

STUDY ON INTEGRATING CHILDREN'S STORIES FOR LEARNING NUMERATION IN ROMANIAN PRESCHOOL EDUCATION

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ABSTRACT. The new Curriculum for preschool education in Romania, introduced in 2019, launches a challenge for educators: the active involvement of preschoolers in the activities carried out in kindergarten, their preparation for a social life based on cooperation, communication and action. One of the recommendations of the new curriculum is to organize the learning content in an integrated way. In this context, we intended to study how pre-school teachers' approach in an integrated way the teaching of numeration through stories, their role and importance. The data were collected using the survey method based on a questionnaire in Google Drive. The questionnaire was completed voluntarily and anonymously by 101 teachers for preschool education. Over 88% of respondents consider that stories contribute to a large or to a very large extent to learning the numeration and that preschoolers are actively involved in learning activities in which stories are used, obtaining very good mathematical performances. Almost all preschool teachers who attended the study found the use of stories in learning to be very beneficial, even if they face to some difficulties, including the lack of a collection of consacrated stories for learning numeration.

Keywords: *Children's stories, numeration, kindergarten, survey, Romania.*

1. Introduction

In recent years, a comprehensive process of reform, reorganization of the education system has begun in Romania, in order to align it with the European one. The new Curriculum for preschool education introduced in 2019, launches a challenge for educators: the active involvement of preschoolers in

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the activities carried out in kindergarten, their preparation for a social life based on cooperation, communication and action.

The Curriculum for early education (Ministry of National Education, 2019) requires two major changes within the preschool system which starts from the necessity of improving the quality of education at an early age to meet the requirements today's preschooler. One of the recommendations of the new education is to organize the learning content in an integrated way. The traditional monodisciplinary approach is now accompanied by an interdisciplinary, multidisciplinary design, organization and development of activities. Through the activities carried out in an integrated manner, the educator offers the preschoolers the chance to manifest themselves freely and creatively and creates a stimulating and diversified environment for the development of their personality.

The integration becomes a key concept, with the help of which the educator can carry out an educational approach focused on the needs of the preschooler, his possibilities and his pace of learning. According to Petrovici (2014) "mathematical activities in kindergarten are some of the most prolific activities, they can be approached in various forms, at any time of the day, both to the chosen activities and to the compulsory activities". Integrated teaching of mathematics can be done in many ways, one of the ways being the use of stories as an integrative element.

A story is defined in different ways as follow: "a description, either true or imagined, of a connected series of events" (Cambridge Dictionary, n.d.); "A description of events and people that the writer or speaker has invented in order to entertain people" (Oxford Learner's Dictionaries, n.d.); "A fictional narrative shorter than a novel" (Merriam-Webster, n.d.); "An account of something that happened. Stories can be imaginary, traditional, or true" (MacMillan Dictionary, n.d.). In Romanian language the story is defined as "A kind of epic (popular) in prose in which fantastic events of imaginary characters in the battle with evil characters are told and in which the good triumphs; fairy tale"; "A narration, exposition of a fact, of an event or of a series of facts or events in a gradual development" or "A literary narrative comprising possible and impossible facts" (Explanatory Dictionary of the Romanian language, n.d.).

The stories used in preschool education can be diverse, such as: stories with Romanian or foreign authors, Romanian or foreign folk tales, legends, fables, poems, etc., all of which being generically called "children's literature" or "children's stories". It is obvious that the stories from the universal literature that have been transposed in movies as well as the consacrated stories at national level or those who are specific to a certain geographical area are most often used in activities. Also, the methods used in story-based activities can be

as diverse as: text read by the teacher; storytelling based on pictures, picture books or picture videos; animated film; film with actors; story reproduction with tokens or miniatures objects; role-playing games; dramatization, etc.

