

Use of the Picture Book in Teaching Mathematics and Serbian Language to Children with Learning Disabilities

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The aim of the authors was to provide a cognitive context of learning which would help children with learning disabilities overcome their disabilities and adopt the prescribed teaching content of Mathematics and Serbian language. They analysed the role and importance of the picture book and presented ways in which it can be used to teach children with learning disabilities at the start of education. The picture book is viewed as an adequate didactic tool offering socially constructed situations familiar to the pupils. The authors illustrated how the same picture book can achieve this role in two different school subjects and analysed the possibilities of the picture book in creating a context in which elementary mathematical concepts can be adopted and overcoming difficulties related to reading and writing in the early school period, as well as in enriching one's vocabulary and developing sentences of the Serbian language course.

Keywords: mathematics, Serbian language, picture book, students with learning disabilities

Introduction

Education is nowadays faced with numerous challenges. How should we organise education so as to enable each individual to realise his/her full potential on one hand, and to adapt it to every individual's abilities on the other. This problem becomes even bigger and more pronounced if we observe it in terms of inclusive and multicultural education, or education in any heterogeneous group of students. In such circumstances, we must always strive to find an optimal method of teaching which will suit children that don't be-

long to these groups, but also children with learning disabilities. This paper wants to draw attention to the issue of students with learning difficulties in the first years of education on the example of Mathematics and Serbian language courses.

Mathematics and Serbian language (mother tongue) represent compulsory school courses at all education levels. We can say that these two courses are fundamental in each education system. Given that the foundations of further mathematics and Serbian language education are laid in the first grade of primary school, through elementary mathematics education and learning of reading and writing, the success with which students will master these areas will impact their relationship not only toward learning mathematics and mother tongue later in life, but also toward all other school courses, both from the field of natural sciences and humanities. Natural sciences are based on abstract mathematical symbols, whereas the entire communication, acquisition and transfer of knowledge in the teaching process rest on the skills of reading and writing and culture of oral and written communication. If any omissions or oversights are made in the initial stages of education, they will be directly reflected in later education. Therefore, organisation of education carries great responsibility, and requires meticulousness and sound judgement in every step.

The problem only gets worse if observed in the context of students with learning disabilities who have troubles in the adoption of content from mathematics and Serbian language. These students require special support in learning, finding special work methods, strategies, procedures, didactic devices and materials that will help them overcome difficulties in learning and successfully acquire knowledge, skills and habits, develop abilities, form an appropriate relationship toward school and school duties. If such interventions are omitted in the early stages of education, no force or skill will be able to compensate for the errors made in junior grades of primary school.

Learning Disabilities and Difficulties in Adoption of Mathematics and Language Content

Learning difficulties are not a group of individual disabilities; instead, they include all difficulties related to reading, language or mathematics. They may occur in students who, despite possessing average or above average intellectual abilities, exhibit significant problems in adopting basic school skills, such as reading, writing and calculus (Silver and Hagin 2002). These individual types of difficulties often occur together either with a deficit of social skills or emotional and behavioural disorders (Lyion 1996; Silver and Hagin 2002;

Fletcher et al. 2006). The term *learning disabilities* doesn't include children with learning disabilities due to a visual, auditory or motor handicap, or children with intellectual disabilities, emotional disorders, or emotionally or culturally disadvantaged children (Golubović 2005, 377). The thing that all learning disabilities have in common is the fact that they are clearly manifested, and the thing that clearly defines them is a discrepancy between student's academic achievement and his/her apparent learning capacity.

