

Gramotnost, pregramotnost a vzdělávání

Odborný recenzovaný časopis zaměřený na problematiku
čtenářské, matematické, informační a přírodovědecké
gramotnosti a pregramotnosti

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Univerzita Karlova, Pedagogická fakulta
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Dear readers,

once again, the year has ended and another English issue of our journal is being released. From the beginning of our preparations, we decided to have this monothematic issue open to all authors dealing with current issues of educational literacy. In line with the objectives and focus of the journal, when selecting articles, we have sought to create an interdisciplinary platform to share findings not only across educational areas but also across scientific disciplines. We are therefore pleased with the diversity of the contributions we managed to include in the third issue of 2018. We also appreciate the fact that all the papers that were selected undoubtedly have a certain overlap with practice and can thus serve as an inspiration for the development of our pupils' literacy in schools. Let us now briefly introduce each of these articles.

In the first paper, which is the only theoretical paper in this issue, Michal Nedělka and Zuzana Selčanová introduce the contemporary concept of musical literacy, which stresses the complex character of musical literacy intersecting with the component of knowledge and

skills. In their review the authors pay close attention to the process of developing musical literacy and its impact on the development of the emotional sphere of the personality.

The following three articles all have the character of empirical studies.

Pavel Pešat, Ilona Pešatová, and Václava Tomická focus on the issue of the language development of first-grade pupils. The authors interpret the results of their study mapping the influence of different cultural backgrounds or living conditions on the development of the speaking skills of those children. The study explores pragmatic and social language skills in detail.

In the third article, Martina Fasnerová and Jitka Petrová assess and evaluate the level of reading literacy in children at the end of the first grade of elementary school. Since various approaches to teaching this are being applied in our schools in these days, the study compares the levels of reading literacy of three research groups: pupils being taught by means of the analytical-synthetic method, genetic method, and *Sfumato* blended reading method.

Similarly, the fourth article is also devoted to the issue of reading literacy.

Martina Škodová and Tomáš Slávik share their findings from a Slovak study comparing the level of reading literacy achieved by primary and secondary schools by using geographically oriented texts.

Finally, in their report Anna Kuchar-ská and Klára Špačková introduce the ongoing study Key Literacy Skills for Primary School Pupils - Diagnostic Battery. It is a norming study of a new assessment battery designed for counselling professionals to assess different aspects

of literacy skills in the broad context of environmental factors and reading self-concepts.

We thank all the authors for their interesting papers and the reviewers for their helpful remarks and comments, and we wish you, our readers, pleasant and thought-provoking reading!

Klára Špačková
editor

Musical Literacy

Michal Nedělka, Zuzana Selčanová

Abstract: The paper characterizes musical literacy in the context of classification and other types of literacy and characterizes its basic components. It shows musically pedagogical concepts that have become the basis for the contemporary concept of musical literacy. It introduces musical literacy as a set of competencies that developed essential pedagogical directions especially in the 20th century and shows that literacy despite the pedagogical complexity and relevance of these directions has a complex character interfering with the component of knowledge and skills. It further recalls that the development of musical literacy is supported by a number of teaching texts, but that development is to a large extent dependent on the quality of teaching. The proficiency of music education requires interaction. The text also draws attention to the fact that the development of musical literacy and the contact of the individual with the music that is necessary for this process leads to the development of the emotional sphere of the personality, which at present is of utmost importance for the overall development of the personality. The contribution also points to the development of musical literacy in the current school, and highlights the need for adequate preparation for future music teachers.

Key words: musical literacy, musical abilities and skills, musicality, functional literacy.

Introduction

Literacy, especially in terms of specific educational areas such as reading, numeracy, digital or financial literacy, is something that we have come to expect from current education. The term *musical literacy*, however, is not frequently used in relation to music education, at least not in the Czech Republic. All the more it seems the meaning of this term remains unclear. If we look at the content of music education more closely, we find elements

that can certainly be considered musical literacy, musicality, which includes musical abilities and skills, while knowledge of musical theory, aesthetics, history and understanding music as a listener or an active musician is secondary. This list of terms already shows that musical literacy is superior to musicality since it comprehensively covers more aspects of education. Different educational levels cover them at varying degrees whereby current music education practice focuses on activities – in other words a set of

skills. These do not, however, comprise all the competencies, which define literacy.

Functional Literacy

Originally, the term *literacy* defined abilities and skills closely related to a person's practical life. The initial understanding of literacy in the sense of the ability to read, write and count has significantly expanded over time and various scientific areas come up with their own definition of literacy. There are several factors that affect literacy in schools. Kropáčková et al. (2018) for example cites that the development of literacies concerns all teachers and all subjects.

Niklesová and Bína (2010) point to a new attribute in literacy - so-called *modern literacy*. This type of literacy means being absolutely well-versed in various written and spoken modes of communication for example. The ability to distinguish important and unimportant information is also important as is the ability to be able to clearly articulate one's thoughts and ideas. Each individual modern superstructure of literacy uses a more narrow definition according to goal and subject. Today, we are speaking about literacy in the following areas: reading, visual, information, civic, literary, linguistic, ICT, natural science, mathematics, geometry, physics, internet, art, drama or music (Framework Educational Program for Elementary Education, 2017).

The content of the term literacy as such is based on history. In the past, a literate person was able to communicate with others especially through writing. The ability to mutually understand one another is no less important today, however, its narrow definition of reading, writing and simple arithmetic does not nearly cover today's demands. A person today is able to envelop a wide spectrum of activities, some of which were not even known in the past. According to Wieger (2007), understanding literacy moves to a broader definition in the form of so-called *functional literacy*. It can be said that, "*functional literacy represents a set of knowledge, skills and abilities needed for the life of an adult in modern society.*" (Kováčiková, 2002, p. 45). According to Rabušicová (2002, p. 18), "*a functionally literate person is able to participate in all activities where literacy is necessary for functioning efficiently in society.*". In the educational context, the issue of functional literacy is especially significant because it relates to knowledge and abilities needed for living and for an individual's capability to make responsible decisions on their life's direction.

Literacy Research

Burdová and Matějů (1998) divide functional literacy into three components in the SIALS project National Report (Second International Adult Literacy Survey carried out in 1998 in the Czech

Republic as a second wave of the IALS research). They are defined accordingly:

1. *Prose literacy* – the ability to understand and make use of information obtained from written texts.
2. *Document literacy* – the ability needed to search and use information obtained from various types of documents (including job applications, payment slips, public transport schedules, maps, tables, charts etc.).
3. *Quantitative literacy* – the ability to work with numbers, to apply suitable mathematical operations to numerical data contained in printed texts such as charts, tables, as well as the ability to interpret this data. This e.g. includes filling in a purchase order, calculating tips etc. (Burdová & Matějů, 1998).

The IALS research project (International Adult Literacy Survey carried out internationally in 1994) was to prove that functional literacy is an important indicator of human capital, which cannot be replaced by the formal educational attainment indicator: functional literacy represents a continuum, which a person enters at a specific point according to the level of their ability to understand and work efficiently with specific information.

There are also several international comparative research studies with Czech Republic's participation. The RLS research (Reading Literacy Study, carried out in the Czech Republic in 1995)

focused on reading literacy; it examined 3rd and the 8th grade elementary school students. The TIMSS (Third International Mathematics and Science Study from the same year) research study also focused on these grade levels and examined the students' mathematical and natural science knowledge and skills. In 1999, the CivEd (Civic Education Study) research focused on examining civic education in 8th grade elementary school students and 3rd grade secondary school students. PISA research (from 2000) surveyed reading, mathematical and natural science literacy in children ages 15 and 17 as part of their reading literacy survey. In these questionnaires, students also stated how much time they spend on musical activities (e.g. playing a musical instrument, going to a concert etc.). The PPUČ (Supporting the Work of Teachers) project also draws attention to dealing with literacy across all school subjects. Teachers can share their observations on the development of literacy in various subjects in different grades on the <https://gramotnosti.pro/> online platform. Music education is missing here, however. The listed research studies do not focus on musical literacy as such but only touch on certain aspects of music education and do so only as part of other forms of literacies. The need to focus on musical literacy, which has its own potential to develop personality in terms of noetics, aesthetics and emotion is all the more apparent.

Musical Literacy – Definition

Musical literacy is a term that is not frequently used in the Czech Republic (see Introduction) nor is it commonplace in scientific literature. We can still find texts, however, which deal with this term and define it. Čiháková's bachelor thesis (2017) explains musical literacy and surveys its level (in this case in older elementary school children). The author references conclusions of research studies surveying musicality in school-age children in the 20th century, which focused on the perception of music. Her conviction that perceiving music is a decisive aspect of musical literacy is based on these theories (Čiháková, 2017). Nevertheless, she finally arrives at the conclusion that musical literacy is a compound of knowledge, ability and aesthetic skill, in other words everything that good-quality music education should provide.

Composer, teacher and performer Kvěch (Kvěch, 2015) interprets musical literacy in more narrow terms, when he states that the first prerequisite for understanding a piece of music in terms of musical literacy is deciphering the musical score. Composer and teacher Tichý (1992) on the other hand points to the fact that musical literacy in terms of theory, historical contexts and even some musical abilities is not always necessary to ensure a good musical performance. He immediately adds, however, that a good performance without

the necessary level of musical literacy is based more on exceptional intuition that can easily fail. He therefore always considers literacy to be a prerequisite for a consistent level of musical performance. Samuels agrees, adding that without the necessary skills one cannot interpret and perform music at all. Admittedly, he means specific skills such as basso continuo, current chord names and symbols as well as historically informed performance (Samuels, 2000). Mills and McPherson draw attention to the ability to read music in the course of musical literacy development (similarly to Kvěch above). They also highlight the principles common to learning writing as a means of verbal communication (Mills & McPherson, 2015). The following statement from Samuels (2000) supports this notion of treating musical literacy as a prerequisite of communication: "Indeed, music contains all the basic elements of language. There is a musical syntax: the connection between melody, harmony, rhythm, and dynamics. There is even a grammar in music." (Samuels, 2000, p.56) Feierabend (1997) says something similar: "Development of musical literacy should follow much the same process as that which naturally develops in our own speaking, reading, and writing skills. In learning one's own language, one goes through five or six years when language skills are developed by ear-before reading and/or writing of language is introduced. This natural process instinctively enables one to communicate verbally with words and

later, after learning to read, to learn to write those thoughts". Samuels' statement on the indispensability of literacy for all types of active musicians supports the idea for a comprehensive understanding of literacy as a set of competencies: "You might find that you enjoy composing, arranging, conducting, improvising, producing, publishing, or teaching. All of these activities require an understanding of the language of music. The kind of analysis and practical application explored in this article is the first step in achieving musical literacy" (Samuels, 2000).

Musical Skills and Abilities as a Component of Musical Literacy

It is apparent from the examples cited above that different experts understand musical literacy differently depending on their own expertise, in other words according to which knowledge and skills they consider paramount for their scope of activity. The listed examples deal with special music education, that is to say the education of a performer or a composer. In order to view musical literacy comprehensively, one must also consider the content and purpose of general music education. What does *music education* comprise from this standpoint? The term *concept formation* definitely falls in this area. Without a connection to actively performed or perceived music, musical terms remain

in the abstract realm. Comprehending them requires a complex development process and it is this understanding of the concepts and their usage according to their meaning that constitutes a level of musical literacy. For people, rhythm is the most comprehensible expression of music. Understanding rhythm has its roots in early childhood based rhythmic activities and singing, as well as later on, when a child begins understanding individual rhythmic values when playing simple musical instruments. A certain parallel with mathematics is apparent here. Rhythmic values correspond to the concept of a *natural number*. Initially, a natural number is not related to actual arithmetic and the same is true for the length of a rhythmic value (that is why rhythmic syllables are used in preparation for the development of rhythm as pre-school aged children can learn them more easily than exact rhythmic durations). Children learn how to count, multiply and divide rhythmic values later on in the first years of elementary school. Furthermore, we can compare tempo to a *fraction*. A child will gradually arrive at the term fraction as to a *rational number*. One tempo is twice as fast as another, while another is twice as slow and so forth. Understanding content and scope of a term is generally related to analytical thinking ability and this ability increases with the *development of abstract thinking*. The ability to work with abstract concepts affects the entire personality of a person (not only their intellectual

development). With this respect to this, however, Rabušicová (2002) points out that not all people fully reach this level of thought.

Reading and writing is another area covered by musical literacy. A musically literate person can read and write music and is able to use and work with it. Just as is the case with mathematical or reading literacy, this person is working with symbols. Imagining their specific expressions, that is to say the sound that they make, is much more difficult for most people than to do the same in writing, especially if we're dealing with several sounds or chords at once - three or more tones expressed in musical notation. This is why the ability to read or write the music for one voice, most often a song's melody is considered adequate in school music education.

The relationship between individual means of expression in a musical work, its analysis and understanding the mutual relationships in the musical work is all part of *functional thinking*. This generally means the ability to perceive relationships and understand their interconnections and the ability to interpret these phenomena. In music this relates to corresponding means of expression, their relationships and expressions, which can be found within these relationships.

The ability to *solve problems* includes creative activity in musical theory. This activity means active musical expression, choice of meter, tone, form, melody in an independent musical performance

as well as the option to accompany the given melody etc. These are tasks, which require the ability to form hypotheses, to find paths to solutions, to use different solution strategies and therefore the ability to think critically.

The area listed above is called *decision-making*. Besides creative and interpreting activities, it is also applied during the critical evaluation of a work and its creation. A person can use this as a basis to compare, evaluate and search.

An integral part of musical literacy is also the area of *application*. It is the application of knowledge in musical practice, which for a person who is not a musical professional means the use of musical activities in daily life - in various situations, on different occasions, repeatedly if need be.

The area of *communication* represents the ability to express one's thought on music, the ability of purposeful argumentation and supporting one's conclusions.