The specialized literature mentions that integrating children's literature in mathematics education has many benefits that have been centralized by Demeny & Zsoldos-Marchis (2020) as follows: reduces mathematical anxiety (Furner, 2017a); increases the motivation for learning Mathematics (Albool, 2012); arising children's curiosity towards the mathematical notions (Zsoldos-Marchis, 2020a); increase children's engagement in mathematics learning (Trakulphadetkrai, 2015); promote active participation (Furner, 2017b; Zazkis & Liljedahl, 2009). Also as stated by Wilburne, Keat & Napoli (2011) almost any story written for children can be integrated in a preschool mathematical activity, and are efficient to develop different mathematical knowledge as: number sense (Albool, 2012; Lemonidis & Kaiafa, 2019; Heuvel-Panhuizen, Elia & Robitzsch, 2016); geometrical competences (Casey, Erkut, Ceder & Young, 2008; McAndrew, Morris & Fennell, 2017; Skoumpourdi & Mpakopoulou, 2011; Heuvel-Panhuizen, Elia & Robitzsch, 2016) or measurement abilities (Tucker, Boggan & Harper, 2010; Heuvel-Panhuizen, Elia & Robitzsch, 2016).

Thus, the main aspects covered in the study of natural numbers: the cardinal aspect, the ordinal aspect, the verbalization and the writing of figures (Magdaş, 2014) can be acquired and consolidated based on the stories. The cardinal aspect is highlighted by counting the characters or other elements in a story. The ordinal aspect is highlighted by identifying the position of a character or an element in the story in the numerical string. For example, for the story "Snow White and the 7 Dwarfs", after the pupils see a picture of the dwarfs in a certain order, the teacher can ask questions such as: "How many dwarfs have a red hat? Describe the third dwarf." At the same time, the children will verbalize the numbers and will identify the figure that correspond to a number by making different correspondences. For example, for the story mentioned above, the children will choose the figure 7 which correspond to the numbers of dwarfs. In addition, the stories give the possibility to perform addition and subtraction operations that are also studied in preschool education in Romania. Depending on the specific content approached, the teacher can create stories or transform stories already known by children by adding characters or additional elements, for example to the story "Little Red Riding Hood" can be added to the story that "On her way to Grandma's house, Little Red Riding picks 3 red and 2 yellow flowers. How many flowers did the little girl pick?". By integrating the stories into activities, can be identified characteristics of the characters or objects through which knowledge about shapes, colors, sizes, spatial positions, aspects regarding time, etc. are consolidated. So that

pupils will develop their interdisciplinary and mathematical knowledge as well as language.

Studies conducted in Romania show that Romanian teachers have a positive attitude towards mathematical children's stories and consider useful the use of children's stories for mathematical education in preschool and classes 0 - 2 of primary school (Zsoldos-Marchis, 2020a, 2020b).

Based on these considerations, we conducted a survey to find out the most used stories to learn numeration in preschool in Romania and to what extent they are used. The results obtained from the application of the questionnaire are presented in this paper.

2. Research Questions

Through this research, we proposed to answer to the following questions about learning numeration in preschool education in Romania: How often the stories are used by teachers in preschool activities?; What types of stories are used ?; What are the most commonly used stories ?; What are the criteria according to which the teachers choose the stories ?; What types of math activities are the stories used for ?; To what extent do stories help to learn the numeration and activates the preschooler ?; To what extent does the use of stories lead to superior learning outcomes ?; What are the positive effects of integrating stories into learning, but also what are the difficulties / limitations of using them in preschool education?

3. Purpose of the Study

By analyzing the answers to these questions, we aim to identify the role and the importance of using stories in learning numeration, from the perspective of preschool teachers. These results are a starting point for developing a collection of stories useful in learning numeration along with methodical suggestions and examples for their integration into preschool activities.

4. Research Methods

Procedure. We created a questionnaire by using the Google Forms application in Google drive, which was distributed between March and April 2021 on the social network Facebook and by e-mail. The survey included 16 items, out of these, 14 were multiple choice questions, one item was an open answer question and one was a dual choice question. The collected data were statistically processed and represented in diagrams by using the Microsoft Excel program.

Participants. The questionnaire was completed voluntarily and anonymously by 101 preschool teachers. Regarding the participants' educational level, 63% of them have Bachelor's degree, 32% of them have a Master's degree. Only 5% graduated only the secondary education (Pedagogical High School). Regarding the didactic degrees (which are stages of the didactic career), almost half (44%) of the respondents have the Ist Didactic Degree (the highest didactic degree), 30% of them have the IInd Didactic Degree, the Definitive Degree is held by 15% of respondents, while 11% of them are beginners.