Of the total number of children with specific learning disabilities, around 5% to 8% are children with some type of cognitive deficit disrupting their ability to learn concepts or procedures in one or several domains of mathematics (Geary 2004, 4). Although neuropsychological research points out to the basic underlying causes of mathematics-related problems, e.g. visual-gnostic processes, audio-gnostic processes, spatial processes (Murphy et al. 2007), there are other reasons for manifesting weaknesses in mathematics. We should seek them at the level of cognitive development, environmental factors, teaching process, compatibility between teaching and learning styles, fear, child's preparedness for adopting mathematics (Geary and Hoard 2002; Golubović 2004), but also hereditary factors (Shalev et al. 2001). Difficulties in learning mathematics may be the result of the lack of ability to represent or process information in one or all domains of mathematics (e.g. geometry), or in one or a set of individual competences within each domain (Geary 2004, 4). Abilities and skills required for acquiring mathematical knowledge, which form the basis for successful learning of this scientific discipline are not mathematical in nature. According to Sharma (2001), these skills are: ability to follow the order of operations; spatial orientation and organisation; recognition of shapes and forms; visualisation; estimation of size, mass, number; deductive reasoning – ability to draw conclusions from general rules to individual premises, or from a general premise to a logical conclusion; inductive reasoning – natural understanding which is not a result of conscious attention and reasoning, simple observation of shapes in different situations and mutual connection between procedures and concepts. If students fail to master these skills, they may encounter difficulties in learning mathematics, manifested in the form of difficulties in following the order of operations in mathematical problems (e.g. division – which number should be the divisor, which procedures should be implemented in this operation, etc.), or as incorrectly written and regrouped. In addition, a child may also have difficulties in counting, estimating distance, height, movement through space, etc. because all these actions require a developed concept of three-dimensional space (Golubović 2004, 71). Many children with learning

disabilities also exhibit developmental delay in understanding the concept of counting, they use unapproved procedures in counting and make more procedural errors when solving arithmetic problems. Unlike typically developed children, these children are unable to transition easily from the use of counting procedures to memory-based processes, such as finding arithmetic facts. The use of immature counting procedures in solving arithmetic problems may arise due to poor understanding of the concept of counting, or insufficient skill to discover and correct counting-based errors (Geary and Hoard 2002).

When it comes to difficulties in learning and adopting mother tongue, children with learning disabilities find it hard to master spoken and written language in terms of understanding and producing all or some language elements: phonology, morphology, semantics, syntax and pragmatics (Kologranić Belić et al. 2015; Sharp and Hillenbrand 2008). These difficulties form a heterogeneous clinical picture used to describe different profiles of language difficulties, such as: difficulty in adopting new words and in recalling words; problems in forming two-element or multi-element sentences; slow development of a phonological system; difficulties in recalling phonological coding; presence of errors in verbal and noun morphology; difficulties in narration, etc. (Golubović 2005; Verhoeven and Balkom 2004). Research shows that children who exhibit these difficulties in syntactic processing will make more errors in tasks which require them to repeat sentences, recognise and correct wrong suffixes, and to define the concepts of words and sentences compared to their average peers (Ljubešić, Blažić, and Bolfan Stošić 1993). Research also shows that children with difficulties in adopting language commonly start talking later than their typical peers (Lyytinen et al. 2004; Preston et al. 2010), and their deviations in language will only become more noticeable with age, which inevitably impacts the mastering of reading and writing skills, and especially the mastering of social and communication skills (Conti-Ramsden and Durkin 2008; Nippold et al. 2009).

The presence of learning difficulties in mastering reading, writing and calculus in a child may cause significant stress in school because the curriculum and learning heavily rely on these skills. Academic requirements based on these skills and teaching methods adapted to 'average' students without any additional didactic or methodological adjustments can put students with learning difficulties in a more unfavourable position compared to their typically developed peers (Kunnen and Steenbeek 1999; Martan, Skočić Mihić, and Lončarić 2015). Due to this, we must provide additional support to such students to help them overcome their difficulties and achieve their fullest

potential, and make sure that all children have positive experiences in the speech development stage (Brock and Rankin 2008).

The question is – How can we achieve this? The answer is complex and multifaceted. There are numerous ways, methods, and procedures to achieve this. The teacher is the key factor on whom the success of this plan depends entirely. This paper wants to draw attention to the picture book as a didactic device which should ensure learning of mathematics and Serbian language in students with learning disabilities related to these two courses, and which at the same time represents an integrative element of the learning activity within these two courses.