The given characteristics demonstrate that the areas of literacy mutually overlap in relation to musical literacy - the abilities and skills acquired and developed in other areas are naturally applied in musical literacy. It also definitely shows that a musically literate person knows more than to read music. We understand musical literacy on a much broader spectrum. Developed musical abilities, which can be classified in many ways fall within this spectrum. Several authors have done this, such as Těplov

or Michel but we consider Sedlák's classification to be most accurate (Sedlák, 1985):

- auditory perception abilities (understanding and working with tones, distinguishing tone characteristics, understanding relationships between individual means of expression - melodies, rhythm, meter and tempo);
- auditory ability and movement (ensuring the coordination of a movement between a body part and the auditory organ, for example moving one's hands while playing a musical instrument, etc.);
- analytical-synthetic ability (allowing for the perception of music, understanding it by affecting the means of expression and the relationship between its components as well as understanding form);
- rhythm (the ability to perceive timing in music);
- tone (the ability to notice tone, in other words the relationship between tone and the tonal center);
- harmony (the ability of consonance, dissonance, distinguishing chords and the ability to use chords);
- musical memory (the ability to recall previously heard musical forms);
- musical imagination (creating ideas and being able to work with them);
- musically intellectual abilities (musical thinking - the ability to use and understand music comprehensively including theoretic reflexion, aesthe-

tic perception and evaluation - the ability to assess quality, understanding content, musically creative abilities - creating new musical forms).

Besides musical abilities and based on the statements of Tichý and Samuels listed above, we also have to include knowledge in musical literacy - knowledge such as historical and musical theory, which are applied in musical activities.

Even though musical literacy is a term that only began to be used in the 21st century, it follows from the above that its dominant component is musicality, in other words the ability and skills that allow a person to adequately communicate through music and in music. This emphasis on a musically developed person was the main aim of music education especially in the 20th century. It related to a more narrowly defined expertise of a person with respect to individual aspects of knowledge and educational areas and activities that were supposed to provide adequate training for them. Sets of activities, which significantly supported the ability to perceive and feel music were used to develop musical abilities and skills. Swiss educator Émile Jacques-Dalcroze, for example, believed movement to be one of the instruments used to develop musical skills. He stressed the necessity of developing rhythm in his methodological concept (Jacques-Dalcroze, 1927). These mainly included all types of musical movement

connected to the life of a child and their musical experiences especially various types of dance. German educator and composer Orff was a big proponent of connecting music with movement and rhythmic expression. To this day, his set of simple instruments still provides an array of options to develop musical expression with rhythm as the crucial element. Orff emphasized that if we begin with developing musical ability and movement in the early stages of a child's development, we can significantly support their natural talent (Hurník & Eben, 1982). Hungarian composer and educator Kodály understood musical literacy as the ability to understand what we call musical notation, basically a type of reading literacy connected to reading out loud - while reproducing a text (Novotná, 2011). As was already mentioned, since the ability to recall tonal pitch when reading music is quite difficult, Kodály attempted to connect these recollections with so-called phonogestics. Simply put, this means that each tone matches an exactly defined hand movement (gesture). Phonogestics is still used today: a person can connect this gesture with their own singing (then the recollection of a sound is connected to a performed active movement) or a person can sing according to gestures performed by another person, for example a teacher (it is once again the connection of sound and movement but this time with an imagined movement and the option to use proprioceptive

afferentation, in other words impulses, which could lead to movement based on previous experience of a movement).

Knowledge as a Component of Musical Literacy

Jiří Kusák (2006) highlights the role that knowledge plays in interaction with musical abilities and skills. He distinguishes the following components of the spectrum of knowledge necessary for the complete musical development of a person: *"The performance-knowledge component reflects the individual's level in terms of musical ability, skill, as well as knowledge, which are essential for performing musical activities (...)*

The motivational-preferential component focuses on an individual's personality in relation to their interest preferences in musical style, genre, and music in general (...)

The axiological component refers to the internal emotional facilities and value orientation of an individual in the field of the (musical) arts.

The socio-cultural component supplements the relevant information with family background in terms of a musically stimulating environment" (Kusák, 2016).

Similar to other types of literacies, musical literacy also requires knowledge apart from the components listed above. This is apparent when speaking about reading sheet music and the array of opti-

ons when singing this music. A person's first contact with music occurs in much the same way as first contact with a language based experience and is dependent upon activities, in other words skills. A musical score as a system of symbols eventually requires knowledge and is gradually required during modes of musical expression, in genres, styles where knowledge is important as well as an overview of history. The basics of musical literacy in this respect means knowledge of musicology: knowing how to write musical notation, understanding the relationship between tones, terminology, musical genres, styles. One can once again see parallels between music and language, where knowledge of the alphabet, grammar and syntaxes as well as literature is similarly essential. Musical theory developed in conjunction with music and it naturally changes and develops along with how music itself changes and develops. Development of musical theoretical knowledge is supported through several teaching texts, such as the basics of musicology, understanding harmony, counterpoint and musical forms. The same is true for the history of music, where the biggest problem, however, is always contemporary music which cannot be adequately captured in these texts. Texts for teaching musical theory and the history of music serve their purpose well in those areas where the quality of education is high – where permanent interaction between teacher and student takes place. These are mainly

teaching texts used to prepare students for a professional career as musicians or are used for the expert study of music. In general education schools, textbooks that contain selected areas of musical theory and music history are used. They contain musical score material (e.g. scores of songs and parts of compositions) as well as the ideas for musical activities but these are also reliant on professionally led teaching methods of a high quality. It is interaction, activity and performance that is essential for developing musical literacy. Operations, which take place do not have significance only for musical literacy but also contribute to the development of personality as such. Contact with music, as a listener, performer or creatively significantly contributes to the development of emotional aspects of personality.

Conclusion

Musical literacy comprises a set of competencies, which enable a person to understand and actively reproduce music on various levels depending on the level and concentration of education. It is a prerequisite for a conscious and adequately qualified contact with music, which can become a person's lifelong passion thanks to a qualified development of this literacy. The fact that musical literacy is based on balance between knowledge and ability is an important aspect for this process, just as is the case when developing linguistic competen-

cies. The basics of developing musical literacy rest on music educational concepts of the 20th century, where these concepts are applied in current education on various levels. They mainly focus on the development of selected abilities and skills according to the preference of their authors and that is why in those instances they do not yet constitute musical literacy. Musical literacy can be seen in the comprehensive musical development of a person, who accepts music and understands it, is able to create or reproduce it, and has the necessary knowledge at their disposal. This complex reaches deep down of course and depends on the level and concentration of education as well as the preferences of the individual. Current music education

covers the listed components. In practice, however, the proportion of activities and knowledge depends upon the orientation of the teachers. All the more the proportional development of musical literacy depends on the good preparation of teachers and their interest in teaching their students to live a life where music is an indispensable, enriching and truly valuable component and a lifelong passion.

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Pragmatic Communication Disorder in Socially Disadvantaged First-grade Pupils

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Abstract: The communication skills of first-grade pupils (i.e. of the pupils that start the first compulsory year in Czech primary schools at the age of six) were explored to find possible risks of school underachievement with a focus on early intervention and supportive measures provided to these children to improve their worse communication skills.¹ Items selected from among the current diagnostic tools used in speech and language therapy and special education were used to assess the communication skills of 330 first-grade primary school pupils (N = 330). The data that was acquired was processed, analysed, and statistically evaluated. Concurrently, the study mapped the number of pupils entering their first year of education with symptoms of ADHD, and the influence of different cultural backgrounds or living conditions on the development of the speaking skills of those children. It was found that deficits in the pragmatic language skills correlate to the disadvantageous cultural environment or different living conditions of the first-grade pupils, which was not confirmed for social language skills. The findings presented here suggest that the conception of the Social (Pragmatic) Communication Disorder as listed in DSM-5 is probably too broad.

Keywords: Impaired Communication Skills, Pragmatic Language Level, Socio-cultural Disadvantage, First-Grade Pupil, Social (Pragmatic) Communication Disorder

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Communication and its disruption

Language development is part of the overall cognitive, motor, and social development of the child. The development of language skills is always highly individual and every language has its own specific features, e.g. vocabulary, which can be quantified quite easily. The critical period in language development extends roughly to the age of eight (Pinker, 2009, p. 336–337).

According to Lechta (2002a), impaired communication skills can be defined as deviation from an accustomed (or codified) language norm in a certain language environment or on the basis of the communicative intentions of an individual. The first approach is too tightly bound to the language environment and cannot be applied generally. Therefore, Lechta defines impaired communication skills as follows: “*The communication skills of a human are considered to be impaired if one language level of his/her verbal communication (or several levels simultaneously) interferes with the communication intent.*” (2002a, p. 13). According to the current psycholinguistic view, this is the situation where the sender (communicator) transmits a speech signal to the receiver (communicant) and the current manifestation of the impaired communication skill on the part of the communicator interferes with the decoding of the signal on the part of the

communicant (Lechta, 2002a; Klenková, 2006).

Language level approach used in Czech special education

Four language levels are distinguished in Czech linguistics, namely the phonetic-phonological, lexical-semantic, morphological-syntactic, and pragmatic language levels. In Czechia, the linguistic concept of language levels has been taken over by the branch of science called *logopediá and impaired communication ability* as a *special education* discipline which deals with speech-language pathology and therapy in all its aspects.

The phonetic-phonological level primarily deals with the acoustic features of a particular language, i.e. the auditory differentiation of the sounds of a mother tongue and their pronunciation (Bendová, 2011). The development of this language level is supposed to be finalised, in terms of sound pronunciation, by the age of five. By then defective pronunciation can be considered physiological. If these problems persist until the age of seven, the condition is described as extended physiological dyslalia (often to be seen in children with ADHD or those at risk of specific learning and behavioural disorders). If the pronunciation cannot be corrected by the seventh year, the speech defect is considered to be genuine

dyslalia (Bendová, 2011). The phonetic-phonological level secondarily concerns phonemic awareness, i.e. the ability to isolate a sound within a word by forming the words from individual sounds and thereby acoustically distinguishing the individual sounds in a word. In this field, the Czech language has specific features, e.g. in hard and soft consonants and sharp and dull sibilants. Phonemic awareness is usually defined as: “conscious ability to discover phonemes in the language and to handle them..., irrespective of the meaning and representation of the phonemes in a written language” (Sodoro et al., 2002, p. 223).

The lexical-semantic level is the second language level. According to Lechta (2003), the main concern in this context is understanding the literal (concrete and abstract) as well as the figurative (idioms, metaphors, proverbs) meanings of words, or comprehension of semantic relationships among certain words (homonyms, synonyms, antonyms, equivocal expressions). The category of vocabulary quality may also include the composition of word classes (verbs, prepositions, reflexive pronouns, etc.) and ability to use word classes properly (Škodová, Jedlička et al., 2007). The terms “ability to use” and “comprehension” indicate that vocabulary itself involves both of its aspects, i.e. productive (active) and receptive (passive). The overall image of the vocabulary use of an individual who is examined includes the evalua-

tion of both its quantity (poor vocabulary, age-adequate, rich vocabulary) and quality. The lexical-semantic level usually starts to develop at the age of 10 months, when infants reach the stage of language understanding and their receptive vocabulary begins to grow. The productive vocabulary can be recognised at the moment the infants start to use their first words, i.e. at about one year of age. The growth of vocabulary accelerates fastest up to the third year of an infant’s life. In their first year of life, infants use about six words, while at the age of two the number grows to 200 words, which increases to about 1000 words at the age of three. From then on, the vocabulary increases further, albeit at a slower pace. At the ages of four and six, the vocabulary increases to about 1500 words and 2500-3000 words respectively. In addition to vocabulary, children’s ability to orient themselves in the terms they use and to use them in the correct form is assessed within this language level. Without an adequately developed lexical-semantic level, one cannot express one’s thoughts correctly and use language to communicate with others. Hence, within the lexical-semantic level the development of the passive and active vocabulary throughout the whole course of a human life is explored (Klenková, 2006).

The structure of words and the rules for linking words into larger units – sentences – are examined in the morpho-

logical-syntactic level of language. This level cannot be explored before the infant starts to use his/her first words (Klenková, 2006). One-word sentences have different intonation, depending on the emotional intention and will (Lechta, 2002a). The first words are not declined; these are typically substantives in the nominative case, interjections, and verbs in the infinitive, in the third person, or in the imperative mood. Between one and a half and two years of age, infants start to form two-word sentences; this is also known as a “telegraphic” or “pivot” style. Between two and two and a half years of age, infants start to decline words and form multi-word sentences. Increased numbers of adjectives and personal pronouns are used between two and three years of age. Problems may persist forming comparative and *superlative adjectives*. The child deliberately adjusts the order of words to put the key-meaning word at the beginning of the sentence. Numbers, prepositions, and conjunctions are the last parts of the language to occur. From approximately three years of age, children start to use plurals and understand the meaning of words. They start to form what are called “higher concepts”, complex sentences, initially with coordinate clauses and then also subordinate clauses. Towards the end of the fourth year, grammatical use of language should be free of any major grammatical errors. If the language still exhibits certain deviations from the standard grammatical structure, it may

be a sign of disturbed language development (Klenková, 2006).

These three language levels form a framework for the pragmatic use of language as a means of verbal communication.

Pragmatic language level

Interest in various situational aspects of communication increased predominantly in the 1980s. In this period, pragmatics came to the fore. Works by Lahey dominated what was then the cutting-edge research. In the '90s, research in the field of the pragmatic level of language was oriented primarily towards dialogues, storytelling, and descriptions of events (known as the “pragmalinguistic concept in speech therapy”). On the basis of research findings, the focus of interest shifted to the sphere of the diagnostics of people from a bilingual environment, lower social strata, etc. Until that time, communication had always been evaluated on the basis of the standards typical of the majority. The reason for increased interest in pragmatic features of communication correlates with the importance that is nowadays ascribed to social and communicative abilities. The paradigm of speech therapy has also shifted towards a holistic approach.

