

**APPLICATION OF THE DECOLE PROGRAMME IN A
NATURAL CLASSROOM SITUATION: EFFECTS ON
EMERGENT LITERACY SKILLS**

**APLICAÇÃO DO PROGRAMA DECOLE NUMA SITUAÇÃO NATURAL
DE SALA DE AULA: EFEITOS NAS COMPETÊNCIAS DE LITERACIA
EMERGENTE**

Regiane Kosmoski Silvestre Gatto

Faculty of Philosophy, Sciences and Arts of Ribeirão Preto –
USP

Sylvia Domingos Barrera

Faculty of Philosophy, Sciences and Arts of Ribeirão Preto -
USP

Abstract

This quasi-experimental study investigated the effects of the DECOLE Programme, applied by a teacher in natural classroom conditions, on pre-schoolers' emergent literacy skills. Fifty-three Brazilian children attending a public preschool participated (average age: 5 years and 7 months; standard deviation: 3.9 months), separated into an Experimental Group (n=30) and a Control Group (n=23). Before and after the intervention, participants' phonological awareness, vocabulary, oral comprehension, and letter knowledge skills were assessed. The results indicate that the groups were equivalent in the pre-test regarding the skills assessed. In the post-intervention, significant differences were observed in favour of the Experimental Group, which participated in the intervention, in phonological awareness, oral comprehension and vocabulary. The results suggest the effectiveness of the DECOLE Programme, when applied in a natural classroom situation, for the development of emergent literacy skills considered highly relevant for learning to read and write.

Keywords: Emergent literacy, intervention, phonological awareness, kindergartners, oral language.

Resumo

Este estudo quase-experimental investigou os efeitos do Programa DECOLE, aplicado por um professor em condições naturais de sala de aula, nas competências emergentes de alfabetização de crianças em pré-escolar. Participaram 53 crianças brasileiras (idade média: 5 anos e 7 meses; desvio padrão: 3,9 meses) que frequentavam um jardim de infância público, separadas num Grupo Experimental (n=30) e num Grupo de Controlo (n=23). Antes e depois da intervenção, foram avaliadas as competências de consciência fonológica, vocabulário, compreensão oral e conhecimento das letras dos participantes. Os resultados indicam que os grupos foram equivalentes no pré-teste relativamente às competências avaliadas. No pós-intervenção, foram observadas diferenças significativas a favor do Grupo Experimental, que participou na intervenção, na consciência fonológica, na compreensão oral e no vocabulário. Os resultados sugerem a eficácia do Programa DECOLE, quando aplicado numa situação natural de sala de aula para o desenvolvimento de competências de literacia emergente consideradas altamente relevantes para a aprendizagem da leitura e da escrita.

Palavras-chave: Literacia emergente, intervenção, consciência fonológica, alunos do jardim de infância, linguagem oral.

Introduction

Research in cognitive psychology dedicated to studies on the importance of linguistic and metalinguistic skills for learning to read and write, has been obtaining relevant results concerning the teaching of written language, highlighting the role of Pre-school Education in the development of emergent literacy skills considered predictors of formal learning of written language (Rohde, 2015; Viana & Ribeiro, 2014; Whitehurst & Lonigan, 2003).

Emergent literacy skills correspond to a set of knowledge, skills and attitudes related to reading and writing that usually develop prior to the formal literacy process and that contribute significantly to the success of this process, such as, for example, knowledge of the alphabet and the conventions and social functions of writing, phonological awareness and vocabulary and oral comprehension skills (NELP, 2008; Viana & Ribeiro, 2014; Whitehurst & Lonigan, 2003).

Rohde (2015) emphasises that these skills must be seen as resulting from a process of bilateral influence of personal skills and conditions provided by family, school and community environments. The author argues that initial literacy skills can be acquired more easily by children as teachers have effective training and knowledge about child development and emergent literacy subjects. However, according to the author, many preschool teachers demonstrate a lack of knowledge about literacy development, which makes them unable to provide and develop these skills in children.