Picture Book as a Didactic Material for Teaching Students with Learning Difficulties in Adopting Mathematics and Serbian Language

The first book in the life of each individual is a picture book. The appearance of the picture book is related to the Czech pedagogue J. A. Komenský (Comenius) and his work *Orbis pictus* published in 1658. The picture book may have a very important role at the very beginning of primary school education as a didactic device for teaching students who face learning difficulties in adopting content from mathematics and mother tongue. Numerous studies have shown that combining texts (descriptive representation) and pictures (depictive representation) is beneficial for teaching (Mayer 2001). Authors who estimate the representation of these students in the overall school population tell us that approximately 5% of all students in regular schools have been identified as persons with learning difficulties (Lyon 1996; Golubović 2005). Given the percentage of students with learning disabilities, we must provide a cognitive context which allows students to adopt the material prescribed in the curriculum more easily. The picture book could help us achieve that, given that it is defined in literature as ‘multifunctional reading material’ (Martinović and Stričević 2011, 52), which achieves different functions: informative-educational, cognitive, aesthetic and entertaining (Čačko 2000).

Student in the initial stages of education exhibits no resistance toward the picture book, since he/she is very familiar with this book, and since this book was created precisely for children. Contemporary authors define the picture book as a collection of text, illustration and overall design (Bader, 1976; Hameršak and Zima 2015, 164). Precisely due to their dual aspect in the form of text and images and specific importance, picture books possess a pedagogical, psychological, artistic and linguistic potential to influence the child and a means of expanding and enriching their vocabulary, whereas reading picture books represents the beginning of literacy where the child

'gets introduced to his/her mother tongue, its intonation, pronunciation, diction, words' (Martinović and Cupar 2015, 7). Research indicates the importance of illustrations and images in presenting and conveying a meaning in the text (Lewis 2001). Illustrations in the picture book are observed as a key element which enables us to understand words and concepts in general, including mathematical concepts.

Leafing through a picture book, looking at the pictures, listening to an interesting text read by the teacher represents a natural continuation of learning through play for a student at the beginning of education, because learning through play was a dominant method of learning in the period of preschool education. Play and the entertaining function of the picture book allow the student to observe the work on a picture book not as learning, but as fun, which is why he will approach the learning process spontaneously. There is no resistance, not even unconscious resistance a student may exhibit if his learning difficulties have been noticed by other students. On the other hand, students who do not have any learning disabilities may also manifest resistance to learning due to a change of the learning environment, or even due to collaboration imperatives of teachers to complete an assignment or solve a problem. All students will participate in the activities related to the picture book. They will see work as play, game and entertainment, which is why students who experience learning difficulties in adopting mathematics and language will not be in an unfavourable position in relation to their peers. They will be completely unaware of the fact that they are actually learning and mastering social and communication skills at the same time.

The picture book represents an important didactic material at the initial levels of education. In the first grade of primary school, the picture book helps students understand images and words as symbols which convey a message (Stričević and Maleš 1995, 7). This message will be stored in a cognitive context familiar or well-known to the child. Therefore, the subject matter depicted in the picture book is represented as: the world of reality the child is familiar with, but also as a world of imagination the child dreams or fantasises about (animals that can speak, famous characters from fairy tales and animated movies, etc.). This way, the picture book creates a basis for learning, not just for learning the language, but mathematics as well. Research also shows that 'picture books can offer a meaningful context for learning mathematics and provide an informal basis of experience with mathematical ideas that can be a springboard for more formal levels of understanding' (Van den Heuvel-Panhuizen, Van den Boogaard, and Doig 2009, 37). Haury (2001, 3) underlines that 'one way of connecting school mathematics to everyday

life, then, is to draw attention to the mathematics embedded in the literature of everyday life, to reveal the mathematics inherent in human thinking and communication about life experiences.'

From the aspect of elementary mathematics education and the learning and adoption of language, the picture book enables children to place abstract concepts and unknown words into a familiar or interesting background. 'Good, but ordinary, picture books – in the sense that they are not written to teach mathematics – have the power to get children thinking mathematically' (Van den Heuvel-Panhuizen, Van den Boogaard, and Doig 2009, 30). The National Council of Teachers of Mathematics (2000) also advocates using content from children's literature in mathematics education. This is logical given that 'the process of developing mathematical concepts must be placed in a realistic context, a child is motivated to participate in learning, and the learning process is stimulated by the internal initiatives of the child' (Maričić, Stakić, and Malinović-Jovanović 2018, 632). This way, picture books can support children in attaching personal meaning to the mathematical objects involved in the books (Marston 2010, 324). Picture books may contribute to the development of children's attitudes toward mathematics (Griffiths and Clyne 1991) and can provide children with informal world of experiences which embodies mathematical concepts and structures (Ginsburg and Seo 1999).