The pragmatic level of language is one of the language levels. Lechta states that “it is a level of social application, social use of communicative abilities with emphasised social and psychological

aspects of communication” (Lechta, in Klenková, 2000, p.15). A similar definition of the pragmatic level of language in the relationship between signs and their use can be found in Smolík and Málková (2014). They state that “the pragmatic dimension of a language represents the ability to use the language in a way that is appropriate for the particular situation and that leads to the achievement of communicative aims” (Smolík & Málková, 2014). A common sign of both these definitions is the stress on the use of language in social contexts. Successful communication requires the use of language in social contexts (social communication).

In linguistics, pragmatics means “social language”. The pragmatic aspect of communication includes “the behaviour of all those involved in a communication, the non-verbal expressions used and the context – “an environment” of every communication. Pragmatics analyses the relationships between the transmitter and the receiver in a particular context, the understanding of the goal, interaction, persuasion, confirmation, acceptance, and denial during the communication, etc.” (Lechta et al., 2003, p. 42). At the pragmatic level, two major aspects are observed: the ability to express various communicative intentions (to ask for something, to express one’s stance and emotions, to initiate social interaction) and the ability to converse (to maintain conversation, to play the role of the speaker and the listener, or what is

termed “turn-taking”). This level also involves the observance of the storytelling and conversation rules – the sequence of narration, message delivery, and appropriate use of non-verbal signs (ibid.)

It is important to realise that the standards of social communication may vary in different cultures. The pragmatic aspect of communication must be assessed within the context of the environment which surrounds the child.

The approach described above implies that a child who has no difficulties with any other language levels (i.e. the child can pronounce all the sounds properly, has an adequately wide vocabulary, uses complex sentences in a grammatical manner, etc.), but does not know how to use the social communication rules, may encounter communication problems that can determine the comprehensibility of the message, its adequacy, and the selection of proper communication styles. Problems at the pragmatic level may, in practice, lead to a lesser ability to use language skills in social interaction and to perform given instructions in a correct order or to follow their sequence.

The pragmatic level represents the application of the communication skills of an individual within social interaction – it is the practical use of language as a means of communication (Klenková, 2006). When a child is born, it uses screams and non-verbal signals to communicate with the person nursing it. The primary intention of its signals is to draw the mother’s attention with all

its available resources in order to satisfy its own needs. For this reason, Lechta named the period from birth through the first year of life “the age of pragmatization” (2002a). Children from two to three years of age are able to grasp their role as a communication partner and to react in this role as necessary in a particular situation. Long before it starts to comprehend the meaning of a word or a sentence, a child can intuitively grasp the whole situation on the basis of the paralinguistic and affective expressions of the speaker. By the end of the third year, there is an evident effort on the part of children to communicate and to establish and maintain short dialogues with the people who surround them. At the age of four, abilities develop to react appropriately to a situation and to control the course of events in the immediate environment. This is the age at which the infant’s behaviour can be regulated verbally (Klenková, 2006).

At the pragmatic level, communication is the subject of social assertion, i.e. social aspects of communication come to the fore. The pragmatic level is closely interlinked with the lexical-semantic level, where the state of the vocabulary serves as a good reference scale for the general development of language. Votavová and Smolík (2010, p. 301-302) suggest that *“investigation of one’s vocabulary has a relatively high evident validity: there are no considerable doubts that the vocabulary range is a measure of mental development and abilities.”* It can be concluded gener-

ally that without a sufficient command of vocabulary the language competence is rather low.

Social (Pragmatic) Communication Disorder

The diagnostic status of children with atypical pragmatic and social communication development has long been debated (Brooks & Bowler, 1992). The resolution of the debate is hampered by inconsistencies in terminology and diagnostic criteria, a paucity of reliable, culturally valid assessment tools supported by adequate normative data, and limited comparison of social communication profiles across different neurodevelopmental disorders (Norbury, 2014). Investigators have used terms interchangeably, suggesting that social communication and pragmatic language skills are seen as encompassing the same behaviours. For instance, Rapin and Allen (1983) first described “semantic-pragmatic deficit syndrome” as a constellation of symptoms including verbosity, comprehension deficits for connected language, word-finding deficits, atypical word choices, unimpaired phonology and syntax, inadequate conversation skills, speaking aloud to no one in particular, and poor topic maintenance and answering (Rapin, 1996). Rapin and Allen used this as a descriptive term that was most commonly applied to the communication profiles of children with autism spectrum

disorder (ASD), but they acknowledged that social communication and pragmatic language impairments were also seen in many other developmental disorders. Bishop and Rosenbloom (1987) considered “semantic-pragmatic disorder” as representing a distinct subgroup of children who occupied a diagnostic space between ASD and specific language impairment (SLI).

Social (pragmatic) communication disorder (SPCD) is a new diagnostic category included under Communication Disorders in the Neurodevelopmental Disorders section of the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5) (American Psychiatric Association, 2013a). SPCD is defined as a primary deficit in the social use of non-verbal and verbal communication. Individuals with SPCD may be characterised by difficulty in using language for social purposes, appropriately matching communication to the social context, following the rules of the communication context (e.g. the flow back and forth of conversation), understanding non-literal language (e.g. jokes, idioms, metaphors, and proverbs), and integrating language with non-verbal communicative behaviours. Sufficient language skills must be developed before these higher-order pragmatic deficits can be detected, so a diagnosis of SPCD should not be made until children are four or five years of age. Social communication disorder can co-occur with other communication disorders in the DSM-5 (these include

language disorder, speech sound disorder, childhood-onset fluency disorder, and unspecified communication disorder), but cannot be diagnosed in the presence of ASD (American Psychiatric Association, 2013b).

SPCD is documented as having the following comorbidities:

- a) Autism spectrum disorder. The ASD symptoms are quite diverse and their spectrum is very wide. Individuals with ASD exhibit difficulties with social behaviour and social communication that may develop because of the weak communication abilities of the individual.
- b) Reading problems. Children with SPCD often encounter problems with reading, text comprehension, and the interpretation of language nuances.
- c) Attention Deficit Hyperactivity Disorder (ADHD) (Understood Team, 2017). There are three elementary signs of the ADHD syndrome: a developmentally inadequate degree of attention (attention disorder), hyperactivity, and impulsiveness. To diagnose the ADHD syndrome it is vital that the symptoms have occurred:
 - before school age;
 - consistently for a period longer than six months;
 - considerably more often than in other children of the same age (Michalová, Pešatová et al., 2015, p. 13).
- d) It is worth mentioning that some experts believe SPCD is not a congenital

disorder and does not occur alone. They suggest that difficulties with social (pragmatic) communication are only a symptom produced by other causes (Tager-Flusberg, 2013).

- e) The psycholinguistic markers alone cannot reliably discriminate ASD from SLI or from primary pragmatic language impairments (Taylor, 2016). Hence, if psycholinguistic markers are present, possible comorbidity with ASD or SLI should be excluded.

Norbury (2014) argues that social communication and pragmatic language skills are not necessarily one and the same, with the later being closely associated with structural aspects of language. She highlights inherent difficulties in distinguishing between social communication skills and pragmatic language skills and quotes the *Children's Communication Checklist (CCC-2, Bishop, 2003)* as a tool allowing both features to be separated. The CCC-2 is a checklist of 70 items rating structural and pragmatic language on eight scales and social impairments on two scales and is perhaps the most widely used checklist in clinical practice and research.

Therefore it is a question of what other causes may result in SPCD symptoms appearing in the child at the age of entering school and whether cultural and living conditions that offer little incentive can be identified among these causes as well.

Different cultural and living conditions

The language is an important tool in social life, and as such it is also a medium that leads to the categorisation of people into social strata, thereby introducing prejudice against people from a different cultural background, which, in turn, may cause inequality. It is communication that people use to share their viewpoints, cultural values, and experience (McLeod et al., 2014). If a person cannot speak the language of the majority and has different language abilities, his/her communication with the majority is impaired and he/she may not be able to understand a message from another person and thus cannot even react adequately. Sometimes, an inappropriate reaction is interlinked with differences in non-verbal communication, which play a vital role in the communication process. The inability to communicate in an appropriate manner becomes a social stigma for the person who is affected, which may also lead to social isolation (Vágnerová, 2014).

Another cause may be found in the low economic status of a family as a result of long-term unemployment, old age (retirement age, beyond the productivity line), or a limited income resulting from poor education. Poverty is a ubiquitous barrier for a human, and it is particularly dangerous in early childhood; individuals growing up in poverty

usually lack the necessary health care and thus are endangered by infection or disability (UNICEF, 2007). The social isolation factor may also involve other disadvantageous social situations caused by poor health conditions, disability, and addiction to psychoactive substances, as well as bad habits and a lifestyle that leads to conflicts with society (Section 3 of Act No. 108/2006 Coll. on Social Services, as amended).

The different socio-cultural experience of individuals gained in the environment where they grew up and which had, or still has, an influence will have an effect on their patterns of thinking and behaviour (Vágnerová, 2014).

A socio-cultural disadvantage (SCD) results from belonging to a different social group and thus from a related determination of experience which is different or insufficient. This problem is due to the influence of other socio-cultural influences or different socialisation. These people experience disadvantages only in certain social contexts; they are members of a minority which differs from the majority in certain aspects (on the basis of identity, language, lifestyle, etc.). They should adapt to the majority at least partially in order to be able to exist within a society without any major problems (Vágnerová, 2014, p. 600).

SCD may cause the following complications: language and communication problems, an anomaly in non-verbal communication, different values and

norms of behaviour, different patterns of thinking, different habits and patterns of behaviour, or different perceptions of social roles (Vágnerová, 2014).

The *Catalogue of Supportive Measures* defines the following criteria applied to identify a pupil with SCD:

- a) a pupil living in an environment where they are not sufficiently encouraged, on a long-term basis, in education or in preparing for education (e.g. because of an inadequate material background, unsatisfactory housing, time-consuming commuting, lack of interest on the part of the legal guardian, or conflicts within the family);
- b) a pupil whose legal guardians fail to cooperate, on a long-term basis, with the school to the detriment of the pupil's legitimate interests;
- c) a pupil living in an environment of social exclusion or an environment threatened with social exclusion;
- d) a pupil who is disadvantaged in his/her education as a result of an affiliation with an ethnic or national group or a specific social environment; primarily if the disadvantage relates to an insufficient command of the language that is used in teaching in comparison with other pupils (his/her classmates) as a result of their use of a different language or a specific form of the main language in the domestic environment of such a pupil.

The methodology for the part of the Ca-

talogue dedicated to children from different sociocultural environments includes an extensive *assessment scheme* that is intended primarily for both the teachers to achieve at least an approximate orientation in the issues concerned and the consultants to facilitate the placement of children with the appropriate level of supportive measures based on the current legislation (Michalík et al., 2015).

In the assessment scheme, various symptoms of SCD are described that are divided into five areas: the material conditions of the pupil's education, markers related to the pupil's family and its socio-cultural status, markers related to the pupil's interpersonal characteristics, indicators describing the pupil's intrapersonal and personality characteristics, and his/her readiness for school during the first years of school attendance. The SCD markers are intended for teachers and can be assessed at school, not in the pupil's family. The SCD markers are scaled according to their severity and the optimal state is described (Felcmanová et al., 2015).

During the implementation of the research project, the legislation terminology was changed, including the terms concerning the categorisation of children with SCD. The formerly used term "*a pupil in need of support in education because of socio-cultural disadvantages*" has been replaced in the new legislation (Decree No. 27/2016 Coll. on the Education of Pupils with Special Educational Needs and Gifted Pupils, as amended and

effective of 1 September 2017) with the term "*a pupil from a different cultural environment or dwelling in different living conditions*".

Social exclusion and social integration

Under the current legislation (Section 3 of Act No. 108/2006 Coll. on Social Services, as amended), social integration refers to "*a process which ensures that socially excluded people or people threatened with social exclusion have access to opportunities and possibilities which would help them integrate fully into the economic, social, and cultural life of society and live in a manner that is considered usual in society*". The same provision describes "social exclusion" as "*an exclusion of a person from ordinary social life and an inability to integrate into that sphere because of unfavourable social situations*".

The difficulty and complexity of the social integration of a child from a different socio-cultural environment to the majority mostly depends not only on the economic background of the family (children from poor families lag behind their peers in language skills and readiness for school, and they tend to need empirically valid and culturally sensitive instructions), but also on the personal qualities and experience of the child and its ability to regulate the linguistic, cognitive, social, and emotional tasks

associated with the acquisition of new language and cultural values (Navarrete & Watson, 2013).

The parents' educational level affects the social and cultural determinants of language and the development of communication in children. Much research demonstrates that children from families with a higher social status (a higher social class) use longer sentences and more sophisticated syntactic constructions than children growing up in families with a lower level of education.

The social determination of language codes for children is summarised in the Bernstein theory of the social determination of children's language codes. This theory distinguishes two types of codes or two variants of the same language. If the code is limited, the speaker uses simple grammatical structures. This is a language of informal communication, characterised by short, grammatically uncomplicated, often incomplete sentences, with a typical overuse of linking words, rare occurrences of subordinate clauses, and limited vocabulary. The limited code is typical of children from families in lower social classes. A developed code, on the other hand, refers to more sophisticated grammatical structures and generally wider vocabulary, typical of school education, public media, science, etc. This code is characterised as follows: generally rich vocabulary, grammatical correctness and appropriate order of words, complicated sentence structures, high frequency of preposi-

ons and conjunctions expressing various semantic relationships, frequent use of "I/me" pronouns, and high frequency of evaluating and specifying adjectives and adverbs (Průcha, 2011).