Before children can read and write, they need to understand how printed language works. The emergent literacy model proposed by Rohde (2015), called the Comprehensive Emergent Literacy Model (CELM), includes three components, each of which is described as composed of complex developmental processes. The model also represents the interrelationships between the components and emphasises the importance of culture and community in the development of emergent literacy skills. Thus, in CELM, each proposed component has its own development sequence and contributes to the development of the other components, showing the importance of recognising the environment in which children and their families live in this development.

The first component of the CELM model is “Print awareness”, which comprises knowledge of the alphabet and concepts about written language, such as book handling skills, knowledge about writing orientation and differentiation between text and drawing. The second component is “phonological awareness” which comprises the mastery of rhymes, alliteration, oral segmentation of words into syllables and phonemes and fusion of syllables and phonemes into words. According to the model, the interaction between the first two components occurs through the correspondence skills between letters and sounds and the behaviour of invented writing. The third component of the model is “oral language” which comprises vocabulary, prior knowledge and communication and listening skills. This component, in turn, interacts with the “print awareness” component through the skills of comprehension strategies, perception of similarities and differences between oral language and written language and grammatical skills. The interaction between the components “oral language” and “phonological awareness”, in turn, would occur through the processes of lexical restructuring. Lexical restructuring represents the reorganization of language by sound. In the normal course of development, children's phonological representations become increasingly segmented and sharply specified in terms of phonetic features. However, children's ability to construct the organisational structure of speech sounds depends also on the size of their vocabulary. Children with limited vocabulary, because of oral language deficiencies, will have more difficulty constructing a system of phonemes and morphemes. Language development is a fundamental component of initial literacy learning, both in its communicative and social interaction aspects, and for the acquisition of knowledge and new concepts. A child's familiarity with language and vocabulary is strongly linked to their later literacy success. Knowledge of the meaning of words (vocabulary) helps children reflect on their phonological representations.

Studies show that shared book reading contributes to the development of crucial preconditions for learning to read and write, that is, before children learn grapheme-phoneme correspondences. Wesseling et al., (2017) report positive effects of shared book reading on the expressive vocabulary and grapheme awareness of preschool children.

Children who have teaching restrictions and/or difficulties in one or more of the afore mentioned initial literacy skills may experience reading impairments and difficulties (Catts et al., 2015; Hulme & Snowling, 2013; Shanahan & Lonigan, 2010). There is now very strong evidence that learning to appreciate the relationship between spelling and sound is fundamental in the early stages of reading acquisition (Lervåg et al., 2017).

Longitudinal studies indicate that children who have more developed levels of linguistic skills (vocabulary and oral comprehension), metalinguistic skills (phonological awareness and phonemic awareness), as well as knowledge of the alphabet at preschool age demonstrate better reading and writing performance in later school years (Catts et al., 2015; Hjetland et al., 2017; Hjetland et al., 2019; Lyster et al., 2020; NELP, 2008). Experimental studies testing the effects of interventions aimed at developing emergent literacy skills in pre-schoolers have also obtained positive results (Barrera et al., 2019; Ecalle et al., 2015; Gatto & Barrera, 2022; Kruse et al., 2015; NELP, 2008).

As emergent literacy skills begin to develop in the preschool years, this educational level should be considered as a privileged context to stimulate their development. Prepare teachers so that they can improve their practices in early childhood education may be the most effective approach to increasing literacy skills in the long term (Almeida et al., 2018; Powell et al., 2010) such interventions must be started early and made available for a sufficient period of time to bring educational benefits (Hjetland et al., 2019).

Hjetland et al. (2017) conducted a meta-analysis study to examine the relationship between preschool predictor variables related to reading and later reading comprehension skills. The study indicated that code-related skills in preschool, such as phoneme awareness and letter knowledge, are indirectly related to reading comprehension through their influence on word decoding. These coding/decoding-related skills are most important for reading comprehension in beginning readers, but linguistic comprehension gradually takes over as children grow. Such results recommend the urgency of a comprehensive approach to language in preschool children, suggesting that successful instruction for reading comprehension should target a broad set of linguistic skills to be developed from preschool onwards.