From the aspect of language learning and adoption, placing unknown or less familiar words into a well-known and familiar context helps students with learning difficulties in vocabulary development, stabilisation of their active vocabulary and conversion of passive into active vocabulary to spontaneously overcome these difficulties. Book reading contributes significantly to children's vocabulary and concept development (Dickinson and Tabors 2001). This way, children are introduced to new words, and it is especially important that the introduction and familiarisation occur in well-known situations and contexts. Children's attention is drawn toward words and concepts, they are associated with already adopted concepts and with existing knowledge, which is very important for children with learning disabilities. Therefore, it is crucial to depict a subject matter familiar to the child, because through repetition at the level of phonemes, words and phrases, it facilitates the adoption of a vocabulary (according to Martinović and Stričević 2011, 54). If we start from the attitude of L. S. Vigotsky that language has a central role in the learning process, and that it occurs in socially constructed situations, then the picture book has a central role in that process. Its content enables the aforementioned socially constructed situations which rep-

represent the starting point for organising learning situations, especially due to the fact that children at the beginning of education are also trying to master reading. Other authors also underline the importance of this approach, which generally represents a process of 'enculturation into a community of practice' (Cobb 1994, 13). Proponents of constructivism in learning observe picture books as an environment in which students actively construct mathematical knowledge (Phillips 1995).

What should the picture book be like to achieve its learning function in the case of children with learning disabilities? The images should be 'clear and easily identifiable, pretty and attractive, with clean and bright colours' (Kelemen Milojević and Đorđev 2017, 370) and they should associate the existing child's experience with the visually depicted context. Babić points out that vocabulary enrichment and adoption of different meanings of a word is achieved by changing and associating experiential situations with a context, and their placement into different relations (according to Martinović and Cupar 2015). For example, the picture book *The Fox and the Raven* (Figure 1), based on the fable of the same name, meets the aforementioned conditions in terms of visual quality of images, but also represents an adequate didactic device for working with students who exhibit learning disabilities in elementary mathematics and language education.

In the picture book *The Fox and the Raven*, we can start working on vocabulary development within the Serbian language course by naming the things depicted on the pictures. The picture shows the animal world familiar to the child. We will name the main animal heroes: the fox, the bird and the world that surrounds them. We should also describe the appearance of our heroes. The colour of the fox and the black colour of the bird should be mentioned. We can use phonological exercises for the purpose of speech development and language learning and adoption (Brock and Rankin 2008; Roskos, Christie, and Richgels 2003). The teacher reads the sound the bird makes from the pages of the picture book *Kraa! (Grak!)*. The aforementioned procedure is a method of natural or onomatopoeic sounds which represent the root of many morphologically motivated words in the Serbian language. For example, by repeating onomatopoeic words which are commonly short, comprising one or two syllables, which in turn are a combination of two or three phonemes, we can clearly identify the connection between phonemes that form the word. Phonemes that form onomatopoeic words, e.g. bleating of the sheep, crowing of the rooster or clucking of the chicken, or in the case of our picture book, the cawing of the raven, are usually phonemes containing an exploding quality, which is why their pronunciation represents an



Figure 1

The Fox and the Raven
(Marković and
Jovanović 2016, 6–11)

exercise in the correct articulation of voices. During the process of naming the reality depicted on the pictures, the teacher also observes how students articulate sounds, if they make any errors in pronunciation or discrimination of sounds similar by place or manner of articulation. The conclusion we can draw from all this is that the picture book may be implemented as a didactic device in tests that precede the learning of reading and writing. Early detection of errors in sound articulation is important so we could prescribe exercises for articulation and sound discrimination in time, and eliminate speech errors before they grow into speech disorders or impediments. The teacher can associate the repetition of the onomatopoeic exclamation *Kraa!* (*Grak!*) with the formation of the morphologically motivated verb which gives the name to the sound produced by the bird. The morphologically motivated verb *to caw* (*graktati*) in Serbian language was derived from the sound made by the raven, and the students of the first grade are not familiar with its meaning. In addition, we can assume that children are not familiar with the name of the bird raven (*gavran*) either, so they will be introduced to a new word through the aforementioned procedure of working on the picture book. The word is introduced not as an abstract and isolated lexeme, but in the context of the picture book and an interesting story about a cunning fox and a bird

