder
and what is on the other side to wonder

Z. Beszczyńska (p. 124)

In her work, the author discusses word play in children's poetic texts, stating that so-called linguistic poems test language and speech possibilities, as unexpected word juxtaposition provokes a recipient to search for different meanings.

In Part III, the author describes recent children's prose, taking into account contemporary trends in literature. She presents the works of an older generation of writers (e.g. W. Chotomska, H. Krall, J. Papuzińska) and literary texts by such renowned authors as P. Boręsewicz, R. Jędrzejewska-Wróbel, B. Gawryluk, G. Kasdepke, M. Strzałkowska and many, many others. Prose for the youngest of readers is mainly represented by fables, fairy tales, as well as realistic and fantastic stories, and stories from contemporary children's lives. K. Zabawa also describes educational children's books which, thanks to their literary form, make child readers more familiar with history, nature, geography, language, and mathematics. The most popular contemporary writer who attempts to educate through literature is G. Kasdepke.

A new phenomenon in Polish children's literature is the examination of matters related to sex education, death, suffering, physical or mental disability, as well as separation and divorce. This trend is represented by authors such as A. Onichimowska, M. Brykczyński, R. Jędrzejewska-Wróbel and others. The author of the monograph draws attention to the semantics and presentation of the contents, writing:

"The paradox of children's literature in the 21st century lies in the fact that, on the one hand, it 'censors' adaptations of traditional tales, depriving them of motifs and themes that arouse fear and sometimes merely sadness, while on the other hand, it actually introduces more and more such items to the original children's books, especially in the stream of realism" (p. 219). The narrator of today's prose for children is often a first-person narrator, who may be identified with the author of the text. The author observes that children's book writers often undertake challenges similar to those faced by the creators of literature meant for adult readers. They want to maintain contact with readers, and "unclear" and "non-obvious" endings in these texts fulfil the postulate of "open" work. In this way, "a child is being initiated step-by-step into the art of word and obtains the keys to the literary realm of imagination" (p. 244). In addition to a first-person narrator, narration in children's literature is often performed by the main character. In her interesting work, K. Zabawa also looks at the recently popular subject of gender roles in children's literature, in-

cluding the issue of gender's presence in the narration. She shows that male authors eagerly emphasise their gender role, in particular pointing to the experience of fatherhood. K. Zabawa also observes that contemporary female writers of children's stories and novels often use a boy as a character-narrator (cf. books by J. Olech, R. Piątkowska, D. Suwalska and others).

The reviewed monograph will certainly be praised by literary scholars, including children's literature researchers, Polish teachers, early childhood and preschool education teachers, educational programme creators, students, and pupils. Literary scholars will undoubtedly appreciate the subtle analyses of recent children's works, promoters of students' theses will find inspiration to create their proposals for study projects, while teachers, students, pupils, and everyone else will discover a valuable teaching aid that they have been lacking in this area for a long time. Last but not least, I hope the author continues *The Story Begun*, and presents further subtle analyses of constantly developing literature for the youngest of readers.

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Krystyna Zabawa,
"The Story Begun. Polish Children's Literature after 1989 and Contemporary Culture"
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Review of the publication: Ľudmila Liptáková, "Kognitívne aspekty vyučovania materinského jazyka v primárnej edukácii" [Cognitive Aspects of Teaching Mother Tongue in Primary Education]

The monograph, *Cognitive Aspects of Teaching Mother Tongue in Primary Education* (2012), is another significant publication by Ľudmila Liptáková, a Professor in the Department of Communicative and Literary Education at the University of Prešov. The book is a synthesis of the author´s theoretical and empirical research in the field of linguistics and language pedagogy, which includes the results of numerous scientific and research projects. The aim of the publication, as stated by the author, is to analyze and interpret such aspects and relations of language-communication education that are based on the relationship between language and cognitive abilities of pupils, and that intentionally lead to it.

Ľudmila Liptáková introduces a didactic conception of teaching the mother tongue, as a reaction to) the present-day educational system in Slovakia, and the current needs of pupils. Living in the knowledge society requires good communicative as well as mental flexibility, the ability to adapt to demanding conditions, critical thought and the creation of a strong system of moral values. For this reason, the author emphasizes a cognitive aspect in designing content and procedures for mother-tongue teaching. She points out that the inseparable relationship between language and cognition reflected in a child´s ontogenesis cannot remain without its reflection in language-communication education. In this regard, she presents convincing arguments and justifications in

favour of a cognitive approach in didactics of mother tongue for primary education.