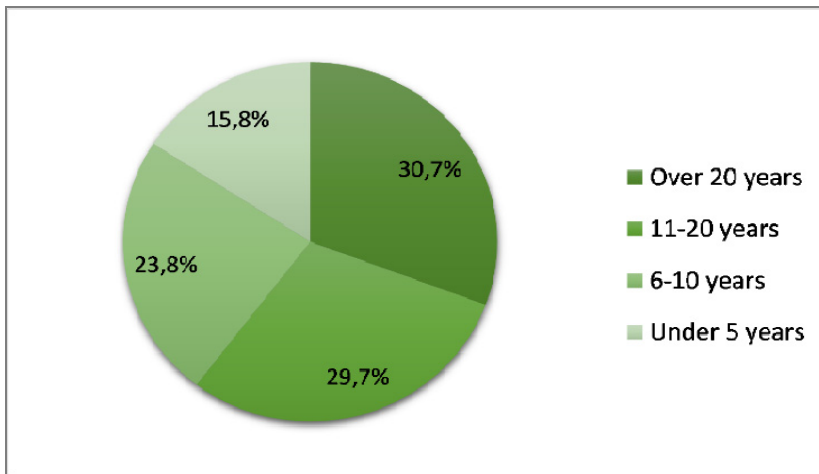


Figure 1. The seniority in teaching of the respondents

Regarding of their seniority in teaching (Figure 1), more than 60% of teachers have at least 11 years old in teaching. On average, 56% of respondents work in institutions located in urban areas and 44% in rural areas. Thus, we consider that the group of respondents have the qualification and teaching experience that allows them to make assessments relevant to the issues investigated through the questionnaire. As 45% of respondents teach in kindergartens in rural areas, the information collected also reflects the situation in areas with fewer material resources.

The research material consists of the answers expressed in the questionnaire.

5. Findings and Discussions

By applying the questionnaire, we obtained the following results. Regarding how often they use stories in mathematical activities (Figure 2), over 75% of respondents use stories at least once every 2-3 weeks, while only 6% use them rarely, i.e., several times a year or less.

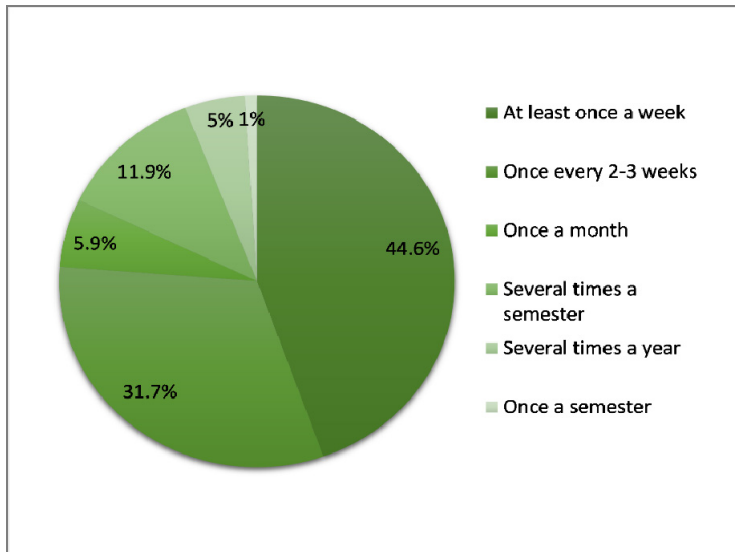


Figure 2. Distribution of teachers according to how often they use stories in mathematical activities

Regarding the types of stories used by teachers in mathematical activities (Figure 3), over 70% of teachers use stories known to children, while over 50% of them integrate invented stories into activities. From the respondents' findings we find that teachers prefer to create stories rather than transform familiar stories or use lesser-known stories by pupils. This is probably due to the fact that it is easier for educators to use a smaller variety of stories but which the students know very well and for which they probably already have teaching material ready to be used.