(raven) that lost a tasty meal due to its credulity. Moreover, we shall repeat the phonemes (cawing sound), word raven (*gavran*) and other words familiar to children, whereas the pictures in the picture book will portray them (such as the words: fox, forest, tree, branch, cheese, etc.), which helps overcome the aforementioned language difficulties, such as the difficulties with adopting new words and difficulties with recalling familiar words. The naming, separation and repetition of words is not given outside the context of the sentence and the story (fable) *The Fox and the Raven*. By describing, narrating and retelling the content of the picture book, children practice and develop sentences.

The aforementioned content of the picture book *The Fox and the Raven* in mathematics education creates the basis for initiating a discussion about the relations of the up-down position. Students are guided toward the content of the picture book and the text accompanying the pictures. Picture books have a 'potential to act as a magnifying glass that enlarges and enhances the reader's personal interactions with a subject' (Vacca and Vacca 2005, 161). Students are expected to discern the person the Fox is addressing, which forms the basis for observing the position of the companion in relation to the Fox. Students will see that the bird (raven) is above the fox on the picture. In addition, they will see that a wheel of cheese is above the fox. On the other hand, students should be guided toward observing the opposite relation: what is located below the raven. These activities are very beneficial for children, because they can observe and identify certain spatial relations, which according to Murphy et al. (2007) represent a source of numerous difficulties in mathematics. Further discussion on the relation of the up-down position can help us develop this relation in mathematics education, but also to expand and enrich the vocabulary of the child by naming objects and beings from their surroundings located above or below the student. The teacher may achieve this through the question: What is located above us? At first, this orientation is associated with the environment in which the child finds himself/herself, but later, we will go beyond this limited space and depict a broader reality. We should gradually move away from the child. The child's position can be placed in the context of illustrations and relations depicted in the picture book, and then we should go a step further and determine the position of other objects based on the objects from the picture and in the child's surroundings. All of this gives a more secure foothold to children with learning disabilities to overcome the difficulties they are facing.

We shall illustrate some of the possibilities of the picture book in teaching with first-grade students on the example of the *Little Red Riding Hood*. The

teacher may start with the picture book by narrating the content of the *Little Red Riding Hood* fairy tale. The tale of the girl who goes through the woods to visit her sick grandmother and her encounter with the big bad wolf is well-known to children. By reminding children of the thematic context of the fairy tale, the teacher creates an encouraging atmosphere in class for children who exhibit difficulties in learning mathematics and mother tongue. Enjoying the depicted world of fairy tales is an integral part of childhood. The child gives in to the world of imagination and magic without resistance which would be present if the child with learning disabilities would hear that the next math lesson would be dedicated to learning number one, or that the next Serbian language lesson would be dedicated to learning to read and write the letter C.

The aforementioned picture book is suitable for adopting the concept of number 1 in elementary mathematics education. Each page of this picture book provides this possibility. The concept of numbers represents a great abstraction for children, and the issue of understanding the concept of natural numbers is even more pronounced in children with mathematics-related learning disabilities. Mathematics education is 'often very abstract for students, so a student of this age can hardly understand or comprehend the essence of a concept or a process if that concept/process is not obvious' (Marčić and Milinković 2017, 120). Therefore, it is often emphasised that mathematics education that starts with situations familiar to the child, based on the child's experience and interests is a good mathematics education. 'Children learn mathematics from meaningful contexts, and teaching should build on the informal knowledge children have acquired both before starting school and outside school hours' (Van den Heuvel-Panhuizen, Van den Boogaard, and Doig 2009, 30).

Pages of the picture book *Little Red Riding Hood* do just that – they create concrete, realistic situations that represent an excellent basis for the formation and development of the concept of number one. On the first page of the picture book, students' attention is drawn to the following elements: one girl in a little red riding hood, one bird, one squirrel, one basket, one flower held by the girl. On the second page, we have: one girl again, one wolf and one rabbit; on the third page: one wolf, one grandmother, but at this point, attention is drawn to the following objects as well: one bed, one case, one carpet, one curtain, etc. Based on the depicted realistic context, we will form unit sets that will be used as examples, based on which children should form a mental image of the concept of number ONE. This way, we will reach the abstract concept of number one via real examples of unit sets. Given that the

entire depiction is an illustration placed in a real context, students are now introduced to the process of observing and identifying unit sets in their surroundings. This way, the picture book helps students connect mathematical ideas to their personal experiences (Murphy 2000).