Method

Current study

The objective of the research was to identify whether the socio-culturally disadvantageous living conditions of children (SCD) will manifest themselves in inferior language abilities. The deterioration primarily involves an impairment of children's language abilities and skills at the pragmatic language level which directly correlates predominantly with their school performance, mainly as a result of the fact that a child has difficulty in understanding the meaning of communication messages. If such a relationship between SCD and SPCD is found and reliably confirmed, it will be possible to include SCD among the SPCD comorbidities.

Research assessment tool

For the first-grade pupils (i.e. pupils that start the first compulsory year of the Czech primary school at the age of six), the authors' own instrument for the assessment of pupils' communication abilities was used. The expected age ranges from five to eight years; it covers not only the six-year-old age group (which is the

most frequent) but also exceptionally gifted pupils in the lower age group, as well as pupils with (possibly repeatedly) deferred admission to school who otherwise belong to the higher age group. The starting point and inspiration for the designing of a new assessment tool were first looking at the other diagnostic tools used in the assessment of the language abilities of children in a given age group and the experience of their practical use.

The instrument contains a total of 50 items covering a common descriptive part of the participant's data (nine items) and assessment of his/her abilities at each language level (a total of 38 items). However, the main focus of this study is the issues related to the pragmatic language level and only items relevant to SPCD and its DSM-5 diagnostic criteria were chosen (16 items). Outside the framework of the evaluation of communicative ability, data on potential comorbidities accompanying the impaired language abilities was acquired, i.e. primarily ADHD and/or other diagnoses affecting the cognitive abilities of the participant. SCD was assessed dichotomically by the evaluators and was based on the pupil's teacher's assessment of the aforementioned criteria set out in the *Catalogue of Supportive Measures* (Michalík et al., 2015) and its *Assessment Scheme* (Felcmanová et al., 2015).

The items in the descriptive part were categorised as nominal variables (e.g. gender, completion of a preparatory

class or SCD) or ordinal variables (e.g. the nature or size of the school which the participant attends). The assessment of the participants' language abilities was carried out on a basic three-item scale (done at the first attempt / done correctly, usually at the second attempt / completely failed) or on a more detailed five-item scale which captures differences in the participants' abilities in a more sensitive way.

The evaluation itself was carried out in such a way that the evaluator gradually assigned individual questions to the participant and evaluated his/her reaction in the above manner. The item *Ability to describe a picture or story in a picture*, in which the participant receives a picture with a simple situation, such as a scene with kids playing in the park in the morning and is asked to describe the situation in his/her own words, can serve as an example. The evaluator then makes the assessment on a five-point scale, where the best is "he/she describes independently in the unfolding sentences" and the worst is "he/she does not describe at all". A similar approach was used when making the assessment of a child's ability to understand what is not explicitly stated, e.g. understanding the meaning of proverbs. An example that can serve as an illustration here is the Czech proverb *Bez práce nejsou koláče* (a verbatim translation is "No cakes without work"), usually translated into English as "No pain, no gain", checking if the participant understands the meaning of a proverb,

i.e. it is necessary to suffer or work hard in order to succeed or make progress. A simpler three-point assessment scale was used in this case, where the best is “he/she understands at the first attempt” and the worst is “he/she does not understand at all”.

The rating was then converted into an ordinal scale and recorded on a form. The total assessment time per participant was approximately one and a half hours, with approximately one hour of direct work with the participant and half an hour for processing and inputting the data.

An evaluation of communicative abilities was carried out by diploma students in the final year of MA diploma courses in special education, specialising in speech and language therapy and education of people with hearing impairment, who were trained in the use of the diagnostic tool. When performing the assessment of the participants, the students worked under the supervision of the project’s qualified experts on speech and language therapy.

The collection of the data from the assessment was carried out through an online form prepared in the *Google Forms* environment, where the assessment was entered in the form of a selection of the correct answer from a multiple-choice menu in order to limit the influence of random errors if just the numerical values were entered.

The assessment tool was run in a pilot study first and the data that had been

entered was processed on a preliminary basis. On this basis, adjustment of the tool was performed and the choice of methods and processing tools were optimised.

The results table in the Google form was converted back into a spreadsheet editor (Excel) from the text strings into numerical values and subsequently processed with the statistical extension XLSTAT, a third-party Excel module. The tools that were used for the testing of the hypothesis were relevant to nominal and ordinal variables, namely correlation and association analysis (the χ^2 test of independence, Fisher’s exact test, and the Dunn procedure with Bonferroni correction) and non-parametric paired tests (the Wilcoxon test and sign test). The results were evaluated and discussed using the common rules of statistical analysis and reasoning.

Validity and reliability of the research assessment tool

To assess the reliability of the screening, selected methods of the standard theory of reliability were applied, namely the estimation of inter-item reliability using:

- the Cronbach’s alpha unstandardised coefficient of internal consistency $\alpha = 0.894$;
- the Cronbach’s alpha standardised coefficient of internal consistency $\alpha = 0.895$;

Table 1. Descriptive characteristics of participant sample

	Gender	Preparatory class		Year one repeated		School location			School size		SCD impact					
Frequency of occurrence	Boy															
	Girl															
		Yes	No	Yes	No, with deferred admission	No, without deferred admission	Village	Small town	Town/city	Less than 100 pupils	301 – 500 pupils	More than 500 pupils	yes	No	Total	
Abs. [n]	172	158	46	284	3	88	239	50	137	143	8	178	144	68	262	330
Rel. [%]	52.1	47.9	13.9	86.1	0.91	26.7	72.4	15.2	41.5	43.3	2.42	53.9	43.6	20.6	79.4	100

- the Guttman split-half coefficient = 0.935.

The aforementioned values indicate good reliability of the data that was assessed. On the basis of Helmstadter’s rule, the test reliability should achieve a value of about 0.9 to perform the evaluation of the differences in the group performance for two items and more, which was confirmed by the test that was conducted with acceptable accuracy.

Descriptive data of participants

The aforementioned diagnostic tool was used to examine the communication abilities of a total of 336 participants. The evaluation encompassed two groups; the

autumn evaluation took place in October 2016 (approx. one month after the participant’s admission to a first-year class); the spring evaluation took place in April 2017 (approx. after one half of the school year). The assessment data of the participants was paired, as the same participants were evaluated repeatedly in two rounds; the period of approx. six months is considered sufficient for the participant to forget items evaluated in the previous round of screening. Between the two testing dates, the participants participated in mainstream education; their parents and teachers received educational instructions to remedy the relevant disorders or impairments (if any). The data of six participants was discarded from the results after the data checking procedure. The data of the remaining 330 participants

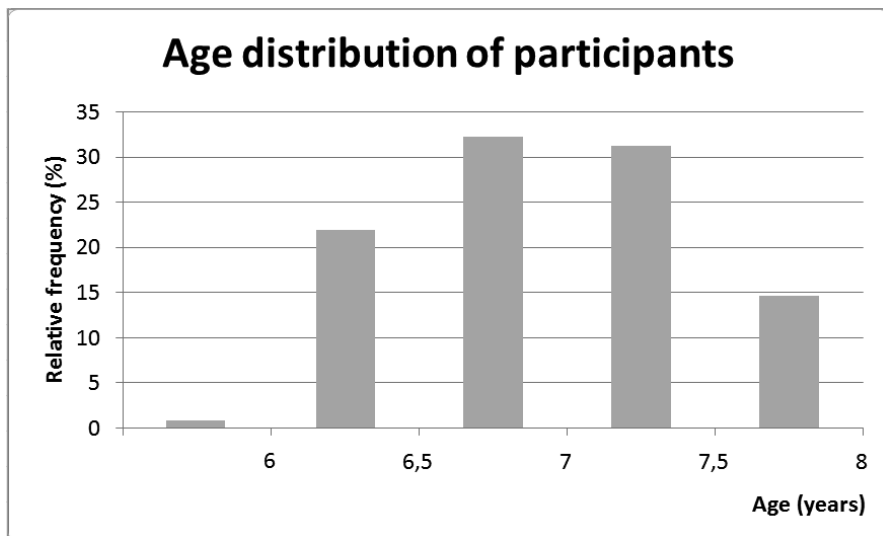


Figure 1. Age distribution of participants—year-one pupils, relative frequency

was further processed and analysed. For basic descriptive characteristics of the participant group, see Table 1.

The data given in Table 1 implies that the gender distribution corresponds to the boy-girl ratio in the general population of first-year pupils, with allowances for statistical error (MŠMT, 2017a). Preparatory classes had been attended by approx. 14% of the participants. About a quarter of the participants were allowed deferred admission to school, which is more than in the entire population of pupils enrolled in the first year (16%, according to MŠMT, 2017b). The pupils typically attended schools in small towns and big cities or schools on housing estates. The vast majority

of the schools have a capacity of 300+ pupils; approx. 40% of the participants attended schools with 500+ pupils. SCD (socio-culturally disadvantageous living conditions of children) were reported in a fifth of the participants.

The descriptive data includes the age of the participants; for the age distribution, see Figure 1.

The majority of participants, at the time of the autumn assessment, belong to the six-and-a-half-to-seven age group; the second biggest group were children from seven to seven and a half years of age. In the entire participant group, only one participant was younger than six at the time of the autumn assessment (not clearly visible in the graph scale).

None of the participants was older than eight.

The schools attended by the participants were located in the Czech Republic, specifically in the Central Bohemian Region, the Liberec Region, and the Ústí nad Labem Region.

Disadvantageous influence of the cultural environment or different living conditions

When examining the influence of a disadvantageous cultural environment or different living conditions (SCD) on the impairment of participants at the pragmatic language level, eleven relevant items were evaluated in the participants, as follows:

- 1) ability to establish natural contact (fine scale);
- 2) appropriacy of reaction to the communication partner (fine scale);
- 3) ability to react to questions within an adequate time (fine scale);
- 4) ability to put questions (basic scale);
- 5) ability to react to instructions (fine scale);
- 6) ability to remember and carry out a sequence of instructions (basic scale);
- 7) ability to communicate in a group (fine scale);
- 8) verbal production and appetite for speaking (fine scale);

- 9) vocabulary extension and word recollection (fine scale);
- 10) ability to cope with a social situation (basic scale);
- 11) ability to understand and explain proverbs (six items, basic scale).

Referring to the Bishops CCC-2 checklist scales, items Nos. 1, 2, 3, and 7 can more probably be related to social communication skills and the remaining ones to pragmatic language skills.

The hypothesis of the possible relation of SPCD symptoms to SCD was tested in the usual manner, i.e. by testing the null hypotheses of independence. The hypotheses were verified for the data acquired during the diagnostics in two groups, autumn and spring. Because of the potential ADHD comorbidity of the participants' impairment at the pragmatic language level, the participants whose parents, teachers, or consultants indicated signs of ADHD were ruled out of the initial group (a total of 41 participants were discarded).

Hence, the verification of the hypothesis was conducted on a reduced group with a total of 289 participants (N = 289).

Results

On the basis of the statistical calculations and hypothesis testing, the following findings can be concluded:

- In the majority of cases, there is suffi-

cient evidence that the hypothesis of the independence of the item under evaluation from SCD can be rejected at a 95% level. On the basis of the calculated p-values ($p < 0.0001$), the probability of incorrect rejection of the null hypothesis (known as “error of the first kind”) was estimated generally at a level of a single percentage point.

- In the majority of cases, the alternative hypothesis can be accepted, i.e. the participants’ impairment at the pragmatic language level depends on the influence of SCD. The analysis of the detected frequencies clearly implies that the influence of SCD manifests itself in inferior abilities and skills of the participants at the pragmatic language level.
- The testing of the hypotheses was carried out through several independent statistical tests with identical results in terms of reliability in items Nos. 3, 4, 5, 6, 8, 9, and 11. Thus, the following abilities and skills of the participants are dependent on SCD:
 - to react in an adequate time,
 - to put questions during communication with a partner,
 - to react to instructions,
 - to remember and carry out a sequence of instructions,
 - verbal production and appetite for speaking,
 - vocabulary extension and word recollection,
 - to understand and explain a proverb.
- After adding the Bonferroni correction of the critical p-value for the simultaneously tested hypotheses by what is known as the “Dunn procedure”, independence from SCD could not be unambiguously rejected in the following items:
 - ability to communicate in a group,
 - ability to cope with social situations.
- Independence from SCD was unambiguously confirmed in the following items:
 - ability to establish natural contact,
 - adequacy of reaction.
- The computed values of the following association coefficients:
 - Cramer V (min. = 0.09, max. = 0.55, median = 0.42),
 - Kendall τ (min. = 0.04, max. = 0.47, median = 0.30),
 - Goodman-Kruskal γ (min. = 0.08, max. = 0.85, median = 0.60)
 generally indicate only a slight association rate (low dependence) between SCD and signs of impairment at the pragmatic language level.

The aforementioned results of independent tests were completed with a test of mutual (pair) independence between the autumn and the spring diagnostics in order to identify any potential chan-

ge that could have happened during the approx. half a year between the autumn and the spring diagnostics in the field of the knowledge and skills of pupils at the pragmatic language level. The conclusions based on the results of the hypothesis verification can be summarised as follows:

- Hypotheses about the mutual independence of the observed phenomena were generally rejected at a 95% reliability level, with the exception of hypothesis No. 2 concerning the independence of the appropriacy of reaction.
- In all the cases observed, with the exception of hypothesis No. 2, the alternative hypothesis can be accepted, that the participants' impairment at the pragmatic language level depends on the order of the diagnostics (autumn and spring term). The analysis of the frequencies that were detected clearly implies that the results of the pupils' diagnostics in the spring term are better than those obtained in the autumn term.
- The results of the hypothesis testing were verified by two adequate independent statistical tests with an identical quality of results leading to the rejection of the hypothesis about independence.