These results suggest that emergent literacy skills, widely recognised in the literature as facilitators of learning to read and write, should be worked on more systematically during preschool, aiming at children's development and also to facilitate work in the following school grades. Although the development of these skills begins in the preschool years, they are also enhanced by the explicit and formal teaching that occurs when entering Elementary School (Viana et al., 2014).

According to the National Early Literacy Panel (2008), knowledge of letters is one of the best predictors of literacy showing significant correlations with reading and writing. The essential requirement for learning to read, in alphabetic writing systems, is the acquisition of the alphabetic principle, that is, the understanding and mastery of the relationships between graphemes and phonemes, which depends, in turn, on knowledge of letters (such as recognise and manipulate letters) and phonemic awareness (how to recognise and manipulate the phonemic units of spoken words) (Tunmer & Hoover, 2019). To achieve this, children also need to develop the ability to reflect on speech sounds, particularly phonemes (Ehri et al., 2001; Melby-Lervag et al., 2012).

According to Morais et al., (2013), the construct “phonemic awareness” involves the capabilities of recognition, discrimination, and insightful reflection of the abstract units of speech, the phonemes. The construct of phonological awareness, in turn, is very broad

and covers several skills, such as: analysis of phrases into words, words into syllables, and syllables or words into phonemes, in addition to the recognition and production of rhymes and alliteration (Capovilla & Capovilla, 2000). This perception of the possibility of segmenting the oral language, particularly in phonemes, which are the smallest sound parts of words, is considered to facilitate learning to read and write and, when worked on in preschool, expands the child's metalinguistic knowledge. Some studies suggest that phonological awareness is strongly related to oral language skills in preschool, forming a single dimension of language (Foorman et al., 2015; Storch & Whitehurst, 2002). Therefore, organised and appropriate pedagogical practices are recommended with the aim of developing phonological awareness in the preschool years and, in this way, helping children's school achievement.

Lyster et al., (2020) assessed reading development in a sample of 323 Norwegian children from preschool to grade 9, across an extensive range of language and reading skills, including phonological awareness and morphological awareness. The results of this study demonstrate the powerful influence of early language on later reading and suggest that language intervention programmes, combining phonological, morphological and semantic activities, can help reduce the incidence of reading problems. Preschool language skills also have far-reaching direct and indirect effects on the development of reading comprehension.

Different debates exist about the challenges and policies that seek to improve the quality of early childhood education, as well as evaluating its results. Furthermore, children from economically and socially disadvantaged families find themselves in conditions of inequality for many reasons, as they might not have access to and experience with books and printed materials. These inequalities further reinforce the importance of preschool as an environment where activities with written language can and should be encouraged.

Experimental studies testing the effects of interventions aimed at developing emergent literacy skills in pre-schoolers have also obtained positive results in at least one of the skills assessed (Barrera et al., 2019; Bleses et al. 2017; Dale et al., 2018; Ecalle et al., 2015; Gatto & Barrera, 2022; Kruse et al., 2015; Lennox et al., 2018; NELP, 2008; Thomas et al., 2020). It is important to highlight, however, that in many studies the programmes are applied to small groups of children or in controlled situations and even by teams of researchers, which reduces their ecological validity.

The present study aimed to evaluate the effects of the DECOLE Programme (Viana et al., 2017) on the emerging literacy skills of preschool children, when applied by the teacher herself, in a natural classroom situation. The specific objectives were: to carry out in-service training for a teacher aiming to understand the theoretical principles and the practical application of the DECOLE programme in preschool classes; evaluate the effects of the DECOLE Programme on participants' phonological awareness skills, letter knowledge, vocabulary and oral comprehension (including comparison with a control group).