From the aspect of speech development, in addition to syntactic development which can be encouraged through discussion about the retold fairy tale, envisaging and describing how the creatures in the tale look like, i.e. by portraying (the girl, grandmother, big bad wolf) of the landscape (forest), exteriors (exterior of the grandmother's cottage), interiors (interior of the cottage), etc. whereby students will mostly use descriptive adjectives in the context of a sentence where they need to correctly implement the desired noun form of the word, but they will also spontaneously exercise and repeat sentences, and unobtrusively correct linguistic errors. If a student makes an error, the teacher can create a context in which the student will be able to correctly repeat the syntactic unit he/she pronounced incorrectly the first time.

From the aspect of phonological development and the development of correct articulation, the given illustration is suitable for exercising the pronunciation of sound C which precedes reading and writing of this letter. The given sound belongs to the so-called affricates or semi plosives in Serbian, because the airflow must overcome the obstruction in the form of speech organs (ridge), i.e. the narrowing of the mouth passage. Because of this, articulation of affricates comprises two elements: a fricative and a stop (plosive) consonant T and S. (Stevanović 1989). A pronounced difficulty in the articulation of sound C involves its instability, because this sound 'is omitted somewhat more often than other affricates' in speech, which can be explained by the short duration of the sound T which represents its integral element (Vasić 1981, 79). Therefore, it is recommended to practice the articulation of this sound in three positions within a word: 1. at the beginning of the word; 2. in the middle of the word and 3. at the end of the word. In a page from the *Little Red Riding Hood* picture book the sound C can be found in almost all words which name images depicting living and non-living objects: Little Red Riding Hood, flower, bird, basket (*Crvenkapa, cvet, ptica, korpica*). By pronouncing these words in the context of the story narrated, children simultaneously exercise articulation of unstable affricates at the beginning, in the middle and at the end of a word in the Serbian language. Other words in which the sound C is at the end, and which are related to the thematic context of the fairy tale, may be introduced into the story as well, such as the word hunter (*lovac*), or we could create a dramatisation in which children will imitate the wolf knocking on grandmother's door and repeat the sound of knocking – knock, knock, knock (*Kuc, kuc, kuc!*).



Figure 2 Visual Recognition of the Number and Position of Sounds within a word

Exercising the articulation of sound C by pronouncing words from the picture (and the picture book) which contain this sound may serve as an incentive for introducing students to the concept of a sound (phoneme) and its understanding in the preparatory period which precedes the process of learning reading and writing. This can be achieved through analytical exercises that are considered difficult for students in methodology, which is why they should be implemented based on the principle of gradualness (Mila-tović 2013, 120). The exercise in which students identified the sound C at the beginning, in the middle and at the end of a word at the same time represents the first stage of analytical exercise for developing phonemic hearing in students and for observing sounds in the context of a word. The next step is to split the word into phonemes. Students are expected to identify the sounds that comprise the word, and their number. This is an oral analysis, but to facilitate identification of the position of sounds, the teacher may single out the picture he/she wants to analyse and represent sounds below the picture in the form of circles, stars, or geometric shapes (squares, rectangles, triangles, etc.) (Figure 2).

Through initial analytical exercises, students are gradually introduced to synthetic exercises that will become inseparable from the former type of exercises. In synthetic exercises, the teacher articulates individual sounds and the students' task is to recognise the word they make – flower – fffll-looowwwweerrr (*cvet* – *cccvvveett*). The value of these exercises lies in the fact that the teacher is able to see which students have difficulties in recognising phonological codes in the period preceding the learning of reading and writing, and to gradually eliminate those difficulties through a process which will be experienced as play by the student. In addition, the aforementioned exercises help eliminate potential future difficulties students may experience in mastering reading skills, such as: incorrect articulation of sounds, unbalanced dynamics of sound articulation and difficulties in connecting letters into a whole, as well as omission of letters.