Discussion

Analysing the results of the influence of the SCD (socio-culturally disadvanta-

geous living conditions of children) described above on the impairment of participants at the pragmatic language level, it is necessary to exclude other possible causes of the impairments that were detected. On the basis of the specification, the Social (Pragmatic) Communication Disorder has the following comorbidities:

- 1) Autism spectrum disorder. None of the participants examined within this study had a diagnosed ASD either in the autumn or in the spring term. There was no feedback from evaluators indicating any ASD symptoms in the participants who were examined.
- 2) Reading problems. This comorbidity could not have been ruled out, as the first-year pupils are only starting to learn to read and any possible impairment would not have manifested itself.
- 3) Attention Deficit Hyperactivity Disorder (ADHD). To exclude this comorbidity, the participants showing symptoms of ADHD were ruled out of the group on which the hypothesis testing was carried out, as mentioned in Chapter 2.4.

The evaluators themselves were diploma students finishing their master's degree in special education working under the supervision of experienced experts with long-term practice in speech and language therapy, who advised the evaluators in border or unclear cases. The resulting assessment of the diffe-

rent evaluators seems to be reasonably similar, as is indicated by the statistical tests of the differences in their assessments. During the examination of the influence of a disadvantageous cultural environment or different living conditions (SCD) on the impairment of respondents at the pragmatic language level, with potential comorbidities ruled out, it was demonstrated that, for the majority of the items that were evaluated, *the impaired language abilities and skills of children at the pragmatic language level depend on SCD.*

The results also support doubts as to whether the inclusion of both deficits in social communication and pragmatic language skills into one SPCD category of the DSM-5 manual is reliable (Norbury, 2014). As regards the dependence of the ability to communicate in a group and the ability to cope with a social situation, the null hypothesis about independence from SCD cannot be unambiguously rejected. Next to that, as regards the appropriate *reaction*, no change had been proven between the autumn and the spring examination, i.e. this item had not been influenced by half a year's education in the first-year class. In summary, the results indicate that the items related to social communication skills cannot be rejected and, vice versa, the items related to pragmatic language skills were rejected, which supports Norbury's doubts about considering SPCD as an undifferentiated group of symptoms. The doubts about

the SPCD comorbidity being confined to ASD, ADHD, and reading problems proved to be well grounded. A set of impairments at the pragmatic language level was identified in this study and these impairments could be assigned to the SPCD symptoms. With a high probability, the group of SPCD comorbidities should be extended to SCD, i.e. *the socio-culturally disadvantageous living conditions of children seem to be another comorbidity of certain impaired competences at the pragmatic language level.*

Conclusions

Significant impairment at the pragmatic language level in first-year pupils at elementary schools was found in this study. Consequently, this language impairment has a negative impact on the degree of speaking competence and a considerable influence on children's school achievement during the early years of their school attendance (Dewart, 1995; Papadimitriou, 2014).

It seems highly probable that some weakening of these language skills at the pragmatic language level depends on the external conditions, specifically on the disadvantageous impact of a different cultural environment and/or different living conditions. The consequences of the weakening at the pragmatic language level hinder individuals from attaining social integration into the group. Pupils get into difficulties with getting involved in the group of their classmates as the

weakening at the pragmatic language level is reflected in their social relations, where social aspects of communication come into the foreground. Problems with the use of language at the pragmatic level are also reflected at the morphological-syntactic language level and the lexical-semantic level.

Limitations that occur during the acquisition of vocabulary at an early age pose a significant risk for the further development of a child. It has become evident that children from a different cultural environment and/or those living in different living conditions often encounter problems in understanding the messages of people from the majority, primarily because they have different social experience, use different communication codes, and follow different rules for communicating, in terms of both the verbal and non-verbal components of the communication. Failure to understand the content of a message may lead to inappropriate reactions by the receiver (communicant) and hence cause a negative response in a certain situation. Another consequence of a limited vocabulary and weakening at the pragmatic language level is the risk of inadequate school performance because the vast majority of information in the first years of school attendance is transmitted verbally. Votavová and Smolík (2010) report that the size of vocabulary is an important indicator of mental development and, to a certain extent, it also functions as a determinant

thereof, i.e. deficiencies in the vocabulary have an impact on the acquisition of language as such and concurrently have an indirect impact on cognitive and social development.

Children from a different language environment find it helpful to receive information in a simplified language form, which helps them in understanding and comprehending the context of the information disclosed. Their social integration may be facilitated if they are given opportunities to participate actively in class activities. This method helps to facilitate their easier comprehension of the behavioural norms and habits of their classmates and makes for faster learning of appropriate verbal and non-verbal communication.

In pupils from different cultural environments and/or those living in different living conditions, it is advisable to intentionally develop their pragmatic language level at nursery and primary schools using all reasonable methods and procedures, preferably through the intervention of speech therapy assistants and special pedagogues specialising in speech and language therapy.

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The Level of Reading Literacy in Pupils at the End of the First Grade of Elementary School

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Abstract: The beginning of school attendance is an important landmark in the life of any child. Starting school changes the child's previous way of life, social position, and activities. The child learns to be a schoolchild, and by means of appropriate teaching methods moves from the area of games to the area of learning and acquires new competencies. Reading, which in principle is understanding the characters of written speech, whether printed or handwritten, is one of the two components of human literacy. In the process of learning, these two components act jointly on a principle that could be simply described as a process from the meaning to the character, and from the character to the meaning. A child who is writing moves the meaning directly to the characters (encoding); a child who is reading picks the meaning from these characters (decoding). These cognitive abilities need to be learned. The process of reading and writing is a complex cognitive process that consists of many sub-processes, which gradually become automatic during the process of learning.

This fact inspired us to perform a deeper analysis to identify which reading competences pupils have after one year of study at elementary school. In the research, the main objective of which was to identify and evaluate the level of reading literacy in children at the end of the first grade of elementary school, the authors considered the fact that in Czech schools, the training of elementary reading uses the principles of three basic methods: analytical-synthetic, genetic, and Sfumato blended reading. The research method was a non-standardized achievement test which focused on various components of reading literacy. The research involved a total of 341 children, of whom 287 were taught using the analytical-synthetic method, 24 by the genetic method, and 30 by the Sfumato blended reading method. The data was interpreted with respect to the research variables; the results were discussed in the context of education in elementary schools.

Key words: reading literacy; analytical-synthetic method, genetic method, Sfumato - blended reading method; elementary school; non-standardized achievement test

Introduction

In addition to speech, reading and writing are the main information channels in school, as well as in everyday life. The ability to read and write assumes that the child understands written text and transforms what is heard into a written form. The need for communication is deeply embedded in the human psyche and its failure or suppression leads to serious disorders in mental life and social relationships.

Children try to read long before they start school. Some letters and words are already picked up at preschool age, at kindergarten or in the family. Some children even read whole sentences before they start school.

Education according to the Framework Educational Programme for Elementary Education focuses on the development of the key competences – a set of knowledge, skills, abilities, attitudes, and values which are important for the personal development of an individual and for the individual's participation in society. The key competences go beyond school subjects and are considered to be both the result and the objective of elementary education. This objective can only be achieved if children's capacities to learn, solve problems, communicate, cooperate, act democratically, and work intently are developed and shaped in all school subjects (RVP ZV, 2017). A closer look at specific skills as defined by individual key competences shows that

a prerequisite for their attainment is to acquire specific reading skills. For example, the learning competence requires that at the end of elementary education children should be capable of effective learning by means of selecting appropriate learning strategies, searching for and classifying information, and using this information in an effective way in the learning process, creative activities, and practical life on the basis of the understanding, linking, and systemization of such information. The problem-solving competence requires children to be able to search for information relevant to problem solving, think in a critical way, and be able to defend their opinions. The communication competence assumes that children should understand various types of texts, reflect on them, and use them for their own development and active engagement in social events (RVP ZV, 2017). A closer analysis suggests that the attainment of the key competences is subject to a high level of reading literacy. As a result, reading literacy becomes both the content and the objective of all areas of education. Therefore, teaching reading comprehension must also be included in other subjects than just reading and writing (first stage of elementary school) and literature (second stage of elementary school). Should reading and reading literacy become a functional instrument in acquiring knowledge and skills in various fields of human activity, in all school-based areas of education children need to work with

different types of texts (continuous and discontinuous) used in various situations in which reading is used for different purposes – personal, educational, occupational, or public.

In order to achieve objectives and expected outcomes in the educational process, the teacher must choose appropriate learning strategies. Modern educational science, especially after the introduction of SEPs, considers learning strategies from a comprehensive perspective and strives for them to attain a stable position in the educational process.

The learning strategy is *“a sequence of learning activities thoughtfully arranged to achieve the learning objective. Using the learning strategy the learner decides which skills to use and in what order. The learning strategies are a subset of a learning style, which has a form of a learning meta-strategy”* (Průcha, Walterová, & Mareš, 2008, p. 230).

The teacher’s methodological approach is part of the concept of teaching. History suggests that teaching methods have always changed according to the period in which education was realized. Adequate procedures by means of which teachers achieved higher educational outcomes in their students have always been selected according to the current conditions in education. To achieve educational objectives, optimal and effective teaching methods must be selected. According to Skalková (2008, p. 181), the teaching method is “a way of deliberate arrangement of teachers’

and learners’ activities to achieve the set goals.”

At present, teachers have a variety of teaching methods that represent the procedural aspects of teaching. The teacher uses the teaching methods to adapt the internal conditions of the learners’ cognitive processes, which are then encouraged and directed.

Initial reading and writing is taught by means of several teaching methods. In the past there were many more teaching methods, but through practical experience only those that were productive continued to be used. By means of the currently used teaching methods, children in the first grade learn to read and write and acquire basic awareness about a text that is read and written. Reading and writing with comprehension means that the basics of reading and writing literacy are developed at a required level appropriate to the age of the learners and their reading and writing experience.

The analytical-synthetic method is the most frequent teaching method used for initial reading and writing. This method is still being modified and is no longer used in its original form as designed by Ushinski in 1951. The basic principle of this method is the learner’s speaking. We speak, write, and express ourselves in sentences. A sentence consists of words. A word consists of sounds and a written sound is a letter. We move from the whole to its parts. The smallest elements are then used to build larger units – syllables, syllables into words and

sentences. According to the holistic language development of the learner in the area of elementary reading and writing, the analytical-synthetic method teaches reading and writing in parallel.

In the first grade the analytical-synthetic method of teaching reading is classified into three stages: language preparation of children for reading, a syllable-analytical way of reading, and fluent reading of words, sentences, and text.

The genetic method was already being used in Czech schools between 1913 and 1948. The founder of this method was Josef Kožíšek, who in his textbook entitled *Poupata* (1927) described teaching by means of the genetic or recording method. The method is based on an assumption that reading can only be trained by writing. Uppercase block letters are used because they consist of horizontal, vertical, and oblique lines and a small number of loops. The author assumed that children would record text using capital block letters and pictures. According to the genetic method, children should learn to write using an uppercase block alphabet. This method had many supporters but also opponents. Kožíšek claimed that writing was not an end in itself but was a means of acquiring the skill of reading. When a child writes words, they are first decomposed by hearing and individual sounds are distinguished and arranged in order.

The didactic approach of this method is as follows: first write, then read. From

the very beginning, children write whole sentences. They use uppercase block letters, uppercase block letters with a dot are used to indicate names, and lines are substituted for verbs. Children frequently record text through pictures. Only after a well-trained auditory analysis does a child learn about the written shapes of the letters.

This concept was also used by Jarmila Wagnerová, who in 1995–1996 developed a project by combining the genetic and global methods designed by Václav Příhoda, which she used to teach children to read and write. She called this method genetic and at that time it was the only alternative to the syllabification analytical-synthetic method. The author issued a textbook with a methodological guide and a reading book with fairy tales in which she described the current methodology for the training of writing using the genetic method. The training of initial reading (and writing) by means of the genetic method is classified into three consecutive stages. The objective of the first stage (preparatory stage) is mainly to develop children's positive motivation for reading, while during the second stage children already begin to use textbooks and workbooks. They adopt basic reading habits; they still use uppercase block letters, which they learn to read and write. During this stage, children do not spell out words but rather try to read through their vision. After being trained in all the uppercase block letters, children are introduced to

lowercase block graphemes, which they distinguish visually and remember, but do not write. The training of lowercase block letters is very quick. In about two weeks children are able to distinguish all the letters. Experienced teachers say that by the end of February children are able to recognize all the block letters. In the third and last stage, children start to write cursive letters according to the joined-up linear handwriting model. During this period children learn uppercase and lowercase handwriting. They eventually learn the graphemes and phonemes in both their block and cursive forms. In the third stage of training, children read almost fluently and with comprehension, and their reading skills and reading and writing literacy are developed. Children's reading gradually develops as they are able to read multiple words at once.

Currently, a new method for teaching elementary reading and writing has emerged, which is the blended reading method, also known as the *Sfumato* method. The author and promoter of the *Sfumato* elementary reading method is Mária Navrátilová. She is a teacher with over thirty years of experience in education. In a practical environment, she started to test her own methods, developed as a piano teacher and teacher of singing, including the *Sfumato* blended reading method. The blended reading method facilitated the transfer of sensory information and its processing. The sense organs involved in the process of learning are arranged in a precise se-

quence, VISION – VOICE – HEARING. While reading, the child holds a sound and it is only after the following sound is identified that it is combined with the previous one. This is called long exposition and correct intonation. The deduction of each letter and sound is preceded by thorough voice training with appropriate strength, length, and colour, involving vision and hearing. Children identify letters by means of all their senses. The next stage is the synthesis of two sounds (letters), for example, SO – LA – MO, where children consider each combination a different word (SO as sova, LA as lavice, etc.) Another step is the synthesis of multiple sounds (letters) that already have a meaning, for example, SOS – LOS, LASO, SENO, etc.) The last step is reading from an alphabet book; children read meaningful texts with an emphasis on the intonation of words and sentences (for more about teaching methods see Fasnerová, 2018).