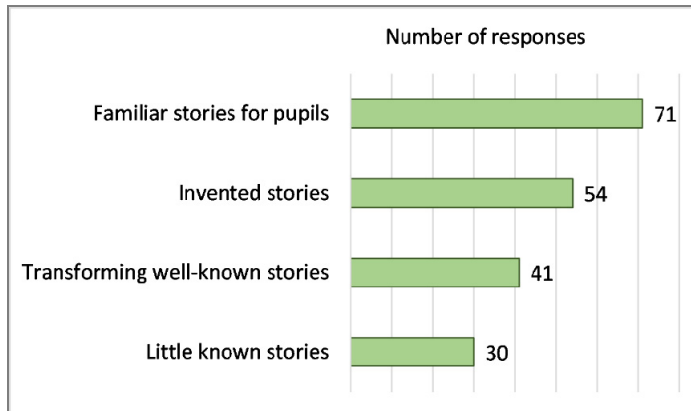


Figure 3. Types of stories used in mathematical activities

Respondents mentioned a total of 281 stories used for numeration, so each respondent named an average number of 2.78 stories. This number is relatively small considering that numeration is the most widely studied content in preschool education, and the stories are extremely varied and attractive to children. One cause of this small number of stories mentioned by respondents may be due to the lack of an official collection of texts proposed for kindergarten and to the lack of methodological guidelines for using stories in instruction. So that, teachers use the texts they consider appropriate, based on their own experiences, knowledge and teaching materials existent. The most used stories in mathematical activities are (Figure 4): “Snow White and the Seven Dwarfs” mentioned by almost half (48.5%) of respondents, “The Goat and Her Three Kids” mentioned by 44.6% of respondents and “The Three Little Pigs” mentioned by 38.6% of respondents. In Figure 4 we represented the stories mentioned at least 2 times by the respondents and we marked in blue the stories from universal literature, respectively with yellow those from the Romanian literature.