Concluding Remarks

Planning, organisation and realisation of teaching in school represents a very complex and creative process in which the teacher plays a dominant role. This task gets even harder if the student group is heterogeneous. Then the

teacher's job becomes a challenge even for himself, and planning, organisation and realisation of teaching gets increasingly complex. Success of such work greatly depends on the teacher's willingness to accept different students, and his ability to provide access to knowledge, skills and information for all students by creating a safe and didactically and methodologically designed environment where each student will be able to learn (Maksimović 2017). This paper draws attention to the picture book as a didactic device and describes how it can be used for teaching students who exhibit learning difficulties in mathematics and Serbian language at the beginning of education to achieve effects in the adoption of both subjects, while simultaneously representing an integrative element of learning. The importance of this approach is confirmed by research the results of which state that when mathematics is integrated with literacy, students who are not typically 'good' at math frequently excel in the subject (Worley 2002) and that 'preschool children with disabilities increased their skills in math after an intervention integrating mathematics within children's literature' (Green 2014, 137).

The contribution of the picture book in the field of learning the Serbian language is unmistakable. However, it should also be noted that mathematics, 'although at first glance, looks like a science which is built on a purely abstract level, is actually the science that operates exclusively with symbols, whose language is a system of special signs (symbols) understandable to everyone, and is certainly built in a real context' (Maričić, Stakić, and Malinović-Jovanović 2018, 639). The picture book is precisely what provides this real context in which a simple picture with compelling illustrations catches attention of the student, he is absorbed in the content of the picture, his perception and attention are captured and he starts to learn, and all this applies to children with learning disabilities as well. Research also confirms this fact, because research results state that picture books help children become engaged in mathematics without having to resort to explicit instructions and references, i.e. content from children's literature in the form of stories represents 'the most natural package of organised knowledge in the cognitive system for acquiring and retaining information' (Casey et al. 2008, 276).

In order to fulfil their function in education, 'it is important to choose the picture books properly. The educator must select carefully the picture book bearing in mind, above all, the aim that he wants to achieve in the field of mathematics learning' (Maričić, Stakić, and Malinović-Jovanović 2018, 634). Due to limited amount of space, the paper presents only two examples which illustrate the function a picture book can achieve in the field of mathematics education and Serbian language, especially in the case of children with

learning disabilities. Almost every picture book, if carefully chosen, is able to achieve this function, primarily due to the fact that picture book content brings the learning context to life, which means a lot to children with learning disabilities. In addition, the child develops speech, enriches and expands his active vocabulary, learns new concepts through unobtrusive content which reminds children of the games they enjoyed in their pre-school period.

The paper presents only preliminary considerations related to the use of the picture book in teaching children who exhibit learning disabilities. Of course, the picture book can be used to work with other children as well. We hope that this paper will encourage other researchers to study the role of the picture book and its contribution to teaching children, both those with learning disabilities and those without them, to examine the limitations of this approach and teachers' experiences in its application.

Acknowledgements

This paper is a part of the project Teaching and Learning: Problems, Goals and Perspectives, No. 179026, the holder is the Teacher Training Faculty in Užice, financed by the Ministry of Education and science of the Republic Serbia.

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Uporaba slikanic pri pouku matematike in srbsčine za otroke z učnimi težavami

Namen avtorjen prispevka je ustvariti kognitivno učno okolje, ki bo otrokom z učnimi težavami pomagalo preseči njihove omejitve in doseči zahtevane cilje pri matematiki in srbsčini. Proučili so vlogo in pomen slikanic in predstavili načine njihove uporabe pri poučevanju otrok z učnimi težavami na začetku izobraževanja. Slikanice vidijo kot primerna didaktična orodja, ki ponujajo učen-

cem domače družbeno konstruirane situacije. Avtorji so pokazali, kako lahko z uporabo iste slikanice dosežejo ta cilj pri dveh različnih predmetih. Preučili so tudi možnosti uporabe slikanic pri oblikovanju učnega okolja, v katerem je temeljne matematične pojme mogoče uporabiti v zgodnjem obdobju učenja pri premagovanju težav pri branju in pisanju, pa tudi za obogatitev besednega zaklada in oblikovanje stavkov pri pouku srbsčine.

Ključne besede: matematika, srbsčina, slikanice, učenci z učnimi težavami