Methodology

The text above emphasized the priority of contemporary education, which is to teach children the key competences, i.e. a set of knowledge and skills applicable in their practical life. The acquisition of the key competences is conditioned by a high level of reading literacy, which needs to be considered as a precondition for successful education. In the context of the innovative changes in the educational process implemented in order

to increase the level of reading literacy, which are based on the competence principle defined in the Framework Educational Programme for Elementary Education, the research study focused on determining the level of reading literacy in children in the first grade of elementary school.

Objective of the research study

In the research, the main objective of which was to identify and assess the level of reading literacy in children at the end of the first grade of elementary school, the authors considered the fact that in Czech schools, the training of elementary reading uses the principles of three basic methods: analytical-synthetic, genetic, and Sfumato blended reading (Fasnerová, 2018)

Research problem and hypotheses

To verify the objective of the research study, the following research question was formulated. *Does the teaching method used for elementary reading affect the level of reading literacy at the end of the first grade of elementary school?* This research question was used to formulate a hypothesis that characterizes the relationship between the two groups of respondents.

In the level of reading literacy at the end of the first grade of elementary school,

there is a statistically significant difference between the results of the children in the groups that were tested.

The null hypothesis was operationalized to determine whether there was a difference between the groups and whether the difference was significant.

H0: There is no difference between the results of the children in the groups that were tested in terms of the level of reading literacy at the end of the first grade of elementary school.

HA: There is a statistically significant difference between the results of the children in the groups that were tested in terms of the level of reading literacy at the end of the first grade of elementary school.

The testing of the hypotheses was divided into three sub-groups, and the following data was used:

1. children taught by means of the analytical-synthetic method (AS group)/children taught by means of the genetic method (G group);
2. children taught by means of the analytical-synthetic method (AS group)/children taught by means of the Sfumato blended reading method (SF group);
3. children taught by means of the genetic method (G group)/children taught by means of the Sfumato blended reading method (SF group).

The null hypothesis was tested using the *t*-test criterion. The calculated value of

the *t*-test criterion was then compared with the critical value of the *t*-test criterion for the selected level of statistical significance and the respective number of degrees of freedom.

Research sample

The research was carried out in June 2018 in the first grades of elementary schools in the Olomouc region (Czech Republic). The research involved a total of 341 children, of whom 287 were taught using the analytical-synthetic method, 24 by the genetic method, and 30 by the Sfumato blended reading method. The authors are aware of the disproportion between the numbers of children in these groups, but this results from the fact that the analytical-synthetic method is the primary method used for teaching elementary reading in elementary schools in the Czech Republic, while the other two methods are considered as alternatives. The identification of age and gender variables was not the subject of the research, so these were not even investigated. The only indicator was the inclusion of the pupil in the first grade of elementary school.

Research methods

The main objective of the research was achieved by means of a quantitative research approach using an achievement test of the authors' own design. The term "achievement test" is defined in different

ways by different authors, but all definitions agree that this is a test that focuses on the objective assessment of mastery of the learning content by a specific group of persons (Chráska, 2007). The pupils were presented with a coherent text that was motivated by a fairy-tale story, which was then followed by 11 questions or tasks (open and closed items) mapping both implicit and explicit text comprehension. The test was submitted to the pupils in written form and was completed in 45 minutes.

By means of the measurement tool – the achievement test – the authors compared all three groups in terms of the dependent variable indicator and observed the effect of the method used for teaching reading in the first grade of elementary school on the level of reading literacy in the children at the end of the first grade. The results were qualitatively processed and statistically analysed using the Student's *t*-test. To gain a better understanding of the conclusions of the statistical testing, a qualitative analysis of the responses to individual test items was performed, and percentages were used to identify possible causes of children's success or failure in both the groups that were monitored.

Data analysis

As already mentioned, the main research hypothesis was verified by testing three partial operationalized hypotheses. The data described below was identified.

Table 1. Basic data for testing of sub-hypothesis A

	Number of children (n)	Average number of points (\bar{x})
G group	24	32.63
AS group	287	29.50

Table 2. Basic data for testing of sub-hypothesis B

	Number of children (n)	Average number of points (\bar{x})
SF group	30	30.77
AS group	287	29.50

A) Children taught by means of the analytical-synthetic method (AS group) and children taught by means of the genetic method (G group):

Sub-hypothesis A: *In terms of the level of reading literacy at the end of the first grade of elementary school, there is a statistically significant difference between the results of the children in the AS group and the G group.*

Conclusion: The difference in the level of reading literacy at the end of the first grade between children taught by means of the analytical-synthetic method and genetic method: the calculated value of the test criterion $t = 2.17$ was compared with the critical value of the t -test criterion for the selected level of statistical significance (0.05) and the respective number of degrees of freedom $f = 309$. The critical value of the test criterion is lower than the calculated value; therefore, the null hypothesis is rejected with a confidence level of 95%. There

is a statistically significant difference between the results of the children in the groups that were tested in terms of the level of reading literacy at the end of the first grade.

B) Children taught by means of the analytical-synthetic method (AS group) and children taught by means of the Sfumato blended reading method (SF group):

Sub-hypothesis B: *In terms of the level of reading literacy at the end of the first grade of elementary school, there is a statistically significant difference between the results of the children in the AS group and the SF group.*

Conclusion: The difference in the level of reading literacy at the end of the first grade between children taught by means of the analytical-synthetic method and Sfumato method: the calculated value of the test criterion $t = 0.98$ was compared with the critical value of the t -test criterion for the selected level of statistical

Table 3. Basic data for testing of sub-hypothesis C

	Number of children (n)	Average number of points (\bar{x})
SF group	30	30.77
G group	24	32.63

significance (0.05) and the respective number of degrees of freedom $f = 315$. The critical value of the test criterion is greater than the calculated value; therefore, the null hypothesis is accepted with a confidence level of 95%. There is no statistically significant difference between the results of the children in the groups that were tested in terms of the level of reading literacy at the end of the first grade.

C) Children taught by means of the genetic method (G group) and children taught by means of the Sfumato blended reading method (SF group):

Sub-hypothesis C: In terms of the level of reading literacy at the end of the first grade of elementary school, there is a statistically significant difference between the results of the children in the G group and the SF group.

Conclusion: The difference in the level of reading literacy at the end of the first grade between children taught by means of the genetic method and Sfumato method: the calculated value of the test criterion $t = 1.60$ was compared with the critical value of the t -test criterion for the selected level of statistical significance (0.05) and the respective

number of degrees of freedom $f = 52$. The critical value of the test criterion is greater than the calculated value; therefore, the null hypothesis is accepted with a confidence level of 95%. There is no statistically significant difference between the results of the children in the groups that were tested in terms of the level of reading literacy at the end of the first grade.

Discussion of the research results

Reading literacy is closely associated with the target categories defined by the current educational curriculum in all its tiers. Although a detailed analysis suggested that the term 'reading literacy' was included in the curriculum only marginally, this term is part of the key competences which are mandatory in education and with which all children should be equipped.

The present research study focuses on children in the first grade of elementary school and whether their level of reading literacy is affected by the method selected for teaching elementary reading and writing. The authors developed an achievement test which was given

to children at the end of the first grade, when they already had some experience with using texts. According to the educational objectives, children at the end of the first grade should be able to read a text correctly in terms of technical aspects and also to understand it, speak about it, and think about it.

Regarding the high variability of the methods used for teaching elementary reading and writing, the authors of the present research study selected those that were accessible and the teachers were willing to use for the purposes of the research. These were both traditional methods (the analytical-synthetic method and genetic method) and an alternative method (the Sfumato blended reading method). Because of the inconsistent distribution of the methods in the research sample, the results of the study cannot be generalized. Similarly, the differences between the methods were not statistically significant; therefore, the items in the achievement test were assessed in terms of quality.

The comments concerning the methods were described in the previous chapter. Nevertheless, this section will include a summary of the results. Except for one item, the best results were always achieved by children taught by the genetic method. This included text comprehension, text analysis, and tasks associated with searching and orientation in a text. The results concerning the other two methods were comparable. This can be explained by the fact that

the genetic method has elements of the global method and is a modified version of Kožíšek's methodological procedure. It is based on breaking words down into sounds and constant training of visual and auditory perception at the expense of writing. In this way, more attention is paid to the meaning, compared, for example, with the method most commonly used in Czech schools, which is the analytical-synthetic method. Even in the case of the genetic method, although it initially focuses on global reading, children themselves need to analyse and synthesize words because words are broken down into syllables. Experience suggests that children with a reading or writing deficit in the form of specific learning disorders do not show any handicaps during the stage of training in elementary reading and writing. Problems with reading come in higher grades, in which the technique of reading is built on analysis and synthesis, and as readers become more experienced, their reading gets faster and they break words down optically into syllables, which they are able to assess globally. Readers who are unable to adopt the skill of word analysis and synthesis and continue to break words down at a higher speed of reading and with longer texts inevitably start to guess words. This leads to guessing of the text and incorrect interpretation. This was not apparent at the end of the first grade, when the children taught by the genetic method showed better

results. They used texts that were appropriate to their age and reading experience.

Considering the use of the analytical-synthetic method to teach elementary reading and writing and regarding the worse results, the authors speculate why most schools in the Czech Republic use this method in the first grade. The authors are convinced that at the beginning the analytical-synthetic method is more difficult. However, the sooner children understand how to break words down into syllables and sounds and use them to make words and sentences, the better and more precise their reading experience is. Regarding the fact that analysis and synthesis take place immediately, any learning disorders are detected at the end of the first grade because word decomposition and composition is a tool to diagnose specific learning disorders. Syllables have a semantic meaning and therefore, learners might need to acquire more experience with reading, which can result in prolonged training. Therefore, if children at the end of the first grade have not got rid of syllabification (which in the case of this method usually occurs up to the first third of the second grade, until the learners' reading becomes automatized), they might have problems with text comprehension, which is the essence of reading literacy.

S is an alternative method that is only marginally used in the Czech Republic; therefore, the number of respondents was very small. For these reasons, the

method will not be described in detail. It can be concluded, however, that the results were comparable.

Regarding this fact and the results mentioned above, it would be very interesting to continue the research and test the remaining assumptions. One of them concerns whether at the end of the second year of elementary school children taught by the genetic method achieve better results in the area of reading literacy compared with children taught by the analytical-synthetic method.

Conclusion

Writing and reading, as human skills that need to be learned, require not only mechanical and technical dexterity, but especially psychological preconditions of an individual for successful adoption of the skills.

Reading and writing are intellectual activities, the level of which depends on the reader's or writer's maturity and experience. This is "*a special case of visual perception, which uses associations from the area of speech kinaesthesia (perception of the movement of the speech organs)*". In the context of reading (Křivánek & Wildová, 1998, p. 18) and in the context of writing (Šupšáková, 1996, p. 27) it is "*the basic literacy instrument used for the purposes of expression and communication. It is used in everyday life, in all curricular subjects, and contributes to an all-round development of the learner's personality.*"

The modern teaching of reading builds on children's preschool language development. Emphasis is placed on maintaining the continuity of the development in the pre-school period and school period. To teach children to communicate in a verbal and written way is one of the fundamental objectives of education at elementary school. Each school should instil a love of reading in children and should teach them to read correctly, fluently, and distinctly, to understand the content, and to acquire the basics of good reading (Šikulová & Rytířová, 2006).

The task of the school is to show children how to find a place for reading in their life, teach them how to get used to reading, and to work with texts. Reading is compulsory in school but at the same time there is an opportunity to show those children who are not encouraged to read at home how interesting reading is. Children can enjoy reading in literature classes. The school can motivate children to read and thus improve their educational opportunities. However, this activity requires appropriate care (Václavíková Helšusová et al., 2012).

To teach children to read correctly is not easy. This difficult task requires a trained teacher in terms of methodological, professional, educational, and psychological approaches. The teaching of initial reading is based on the speech of six-year-old children. Training in reading also uses breathing and articulation exercises. At the beginning, children

are unable to distinguish between the word and the thing that the word designates. The sound aspect of the word is not differentiated from the content. This is the reason why children concentrate on examining speech, the meaning of words, and the sound aspect. Maximum attention is paid to correct pronunciation; children learn to distinguish sounds by hearing, and identify whether a sound is at the beginning, in the middle, or at the end of a word (Blatný & Fabiánková, 1981).

To become a successful reader means to read correctly and understand the content of the words in the text. The way and speed of reading reflect the level of analysis and synthesis of words and correlations between them. The basic precondition for understanding a text is the ability to read the text correctly. It is important to teach children how to read correctly, accurately, and without errors. The way of reading suggests the reader's performance. A typical feature is the fluency of reading words, phrases, and sentences. Deviations from fluent reading include syllabification of words, whispering of sounds, etc. The first grade focuses on reading easy fluent sentences with appropriate rhythm. In order to fulfil this goal, at first students learn to read syllables, and then to syllabify in a discontinuous way and finally in a continuous way. It is necessary that children join syllables together with appropriate stress. Only after that is fluent reading possible. The speed of reading

determines the overall reading performance. The method and fluency of reading are reflected in the speed of reading. If children read too slowly or too quickly, text comprehension becomes worse.

Later, the emphasis is also on quicker reading. However, it is necessary not to increase the speed of reading at the expense of proper articulation and comprehension.

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Developing Reading Literacy in the Teaching Of Geography¹

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Abstract: The subject of reading literacy is a current and frequently discussed topic of the 21st century, and not only in Slovakia. Contact with information presented in a written form necessarily belongs to various areas of everyday human life. From the results of international studies, it is clear that the younger generation of school-age children does not even attain the average level in this skill. The school environment plays the most important role in terms of developing the reading literacy of pupils and all its aspects. The main aim of the present research was to find out and compare the level of reading literacy achieved by pupils of primary and secondary schools with the help of a geographically-oriented text. The research involved 70 pupils at the ISCED 2 and ISCED 3A levels of education. The methods of complex tasks and a cloze test were used. The results of the research confirmed, among other things, that the level of literacy is related to the age and sex of pupils. In the article we also present methodological suggestions suitable for the development of reading literacy and its testing using geographically-oriented texts.