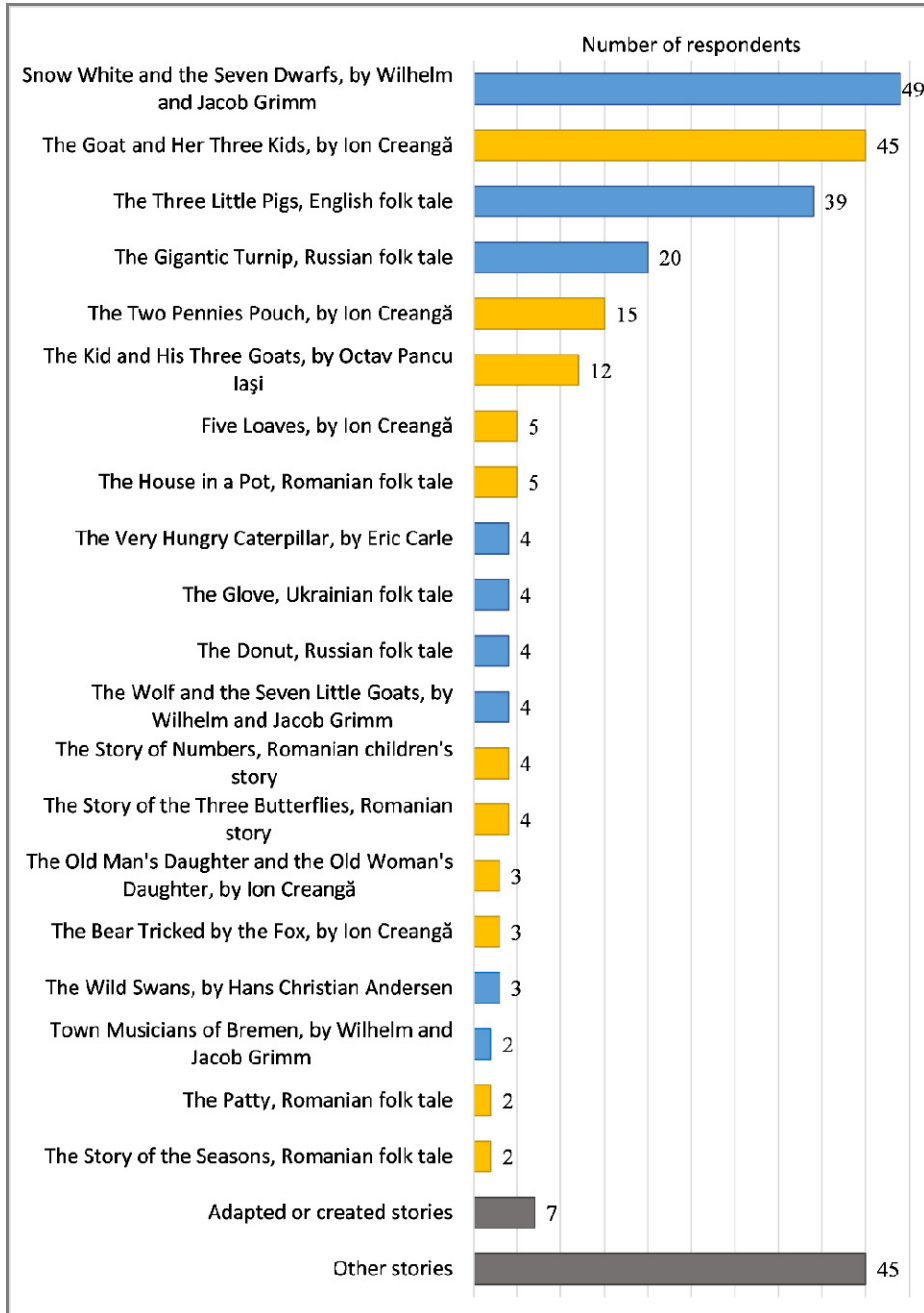


Figure 4. Stories for numeration used in kindergarten

Regarding the most important criteria for selecting the stories used in mathematical activities (Figure 5), almost 80% of teachers choose the stories considering the age and individual characteristics of children, 68.3% choose them according to the objectives and content of the activity, and 64.3% depending on the children's level of understanding. Although teachers do not always have adequate material at their disposal, this is not the first criterion underlying the selection of stories, which is a good thing that shows the responsibility and involvement of preschool teachers.

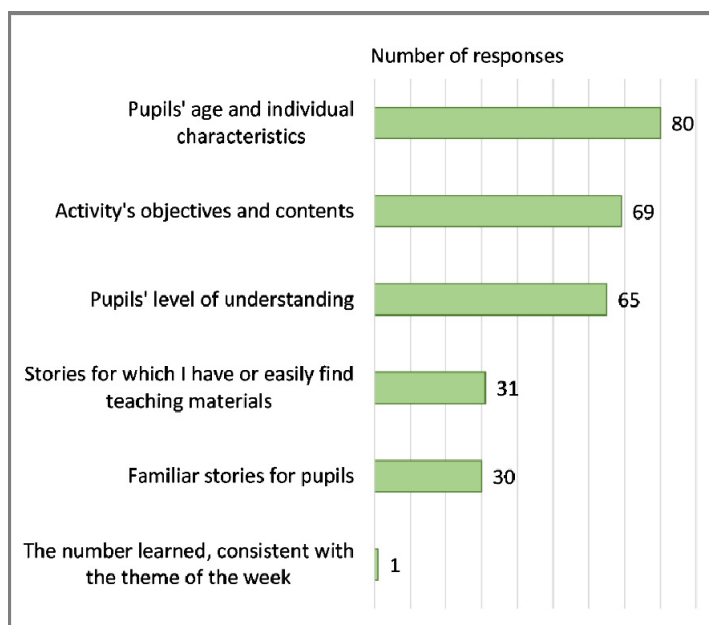


Figure 5. Criteria according to which preschool teachers choose stories in mathematics activities

Among the respondents, almost three quarters use the stories for practice numeration (73.3%), as well as in teaching-learning activities (72.3%) or for consolidation activities (69.3%), while more than a half (54.4%) use the stories also in assessment activities.

Regarding the contribution of stories to learning numeration, 88.1% of respondents consider that stories have a large or a very large contribution, while only 1% consider that the stories contribute to a small extent.

All respondents consider that students actively participate in the lessons in which stories are used, more precisely, 48.1%, respectively 48.5%

of the respondents noticed that children actively participate to a very large extent, respectively to a large extent in these activities.

Almost three quarters (73.3%) of the respondents consider that the results obtained in the mathematical activities in which stories were used were very good, 24.8% consider that the results were good and only 2% consider the results as sufficient.

Among the positive effects of using stories (Figure 5) 70.2% of respondents consider that integrating stories is an attractive way to learn numeration and help to a better understanding. More than half of the respondents consider that the use of stories has all the positive effects mentioned in Figure 6.