The DECOLE Programme is an adaptation of the Speaking, Reading and Writing Programme: Integrative Proposals for Kindergarten, developed in Portugal by Viana and

Ribeiro (2014). Both programmes have the general objective of providing educators who work with preschool children a structured set of pedagogical activities aimed at developing emergent literacy skills. Studies conducted to evaluate the effectiveness of the Portuguese Programme (Ribeiro et al., 2014) reveal that it received good acceptance from the teachers involved.

Like the original Portuguese programme, the Decole Programme (Viana et al., 2017) is based on the complete reading of books of children's literature, carried out in a dialogic, shared and participatory way. The teacher reads aloud to the children, with breaks for dialogues, questions and integrative activities, thus providing vocabulary's development and improving the comprehension skills by the text reflections and analysis of the illustrations.

The programme is organised using attractive and appropriate practices for preschool children in exploring oral and written language. The specific objectives of the Decole Programme are: 1) to promote the development of oral language, particularly the expansion of vocabulary and oral expression and comprehension skills; 2) to promote the development of metalinguistic skills (the ability to reflect on language in its phonological, morphological and syntactic aspects); 3) facilitate the acquisition of cultural and conventional knowledge about written language; 4) promote progress in understanding the relationships between oral language and written language; 5) encourage motivation, interest and curiosity for learning to read and write.

The various activities proposed, based on the reading of each book, are organised into five dimensions: reading, exploration of the verbal or bimodal text (drawing), writing, morphosyntactic reflection and phonological awareness. In recent research (Gatto & Barrera, 2022), significant positive results were obtained from the application of the DECOLE Programme on phonological awareness and oral comprehension skills, in a sample of Brazilian pre-schoolers, however the application of the programme, although conducted in a context of classroom, was made by the researcher. Therefore, it is of fundamental importance that the programme is tested for its possibilities of generating a significant impact on the emergent literacy skills of pre-schoolers when applied by the teacher herself in the natural teaching conditions observed in the preschool context, in order to confirm the ecological validity of the results obtained.

Materials and Methods

The present study was conducted with a quasi-experimental design that makes it possible to analyse the immediate effects of an intervention, based on the comparisons of results between the Experimental Group and the Control Group, assessed before and after intervention. The emergent literacy skills assessed were phonological awareness, alphabet knowledge, vocabulary and oral comprehension.

The researcher in charge trained the preschool teachers in the theoretical principles of the DECOLE Programme and its application to the preschool teachers' two classes.

Participants

The sample consisted of 53 Brazilian children, the gender distribution was 29 boys and 24 girls with a mean age of 5 years and 7 months ($SD=3.9$ months). These children were students at a public school chosen by the Municipal Education Department, for reasons of convenience (the director's flexibility in the participation of researchers in the school routine). The school serves children from low to medium socioeconomic levels. Most parents/guardians of the children participating in the research are literate, predominantly having completed high school).

Ethical Procedures

The research project was submitted for evaluation by the Research Ethics Committee of the researchers' institution and was considered approved. The parents or guardians of the participants signed the Free and Informed Consent Form, also considering the children's agreement to voluntarily participate in the research.

Instruments

To assess participants' emergent literacy skills, both before and after the intervention with the DECOLE Programme, the following instruments were used:

Phonological Awareness Test by Oral Production

The Phonological Awareness Test by Oral Production (PCF-O) (Seabra & Capovilla, 2012) is made up of ten subtests, with each subtest made up of two training items and four test items. The PCF-O scores correspond to the frequency of correct answers, and can vary from zero to 40. The skills evaluated by the PCF-O are: 1) Syllabic synthesis (e.g., "put these syllables together /ca/, /ne/, /ta/": /caneta/); 2) Phonemic synthesis (e.g., "put these sounds together /g/ /a/ /t/ /o/": /gato/); 3) Rhyme judgment (e.g., "repeat the words that end with the same sound: /peito/, /rolha/, /bolha/": /rolha/ and /bolha/); 4) Alliteration judgment (e.g., "repeat the words that begin with the same sound: /colar/, /fada/, /coelho/": /colar/ and /coelho/); 5) Syllabic segmentation (e.g., "separate the syllables of /fazenda/": /fa/, /zen/, /da/); 6) Phonemic segmentation (e.g., "separate the sounds of /aço/": /a/, /s/, /o/); 7) Syllabic manipulation (e.g., "add the syllable /bo/ to the beginning of /neca/": /boneca/); 8) Phonemic manipulation (e.g., "add the sound /l/ to the beginning of /ouça/": /louça/); 9) Syllabic transposition (e.g., "repeat the syllables of /boca/" backwards: /cabo/); and 10) Phonemic transposition (e.g., "repeat the sounds of /sala/ backwards": /alas/). In the present study, the subtests related to the analysis and/or manipulation of phonemes (2, 6, 8, 10) were not used. Scores could therefore vary from 0 to 24. The PCF-O has evidence of validity and reliability (Cronbach's alpha of 0.91 in a sample of children from 1st to 4th grade) and standardization data for Brazilian children from 3 to 14 years old (Seabra & Dias, 2012).

Letter Knowledge Survey

This task was developed specifically for this study, by the researchers, with the aim of verifying the child's knowledge of naming the letters of the alphabet or saying their sounds. Each letter, including vowels and consonants, was presented separately, in capital letter format, in black Arial font, size 72, on a white background, on a notebook screen (with the help of the Power Point programme). The order of presentation was randomized, and the same sequence was maintained for all children. The score could vary from 0 to 26 points, considering both the verbalization of names and the sounds of letters correct. It is noteworthy that, as this test was developed specifically for the present study, there are no expected standards for the level of Early Childhood Education.

ABFW Vocabulary Test

The ABFW test (Befi-Lopes et al., 2004) evaluates children's lexical competence by assessing expressive vocabulary. It consists of 118 figures that are separated into nine conceptual fields: animals (15); food (15); means of transport (11); furniture and utensils (24); clothing (10); professions (10); locations (12); shapes and colours (10); toys and musical instruments (11). The child needs to name the figure indicated in each conceptual field. The test can be applied to children aged 2 to 6 years, being standardized for the Brazilian population.

Contrastive Test of Listening and Reading Comprehension – (TCCAL)

The TCCAL (Capovilla & Seabra, 2013) is composed of two subtests: the Spoken Sentence Comprehension Subtest and the Written Sentence Comprehension Subtest. The first subtest, used in the research, assesses receptive vocabulary and oral comprehension, while the second assesses reading comprehension. It has standardization and validation for application in the Brazilian population aged 6 to 11 years.

Teacher training procedures and classroom intervention

For convenience criteria, two classes were designated as the Experimental Group and two classes as the Control Group (this group continued with the school's normal curriculum during the research period). Prior to the start of the Programme application, the initial training for the teacher was provided personally by the researcher at the school, lasting a total of 12 hours, divided into two-hour sessions, twice a week, for three weeks. Theoretical orientations were carried out with the support of slides presented on the computer regarding the basic principles of the Programme, including topics such as language development, metalinguistic skills, and emergent literacy skills in preschool children. Along with these guidelines, the teacher received a book from the DECOLE Programme that describes the entire basis and justification of the characteristics of activities to introduce children to the scope of oral and written language in early childhood education.

The teacher responsible for the Experimental Group applied the DECOLE programme in her two classes, after the training received and under weekly guidance and supervision from the researcher. The intervention included dialogic and shared reading of children's literature books, phonological awareness activities encompassing analysis of rhymes, syllables and alliteration, and vocabulary and oral comprehension tasks. The materials used were children's literature books, images accompanied by their written names, answer cards (YES and NO, 1 and 2), alphabet tree with images and letters, treasure chest, opinion sheet, and fun phonological awareness games. The Programme was applied in 59 intervention sessions (on average 3 sessions per week, lasting approximately 50 minutes each). In relation to phonological awareness training, the intervention focused only on the syllabic level, in which the skills of segmentation, synthesis, identification and production of rhyme and alliteration were worked on. It was not possible to work on phonemic awareness skills in the interventions due to the COVID 19 pandemic, and the mandatory use of masks during the research.