Key words: reading literacy, teaching of geography, PISA, PIRLS

Theoretical basis of reading literacy

In practically all areas of our lives we meet with the demand for the full and effective use of a written text as a source of knowledge - in the school environment, in the workplace, and in leisure activities. It is the school environment, irre-

placeable in the process of developing this skill, which attracts the attention of the general public to the greatest extent. Pupils are regularly tested in international studies (PISA, PIRLS) and compared to pupils from other countries within different education systems. In Slovakia - according to the results of these studies - it is nowadays generally accepted

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that a Slovak pupil reaches only a sub-average reading literacy level within the OECD countries (Miklovičová et al., 2017). Since the first data on the reading literacy level of our pupils was obtained, our education system has undergone various changes, including efforts to implement the goals of developing reading literacy within the everyday school reality. However, these individual steps are, in most cases, limited to a few learning areas, while there is still considerable potential for the inclusion of tasks with such an orientation into the curriculum of all subjects with a cognitive focus (Mulicáková & Ustohalová, 2015). Without the ability to read, pupils have limitations in terms of the depth and breadth of the scientific knowledge they can gain and hence in their scientific literacy (Fang & Wei, 2010).

In the present research we therefore focused on testing the level of reading literacy in a sample of 70 elementary and high school pupils. We also present appropriate methods and tasks for its development and testing under the specific conditions of teaching geography. Our intention is to point out that the school subject Geography offers numerous opportunities to orient teaching towards working with a text and actively using the information it contains. At present, the concept of literacy can be found in various contexts and areas of everyday life (Gavora, 2006). In publications (e.g. Harris & Hodges, 1995) we find different historical, cultural, and geographical

interpretations which show that literacy involves a wide range of individual abilities, knowledge, and skills and their functional use (Zápotočná, 2012). However, no matter what connotations literacy is associated with, it is impossible to overlook its socio-cultural aspect (Gavora, 2006). It represents a phenomenon in which cultural and social standards and conventions are mirrored (Humajová & Klačanská, 2007). We can distinguish several models, e.g. early literacy, basic, functional, complex, mathematical, and scientific (Maršák & Janoušková, 2006; Faltýn et al., 2011), as well as reading literacy.

The notion of reading literacy was brought to the attention of people in the 21st century through OECD-led international studies - a PISA assessment study aimed at pupils aged 15 and up to the mandatory schooling age and a PIRLS study targeting 9- and 10-year-old students. Both studies were influenced by the concepts of functional literacy (Harris & Hodges, 1995). While the PISA international study works with reading literacy as one of several other areas that are studied, the PIRLS study focuses on it directly (Galádová et al., 2013).

In its current form, reading literacy is, by definition, very close to functional literacy. In essence, in the effective and active use of literacy in society, they significantly overlap. Its definition can be found in various publications (e.g. Humajová & Klačanská, 2007; Húsková & Hlušková, 2013), but it is most clearly

defined in the PISA and PIRLS studies. PISA's reading literacy is characterized as *"a complex set of reading skills needed to work effectively with the text"* (Heldová, Kováčová, & Galádová, 2013, p. 5). According to the PIRLS study, reading literacy is characterized as 'an ability to understand and use the written language forms which society requires and/or which have value for an individual' (Campbell et al., 2001, p. 3).

In our research we focused on one aspect of reading literacy – a pupil's ability to understand a written text (Lapitka, 2005). The processes of understanding are related to how the learner advances in creating the meaning of a written text. According to Koršňáková (2010), text comprehension processes reflect multiple levels of mental strategies, from the lowest level (finding and obtaining information), through the higher level (integration and interpretation), to the most demanding text-based understanding processes (thinking and evaluation).

Reading literacy in the Innovated State Educational Programme of the subject Geography

In the past, the development of reading literacy was considered to be primarily a domain of the school subject of Slovak language and literature. At present, however, the problem of comprehension of a written text is much more com-

plex (Zmach et al., 2007), and reading literacy is a prerequisite for the use of scientific knowledge (Vasilová & Prokša, 2013). The effort and requirement to use text work is currently implied in the curricula of both science and social studies subjects, including Geography. The issue of effective work with textbooks should become the centre of interest for the whole pedagogical public and should be given more attention in the process of the preparation of future teachers, and not only those of Slovak language and literature (Kababíková, 2015; Húsková, 2012).

The goal of school geography is to understand and recognize the world and the landscape in its full complexity (Karolčík et al., 2015), in which reading literacy in obtaining relevant geographic information is a necessary condition. Nowadays, the amount of information is growing dynamically along with the resources that are available, and therefore a pupil has to know how to process, critically evaluate, select, and subsequently use it in the real world (Obrancová et al., 2004). According to Kašiarová, the subject of geography is typical in that it works with many types of information; pupils have to 'be able to use and interpret maps of different kinds, to work with literature as a source of knowledge (textbooks, professional and popular scientific journals) – correctly understand what they have read, and process and interpret scientific knowledge. The initial development of reading

and interpreting images, photographs, charts, tables, cross-sections, schemes, and diagrams is one of the basic means of expression of geography' (2013, p. 14). In this way, a pupil is supposed to have the opportunity to get in touch with different types of sources of information and tasks focused on the development of reading as well as graphic and cartographic literacy.

Within the ISEP of lower secondary education in the school subject Geography, the ability to understand a written text and to use the information contained therein is indirectly present in its objectives:

- pupils are able to search for, compare, assess the truthfulness of, and evaluate available information about the country from various sources of information (iŠVPa, 2014).

Within the ISEP of higher secondary education in the school subject Geography the ability to understand a written text and the use of the information contained therein is present more significantly. In the objectives we find the following learning requirements:

- pupils are able to correctly and accurately interpret country information in different forms (charts, tables, diagrams, photographs, films, etc.);
- pupils are able to find, compare, assess the truthfulness of, and evaluate available information about countries from various sources of information (iŠVPb, 2014).

In the performance standard, we find several pupil performance requirements that directly or indirectly include both comprehension of a written text and the use of the information contained therein or place the emphasis on working with tables or charts:

- pupils know/are able to search for and interpret statistical data and important facts from trusted sources of information;
- pupils know/are able to correctly interpret the data on climatic characteristics presented in various graphical and text formats (tables, diagrams, charts, climate diagrams, thematic maps);
- pupils know/are able to correctly interpret the statistical data and economic indicators of the economic performance of individual states of the world and its regions;
- pupils know/are able to identify the 15 most populated cities in the world, locate them on a map, and determine their presence in a particular region (iŠVPb, 2014).

Chosen methods of reading literacy development in Geography

At present, there is a relatively large number of publications dealing with the characterization and selection of effective teaching methods. Our intention

was to select and briefly consider those with which it is possible to develop the reading literacy of pupils in terms of the school subject Geography. The basis for each of these methods is a text, either in a continuous or unrelated form. A pupil should work exclusively with the information contained therein and none of the methods should primarily require the use of knowledge that has already been acquired.

One of the most commonly used methods is a specific type of learning task – complex tasks (Vasilová & Prokša, 2013), specifically multi-component tasks (Černocký et al., 2011). The essence of the method is a worksheet with an introductory text and various types of tasks which require understanding of the given texts. A keyword method develops students' skills to identify and work with the key concepts of a text. Pupils improve their ability to understand a scientific text and to distinguish between what is more and less important (Čapek, 2015). There are several ways to implement this method. Pupils can identify keywords and write them down or highlight keywords from several words that have already been given. An effective way to verify text comprehension is to reproduce a text. When it comes to free reproduction, the task is to select information from the text, sort it out, and transform the text in some way. A text summary method in various forms (conceptual map, table, schema, syllabus, or annotation) requires the skill of being able to

sort out information. The asking of questions by pupils themselves develops their thinking and motivates them to continue working. The most effective questions are survey questions focusing specifically on one or several elements within the text (Gavora & Šrajerová, 2009; Fisher, 2011; Bartošová, 2015). Other effective didactic methods include working with texts using I.N.S.E.R.T. – Interactive Note System for Effective Learning (Haraus, 2011) and cloze tests – working with a continuous but incomplete text which contains omitted words at predetermined intervals. The pupils' task is to fill in these spaces with appropriate words in order to preserve the stylistic and semantic features of the text (Gavora & Šrajerová, 2009). In addition to the above-mentioned methods, several metacognitive reading strategies can also be applied in Geography in schools (Tomengová, 2011).

Individual methods of working with texts should be closely linked to methods aimed at critical assessment of the credibility of information and its resources. The ability to search for and critically evaluate information is an integral part of reading literacy.

Methods of research

A research study aiming at verifying the level of reading literacy was conducted in May and June 2018 in three different grades – in the fifth and eighth grades of an elementary school and the second

year of a four-grade high school in Banská Bystrica. The testing took place at three intervals, each time within one lesson of Geography. In the fifth grade, 25 pupils participated in the research, of whom 12 were boys and 13 girls, in the eighth grade there were 24 pupils including 11 boys and 13 girls, and, finally, in the second grade of a high school 21 students participated, with only six boys and 15 girls. Altogether, 70 pupils (41 girls and 29 boys) participated in the research. Each time, testing took place within one lesson of Geography. With respect to the specifics of the three samples, we created three versions of a worksheet on the topic of the United Kingdom of Great Britain and Northern Ireland - named 'The United Kingdom on the Palm of Your Hand'. The task of the pupils was to apply the ability to understand the text through complex tasks (Vasilová & Proskša, 2013) aimed at different levels of mental strategies (Húsková & Hlušíková, 2013).

An extract from text 1, "A Visit to London", included in the worksheet 'The United Kingdom on the Palm of Your Hand' for the pupils of the second grade at a four-grade high school:

Although this island country seems to be quite remote from our small Central European one when looking at the map of Europe, the flight to the capital city of England, and indeed the UK, did not last more than three hours.

The European metropolis welcomed us with typical British weather - rain and dense fog. The plane had few problems landing there, but let's be honest, who would like to experience the technical difficulties of a train in a tunnel from France? Upon our arrival at the hotel, we heard the news of the problems in the Eurotunnel earlier that morning. Passengers had to stay there four times longer than the usual 35 minutes and imagine that everyone was 40 metres below the ground! Luckily, we chose the plane...

... At first glance, it was clear that the Queen was not in the city at the time of our visit - the flag of the United Kingdom was not waving above Buckingham Palace. The Union Jack was created by bringing together the flags of all three member states - namely England, Scotland and Northern Ireland. The locals told me that it happened in 1801, almost 100 years after the creation of the United Kingdom. It is a combination of countries with a number of specific features, strong national awareness of their inhabitants and partial autonomy, which, in some parts of the country, however, people still do not consider sufficient.

An extract from the tasks accompanying text 1, tasks "A Visit to London", included in the 'United Kingdom on the Palm of Your Hand' worksheet for the pupils of the second grade at a four-grade high school:

On the basis of the information in the text, decide whether these statements are true (T) or false (F). Correct the false statements.

- a) Kristián prefers the train as a means of transport to the United Kingdom.
- b) The passengers on a train from France arrived in England with more than a two-hour delay.
- c) A certain percentage of the population of the United Kingdom is not satisfied with the level of self-government in their countries.

On the basis of the information from the text, answer the following questions.

- a) In which city did Kristián land with his family on the day of his arrival in the United Kingdom?
- b) How, when looking at Buckingham Palace, did Kristián know that the queen was not inside?
- c) What is the name of the flag of the United Kingdom?
- d) In which century was the United Kingdom formed?

Apart from semantic understanding, another form of reading literacy that we verified was syntactic understanding of the text as a whole. Therefore, we included the method of what is called a cloze test (Taylor, 1953; Gavora & Šrajerová, 2009) into the worksheet; this tests the understanding of both levels at the same time. The worksheet was created in such

a way that a pupil could answer the tasks and fill in the missing words in the cloze test only if he/she understood the context, the meanings of most words, the meaning of the given sentence, and the topic. On the basis of the average relative success of solving individual partial tasks, we identified those that were problematic for the pupils. Subsequently, using qualitative analysis, we attempted to analyse these partial tasks and analyse the pupils' solutions.

An extract from the cloze test "A Visit to Scotland" included in the 'United Kingdom on the Palm of Your Hand' worksheet for the pupils of the second grade at a four-grade high school:

Our first stop was the city of Glasgow. _____, when it comes to the population, the third largest city of the United Kingdom _____ much more than at first glance _____ artefacts of the Industrial Revolution. Becoming a modern _____ city, it belongs among the world's largest financial centres. During our stay there, one of the most traditional football _____ was played between the clubs Celtic _____ Rangers and we were able to experience the exceptional _____ throughout the whole city.

To determine the complexity of the texts in the three versions of the worksheets, we chose the following formula for the

Table 1. The levels of reading literacy used in the research

The level of RL fifth-grade PS	The lowest number of points on an RL scale	The level of RL eighth-grade PS and second-grade HS	The lowest number of points on an RL scale
1	20	1b	12
2	25	1a	16
3	29	2	20
4	32	3	24
		4	28
		5	32
		6	36

Explanatory notes: RL - reading literacy, PS - primary school, HS - high school

complexity of the texts (Průcha, 2013) from a wide range of indicators. We calculated the textual complexity of the text T by the relation $T = TS + TP$, where TS represents the syntactic and TP the semantic difficulty of the text. The syntactic difficulty of the text, TS, is calculated by the formula $TS = 0,1 \cdot V \cdot \bar{U}$, where V represents the average number of words in a sentence and \bar{U} represents the average length of the sentence sections (the proportion of the total number of words and the total number of words, except for indeterminate verb forms in the text). The nature of the semantic difficulty of the text is the rate of occurrence of the following five categories of terms in the text: P1 - common terms, P2 - technical terms, P3 - factual terms, P4 - numerical data, P5 - repetitive terms (Chráska, 2007). To calculate the semantic difficulty of the text, we used the following formula:

$$T_P = 100 \cdot \frac{P}{N} \cdot \frac{P_1 + 3P_2 + 2P_3 + 2P_4 + P_5}{N}$$

where P is the total number of terms represented in the text and N is the total number of words that are in the text. The resulting T values range from 1 to 100 - minimum to maximum complexity of a text, but standardized norms indicating the level of difficulty in relation to age have not been developed yet.