The first chapter, entitled *Cognitive Aspect in Language-Communication Education,* deals with the relationship between language and cognition from the points of view of cognitively oriented linguistics, pedagogy and psychology, due to the fact that these disciplines are part of the conceptual curriculum of the mother tongue. Building on the analysis of the cognitive aspect, Ľ. Liptáková specifies the basic features of cognitive education of the mother tongue and explains the impact of applying cognitive linguistics to the educational process. The integrated development of the cognitive and communicative competence of pupils is an important part of the presented didactic conception. Special attention is paid to the stimulation of a pupil´s metacognitive processes in order to prepare him/her to communicate effectively, to learn and to live in a society as well. After presenting the linguistic, pedagogical and psychological conceptual starting points of cognitive education, the author shifts the focus to the cognitive taxonomy of educational objectives. This taxonomy serves as the basis for a cognitive approach to the categorization of language-communication curricula of the mother tongue.

The following subsection illustrates how the indicated conceptual starting points are reflected on the level of the didactic system. Ľ. Liptáková provides a look at the new didactic *Integrative Cognitive-Communicative and Experience Conception,* which was introduced in the collective publication *Integrovaná didaktika slovenského jazyka a literatúry pre primárne vzdelávanie* [*Integrated Didactics of Slovak Language and Literature for Primary Education*] (Liptáková et al., 2011). The author highlights the need for a new conception which would reflect the dynamics of changing social and scientific systems. The analysis and characterization of selected parts of the conception are supported by various domestic and international research sources as well as the author´s own research activities.

The second chapter, entitled *Cognitive Approach to Categorization of the Mother Tongue Curriculum*, deals with the structuring of curricula in order to make the learning process effective. As a reaction to the cur-

rent state of teaching the Slovak language in primary school, the author provides an overview of different criteria for categorizing curricula of mother tongue. The presented categorization of curricula is based on the categories of knowledge dimension in the revised Bloom´s taxonomy of educational objectives. The further subsections are devoted to the determination and categorization of the curricula, in particular content areas of teaching the mother tongue; meaning the areas of communicative competence. This involves the development of a pupil´s productive textual competence and receptive textual competence, as well as partial speech competences: phonetic-phonological, orthoepic, orthographic, morphological, lexical and syntactic competence. These competences represent the complex of a pupil´s abilities used in text reception and production. The focus is put on the practical application of presented metalingual and metacommunicative terms rather than on memorization of definitions.

In the third chapter, entitled *Reflection of Cognitive Function of the Language within the Content of Language-Communication Education*, the author presents the results of theoretical and empirical research exploring the possibilities of applying the principles of cognitive linguistics to the process of designing mother tongue curricula. Special attention is paid to text comprehension, especially comprehension of non-literary informational texts, as the key area of mother tongue curricula. Ľ. Liptáková argues that effective comprehension of any text requires the reconciliation of language and cognitive processes as well as the stimulation of metacognitive processes. Many of the author´s research findings are presented as recommendations for developing the comprehension of informational (instructional) texts by primary school pupils. In this regard, word-formation motivation is considered to be a reception support and one of the possible means of text comprehension. Research findings and their implications are applicable in the development of a pupil´s reading literacy as well as in the development of his/her general learning skills.

The subsections that follow detail the possibilities of language-communication education in order to demonstrate the cognitive function of language through the use of vocabulary. To reveal the formation of

a pupil´s linguistic picture of the world, the author has applied a prototype approach focused on the connotative meaning of lexical items. Building on the results of derivative research and using metaphoric derivatives, she also projects the way of developing a conceptual system for primary school pupils.

The final chapter, entitled *Cognition in Language-Communication Education*, deals with the subject of didactics and analysis of educational process from the viewpoint of the cognitive and communication framework, "Evocation – Realization of Meaning – Reflection", and the significance of its application in the parallel development of a pupil's communicative, cognitive and metacognitive abilities. The result of the author´s effort to create and introduce the conception of cognitive education of mother tongue can be found in the final summary, in which she proposes the procedure for designing the integrated development of primary school pupils' language and cognitive abilities.

Prof. Ľudmila Liptáková's monograph provides deep insight into the didactic conception of teaching the mother tongue, emphasizing the cognitive aspects of education. It is based on the author´s theoretical and empirical research, which is presented as arguments supporting the application of a cognitive approach. As the author finally concludes, by preferring cognitive aspects of education, she does not deny other aspects of complex development of any person. Cognitively oriented didactics of the mother tongue and intentional stimulation of pupils' language and cognitive abilities are presented as a precondition for success not only in educational, but also in everyday-life situations. For this reason, we consider this monograph to be an important and significant publication dealing with still very current questions of effective teaching and learning processes. Its contribution lies in its many professionally and clearly formulated recommendations, suggestions and instructions that can be appreciated by the scientific community as well as students and teachers of Slovak (or generally of any other) language in primary school. Using the Slovak language material provides an opportunity to compare the conception with lingual-didactic concepts of different mother tongues. Moreover, many new and valuable theoretical inspirations and starting

points offer a perspective for further investigation, development or even application in the area of theory and practice of teaching the mother tongue.

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Ľudmila Liptáková
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