Data analysis

Initially, descriptive analyses were conducted in order to summarise the groups' performance on the different instruments applied at both moments of the research (pre-test and post-test). Analyses to verify the hypothesis of normality in data distribution were also carried out using the Shapiro-Wilk Test. For comparisons between Experimental and Control Group, we used the t Test and the Mann-Whitney test for independent samples. Effect sizes (Cohen's d) were reported and significance levels were previously determined at $p < 0.05$. According to Cohen (1988), values 0.2, 0.5 and 0.8 are considered small, medium and large effects, respectively.

Results

The data were analysed quantitatively, using descriptive and inferential statistical analysis, to compare the performance of the Experimental Group and Control Group. Table 1 presents the maximum and minimum values observed, media, median and standard deviation of the variables investigated in the pre-test and post-test, in each group of participants.

Table 1

Descriptive analysis of the results obtained by participants in the Experimental and Control groups in the Pre and Post-test in the skills assessed

	N	Min.	Max.	Mean	SD	Median
Experimental Group						
Letters' Knowledge_Pre	30	3,00	26,00	12,50	7,64	11,00
Letters' Knowledge_Post	30	7,00	26,00	17,63	6,86	18,50

Phonol. Awarenessl_Pre	30	1,00	17,00	7,00	3,81	6,00
Phonol. Awareness_Post	30	3,00	24,00	13,40	5,28	13,00
Vocabulary_Pre	30	54,00	99,00	82,40	12,41	87,00
Vocabulary_Post	30	60,00	107,00	90,83	11,05	94,00
Oral Comprehension_Pre	30	14,00	33,00	22,43	4,79	22,50
Oral Comprehension_Post	30	17,00	37,00	32,30	3,92	33,00
Control Group						
Letters' Knowledge_Pre	23	1,00	26,00	12,61	8,18	14,00
Letters' Knowledge_Post	23	,00	26,00	16,22	8,58	20,00
Phonol. Awarenessl_Pre	23	,00	17,00	6,00	3,46	5,00
Phonol. Awareness_Post	23	3,00	17,00	7,83	3,50	7,00
Vocabulary_Pre	23	63,00	101,00	84,74	9,81	87,00
Vocabulary_Post	23	62,00	103,00	88,35	11,71	92,00
Oral Comprehension_Pre	23	10,00	35,00	23,39	6,48	24,00
Cral Comprehension_Post	23	16,00	37,00	27,78	5,80	28,00
	N	Min.	Max.	Mean	SD	Median
Experimental Group						
Letters' Knowledge_Pre	30	3,00	26,00	12,50	7,64	11,00
Letters' Knowledge_Post	30	7,00	26,00	17,63	6,86	18,50
Phonol. Awarenessl_Pre	30	1,00	17,00	7,00	3,81	6,00
Phonol. Awareness_Post	30	3,00	24,00	13,40	5,28	13,00
Vocabulary_Pre	30	54,00	99,00	82,40	12,41	87,00
Vocabulary_Post	30	60,00	107,00	90,83	11,05	94,00
Oral Comprehension_Pre	30	14,00	33,00	22,43	4,79	22,50
Oral Comprehension_Post	30	17,00	37,00	32,30	3,92	33,00
Control Group						
Letters' Knowledge_Pre	23	1,00	26,00	12,61	8,18	14,00
Letters' Knowledge_Post	23	,00	26,00	16,22	8,58	20,00
Phonol. Awarenessl_Pre	23	,00	17,00	6,00	3,46	5,00
Phonol. Awareness_Post	23	3,00	17,00	7,83	3,50	7,00

Vocabulary_Pre	23	63,00	101,00	84,74	9,81	87,00
Vocabulary_Post	23	62,00	103,00	88,35	11,71	92,00
Oral Comprehension_Pre	23	10,00	35,00	23,39	6,48	24,00
Oral Comprehension_Post	23	16,00	37,00	27,78	5,80	28,00

Table 2 presents the results of applying the Mann-Whitney Test used to compare the performance of EG and CG participants in the Pre-test. Table 3 presents the results of the comparison between the groups considering the differences in results between the Pre and Post-test, as well as the effect sizes observed in the differences obtained, after the EG had undergone the intervention with the Decole Programme. The use of the Mann-Whitney Test is justified because the results of the Shapiro-Wilk Test rejected the hypothesis of normality for most of the data.