On the basis of the total number of points achieved on the individual tasks and cloze test, we divided the pupils into several levels of reading literacy to compare their success in our test with the results of Slovak pupils in international PISA and PIRLS studies. In determining the point range of the levels of reading literacy we created, we were influenced by the score scales of international studies (0 to 1000 points), calculating the percentage values of the boundary num-

Table 2. The rate of complexity of texts used on the worksheet and the average success rate of the respondents (N = 70) by sex and age

Sample		T _s	T _p	T	Success rate - boys (%)	Success rate - girls (%)	Overall success rate (%)
fifth-grade PS	text 1	7.57	17.72	25.29	57.06	67.00	62.12
	cloze test	13.56	15.82	29.38	27.52	33.09	30.42
eighth-grade PS	text 1	21.76	21.55	43.31	80.24	76.47	78.18
	cloze test	13.52	17.06	30.58	50.42	55.00	52.91
second-grade HS	text 1	28.13	21.60	49.73	73.53	80.41	78.41
	cloze test	23.58	16.32	39.90	50.00	65.24	60.91

Explanatory notes: T_s - the rate of syntactic complexity, T_p - the rate of semantic complexity, T - the overall rate of text complexity, PS - primary school, HS - high school

ber of points for each level of literacy by the OECD. These were then applied after slight adjustments to the final score scale used in our research (0 to 50 points). The success of the pupils in the fifth year of elementary schools was classified according to the levels shown in Table 1 and we compared them with the results of PIRLS 2016. The success of the pupils in the eighth year of elementary schools and second year of high schools was classified according to the levels shown in Table 1 and we compared them with the PISA 2015 results.

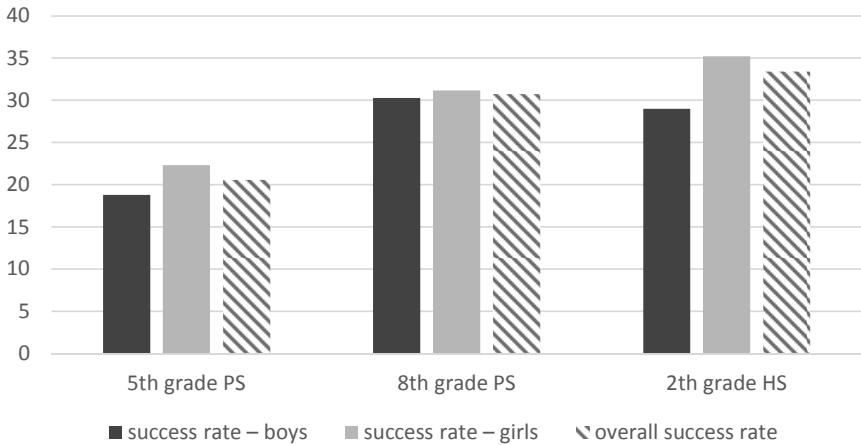
Results

The pupils' results from the reading comprehension tasks of our geographically-oriented text, along with the specific rates of the syntactic and

semantic complexity of the texts on the worksheet - adjusted for each of the three age groups - are shown in Table 2. The results are elaborated in more detail in the other subchapters.

The assessment of the reading literacy level achieved on the basis of pupils' sex and age

When the overall average pupil scores in individual years are compared (Table 2, Graph 1), it is evident that the success rate achieved in solving the problems of understanding the text increased depending on the age of the respondents. In the fifth grade of a primary school, the pupils (10/11 years) achieved an average score of 20.6 points (a 41.2% success rate). The pupils in the eighth grade of a primary



Graph 1. The average scores of the respondents (N = 70) by sex and age

school (13/14 years) achieved an average score of 30.75 points (a 61.5% success rate). The pupils in the second grade of a high school (16/17 years) achieved an even better average score of 33.43 points (a 66.7% success rate). The highest score achieved in individual years increased in direct proportion to the age; in the fifth grade it was 33 points, in the eighth grade 38, and in the second grade 42 points (out of 50). On the basis of the results of the research, we can also say that the girls achieved better results than the boys in all grades (Graph 1). The girls were also the pupils with the best results in all grades (33 points in the fifth grade, 38 points in the eighth grade, and 42 points at high school).

As the cause of these findings, we can

identify several factors that could have affected the results. As Gavora and Šrajerová (2009) also state, it is generally possible to assume that with increasing age, the pupils' experience with texts increases and their ability to actively and efficiently use the information they find is enhanced. It can also be assumed that girls nowadays have a closer relationship with reading than boys, and they are more exposed to written texts on their own initiative, not only in school conditions. The biological factor of the earlier adolescence of girls in terms of cognitive development also played a significant role.

On the basis of the results of tasks focusing on the comprehension of a text, we can conclude that the pupils did not

have any problems with writing the right answer if the required information was explicitly stated in the text. There was a lower success rate with the tasks in which the pupils had to deduce information from the text, or had to think of a text from a wider perspective. From the results of the cloze test, it is clear that the pupils gained the most points only from specific parts of speech, such as pronouns, prepositions, and conjunctions. Their proper positioning in the text primarily requires the understanding of sentence structure and not necessarily the context of a text. With other parts of speech, such as adjectives and nouns, verbs, and proverbs, we observed a success rate of less than 30%. Younger pupils were less successful in completing the text with appropriate words, but more creative (greater variability of the words used) than older pupils.

Discussion

On the basis of our experience and the results of our research into reading literacy, we agree with Húsková and Hlušiková's (2013) claim that in today's society, it is necessary to teach young people to work with information effectively so that they are able to select, evaluate, and use it appropriately. In the school subject Geography, one of the basic sources of knowledge should be, among other things, texts in different forms. However, their understanding is a prerequisite.

Nowadays, when we are looking for up-to-date data on the level of reading literacy of Slovak pupils which we could use to compare with the results of our research, the latest international PISA 2015 and PIRLS 2016 studies are the most relevant. On the basis of the above-mentioned average pupil scores in our test, by applying the percentage values of the boundary number of points for each level of reading literacy in PISA and PIRLS to our score scale, we are able to rank individual grades into the reading literacy levels that we derived from the original levels of written text comprehension in the PISA and PIRLS studies. On the one hand, the pupils in the fifth grade are ranked in Level 1 of reading literacy (according to PIRLS), which, compared to the fourth-grade pupils in the PIRLS sample (achieving the second level of reading literacy in 2016, NÚCEM, 2016), was a decrease in the success rate. On the other hand, the pupils in the eighth grade are ranked in Level 4 of reading literacy and the pupils in the second grade of high school even in Level 5 of reading literacy (according to PISA). In both cases, it would be an increase in the success rate, as the predominantly fifteen-year-old PISA testing sample reached results in the range of Level 4 of reading literacy in the last cycle, in 2015 (Miklovičová et al., 2017). In this case, however, it is necessary to emphasize that this is only a provisional comparison. The testing which was part of our research and the international studies are different in

many ways. We focused on different age groups and worked with a much smaller sample, the pupils partly worked on different types of tasks under different conditions with a different score scale and, last but not least, our test was less demanding in terms of its size.

A research study which, in comparison to ours, shares many characteristics was conducted by Gavora and Šrajerová in 2009. While focusing exclusively on elementary school pupils, the research was based on working with geographically-oriented texts (excerpts from old textbooks that are no longer used) which were formally modified by the cloze test method (three texts of different difficulty) in order to find out the dependence between the performance of the pupils and the age at which they were at that time, their sex, and the location of the school where the research was carried out. The results achieved correspond to the findings of our research. Pupils in higher grades achieved (with minor variations) a better score; in terms of sex, girls were more successful in all the tests (Gavora & Šrajerová, 2009). PISA 2015 and PIRLS 2016 also confirm the higher success rate of girls (NÚCEM 2016; Miklovičová et al., 2017).

Conclusion

We believe that the school subject Geography has potential for the inclusion of tasks focused on the development of reading literacy into its curriculum. It

is not about learning from the text but about its functional and critical use, either in printed or electronic form. On the basis of the experience from the realization and results of our research, it is possible to state that the comprehension of a text is insufficient, especially in the fifth grade of primary school. This part of the research sample achieved only Level 1 of reading literacy (a 41.2% success rate). Reading literacy is related, among other factors, to the age and sex of pupils. Pupils in higher grades, as well as girls compared to boys, achieved better results in testing. Because of the above-mentioned problems the pupils had with successfully carrying out the reading comprehension tasks, we recommend the regular inclusion of various types of tasks that aim at understanding a text and subsequently applying the information obtained in terms of the subject Geography. In accordance with the objectives of the ISEP, the skill of using different sources of information about the countryside and the world in general and its future application is vital. In the fifth grade we recommend applying tasks with texts of lower complexity, focusing on searching for information, understanding and interpreting information, and searching for keywords. In the higher grades of primary school and high school, we recommend applying tasks with higher textual complexity that aim at inferring information from a text and evaluating the information in the context of the pupils' wider knowledge and experience.

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Key Literacy Skills for Primary School Pupils – Diagnostic Battery

The research group of the Department of Psychology of the Faculty of Education of Charles University has completed a GAČR (Czech Science Foundation) project in which different methods of text comprehension were observed. The aim of the new TAČR (Technology Agency of the Czech Republic) project is to extend the view and, on the basis of the research findings, respond to the limits of current psychodiagnostic testing, generate updated norms, and allow the counselling professionals to assess different aspects of literacy skills in a broader context.

Introduction and aim of study

The evaluation of the level of young school-age pupils' reading literacy has a long tradition in the Czech Republic. Since the 1980s original Czech standardized diagnostic tools (Matějček et al., 1987; Caravolas & Volín, 2005; Bednářová et al., 2014; Seidlová Malková & Cara-

volas, 2017, etc.) with an emphasis on decoding with the extended concept of (as it is called) "reading technique" has been widely used in counselling centres in the Czech Republic. Reading precursors have also been examined. Additionally, some of the tools referred to above include basic diagnostic procedures to monitor reading comprehension on the sentence level (Caravolas & Volín, 2005) and on the text level (Matějček et al., 1987; Bednářová et al., 2014). In particular, on the text level, the comprehension tasks are designed to assess comprehension of a narrative text based on retelling a story. It is well accepted that this evaluation may be subjective and significantly influenced by other factors, such as, for example, the verbal fluency of the examinee, rather than his or her comprehension skills.

We build on current trends in the foreign literature (e.g. Gough & Tunmer, 1986; Cain & Oakhill, 2006; Keenan et al., 2008) and bring new approaches to evaluate different forms of comprehension which contribute to the development

of functional literacy from the developmental perspective. The new battery will therefore include tools assessing listening comprehension, different levels of comprehension (explicit, implicit, and interpretative), and comprehension of narrative and exploratory texts, as well as the basic ability to work with texts with respect to silent reading and individual writing tasks.

Methodology

Participants

According to the design of the study, 1000 monolingual, Czech-speaking primary school pupils (1st–5th grade) will be tested. In order to ensure representativeness of the sample, the sampling will reflect socio-economic factors (unemployment). The size of schools will also be taken into account when recruiting participants.

Recruitment is planned to be realized in cooperation with the National Institute for Education, which is an application partner of the project. The principles of ethical data processing will be followed in the research; the head of the school and then the parents will declare their agreement to the participation of pupils (informed consent). All data will be anonymized.

Methods

The battery that has been designed inclu-

des a variety of tools to measure different aspects of literacy:

- Measures of reading related skills (Tests of phonemic awareness, Test of repeating of pseudowords).
- Linguistic awareness test (assessing morphology, word formation, and sentence comprehension).
- Decoding tests (Word reading test, Pseudoword reading test).

Comprehension tests. Comprehension tests are the basis of the new diagnostic battery. They are designed in four formats, each in three versions (for first graders, younger and older pupils). They consist of continuous texts that are followed by questions mapping explicit and implicit comprehension and developing an interpretation of the text. In one of the tasks the examinee does not answer questions but fills in missing words.

- Listening comprehension;
- Oral reading comprehension tests;
- Silent reading comprehension tests;
- Cloze tests.

Reader's self-concept assessment scale.

Environmental factors questionnaires (Questionnaire for schools, Questionnaire for parents).

When designing the tools, we build on the tools developed in the GAČR project P407/13-20678S Reading comprehension – typical development and its risks (for more information see Kucharská et al., 2015). For the validation of the results some subtests from standardized cognitive tests and standardized reading and writing tests will be used.

Implementation of project output and its contribution

Professionals in the counselling system in education – psychologists and special education teachers working in school counselling facilities (pedagogical and psychological counselling centres, special education centres) and at schools (school psychologists, special education teachers) – deal with providing support to pupils with literacy difficulties, i.e. a broad group of pupils (specific learning disorders, speech and language disorders, socio-cultural disadvantage, disabled pupils, foreigners, gifted pupils, etc.). A diagnostic approach which seeks the causes of difficulties in reading and writing and provides information about the strengths and weaknesses of the child is the basis for the recommendations for interventions at school and in the home environment.

The battery that is designed will be distributed via training events at the National Institute of Education. One-day

training will be arranged in which the theoretical background, administration, evaluation, and interpretation of individual tests in relation to the target population of poor readers will be explained. To prevent misuse, the battery will not be available without this training.

The manual of new tools will be used for the diagnosis of literacy difficulties (reading difficulties) of pupils at primary schools, which is the most frequent problem needing to be solved in the counselling system. These tools are necessary for the school environment since pupils with reading difficulties account for up to 85% of pupils with special educational needs. We hope this new standardized material will not only help to refine the diagnostic process of poor literacy but will also help to target the intervention better.

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