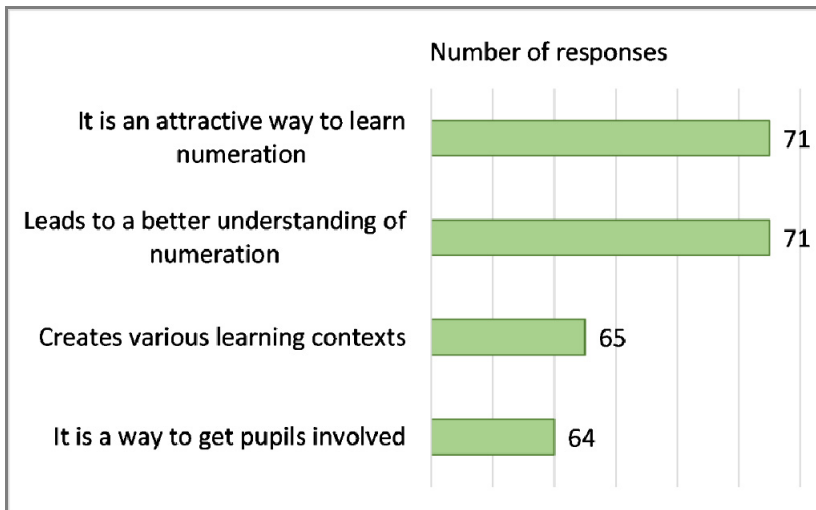


Figure 6. Positive effects of using stories in learning numeration

However, the use of stories in learning numeration also encounters some difficulties (Figure 7). The biggest difficulty encountered by the respondents refer to the appropriate teaching material for the stories because it has to be created by the teachers, an aspect mentioned by 57.4% of the respondents. Another limitation would be that in the methodological guides for preschool education there is no recommended collection of stories for numeration, an aspect mentioned by 31.8% of the respondents. A solution to this problem would be a collection of stories that can be used to learn numbering, along with methodical suggestions and examples of activities.

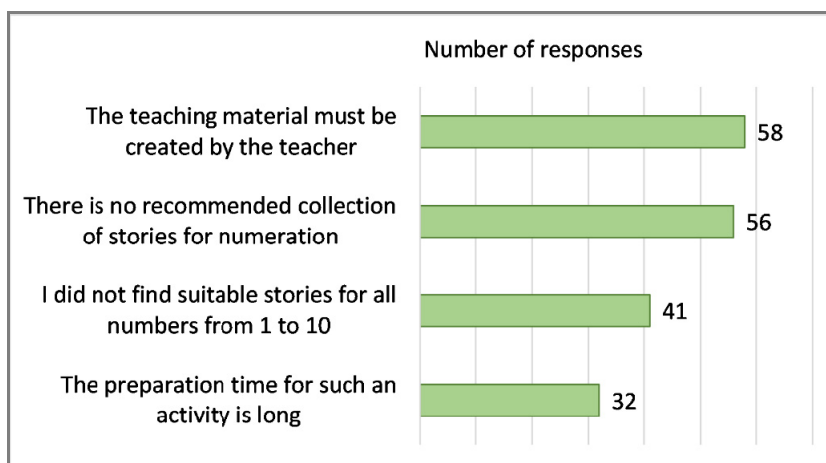


Figure 7. Difficulties and limitations in using stories in learning numeration

6. Conclusion

Preschool teachers have adapted appropriately to the Early Education Curriculum by which a new curriculum design model, focusing on key competencies, areas of development and integrated content approach was introduced.

Our research shows that preschool teachers consider the use of stories to be a good idea, challenging, interesting, which gives very good results in working with preschoolers, as a way to activate and actively involve children in learning activities. The preschool teachers use stories in teaching-learning activities but also in consolidation and assessment activities. Based on the questionnaire addressed to preschool teachers in Romania, we identified that the most used stories are the known ones, such as “Snow White and the Seven Dwarf”, “The Three Little Pigs” etc. from the universal literature, or “The Goat and Her Three Kids”, “The Two Pennies Pouch” etc. from the Romanian literature, but some teachers also use lesser-known stories or invent other stories. The use of stories for learning numeration has many positive effects, including: it is an attractive way to learn to count, helps to better understand numeration, creates various learning contexts. There are also some difficulties and limitations of using stories in learning numeration as: the teaching material needed in such activities must be created by the teachers, they cannot use the stories to learn all the numbers from 1 to 10 because they have not found adequate stories, but especially the fact that there is no recommended collection of stories dedicated for learning numeration.

Based on these findings, in order to increase the level of teachers' competence, it would be necessary to develop methodological guidelines that include theoretical foundations, projects of learning units and integrated activities based on stories for learning numeration, but especially the publication of a collection of stories for learning numeration, along with methodological suggestions for organizing such activities.

Acknowledgements

We thank to the preschool teachers who, by completing the survey, made it possible to develop this study.

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