Table 2

Results of the Mann-Whitney Test for comparison between Experimental Group and Control Group in the Pre-Test for the skills assessed

Pre-test	N	U (Mann-Whitney)	p
Letters' Knowledge	53	344,500	0,993
Phonological Awareness	53	291,000	0,328
Vocabulary	53	372,500	0,621
Oral Comprehension	53	389,500	0,423

Table 3

Results of comparisons observed between groups considering the differences between pre-test and post-test performances in the skills assessed

	N		statistics	df	p	Effect´s size (Cohen´s d)
LK (Post – Pre)	53	t de Student	1.66	51.0	0.052	0.459
	53	U de Mann-Whitney	257		0.057	
Vocab. (Post – Pre)	53	t de Student	1.87	51.0	0.033 *	0.519
	53	U de Mann-Whitney	251		0.045 *	
PA (Post -Pre)	53	t de Student	4.19 ^a	51.0	< .001 **	1.162
	53	U de Mann-Whitney	148		< .001 **	
OC (Post-Pre)	53	t de Student	3.64	51.0	< .001 **	1.009
	53	U de Mann-Whitney	169		< .001 **	

OBS: LK = Letters' Knowledge; Vocab = Vocabulary; PA = Phonological Awareness; OC = Oral Comprehension

It is observed, therefore, that, while the groups did not differ significantly in terms of the skills assessed before the intervention, after participating in the Decole Programme, the Experimental Group made significantly greater progress than the Control Group in vocabulary, phonological awareness and oral comprehension skills. The observed effect sizes were large for phonological awareness and oral comprehension ($d > 0.8$) and can be considered moderate for expressive vocabulary and also for the letters' knowledge ($d \sim 0.5$), although in the case of this last variable the difference between the groups was only marginally significant.

Discussion

The present research aimed to investigate the effects of the DECOLE Programme on the emergent literacy skills of kindergartners. The variables focused were vocabulary, oral comprehension, knowledge of the letters and phonological awareness.

The results showed that the intervention was positive, with significant differences being identified in favour of the Experimental Group in phonological awareness,

vocabulary and oral comprehension skills, and marginally significant differences were observed regarding letters' knowledge, suggesting the effectiveness of the programme for the development of these emergent literacy skills.

These results are in line with others found in the literature, such as those obtained in the evaluation of the Talk, Read and Write Programme in Portugal (Ribeiro et al., 2014), as well as in literature surveys on the effect of programmes developed with pre-schoolers aiming to promote the development of skills considered precursors to reading and writing (Barrera et al., 2019). The systematic literature review in the Scielo database developed by Barrera and collaborators (2019) indicates that the effect of interventions carried out with pre-schoolers aimed at developing phonological awareness and oral language, through dialogical reading of stories, focusing on both linguistic and code-related skills, are more successful in developing these skills. These results also add to evidence and even expand those presented in the study conducted by Gatto and Barrera (2022), suggesting the effectiveness of the Decole programme for the development of vocabulary and letters knowledge, beyond the positive effects already found in that study, concerning phonological awareness and oral comprehension.

The emergent literacy skills studied are important precursor abilities of reading and writing and support the initial acquisition of literacy (NELP, 2008; Whitehurst & Lonigan, 2003; Viana & Ribeiro, 2014). Promoting these fundamental skills in kindergartners should therefore lead to a better response to formal literacy instruction. Studies on phonological awareness indicate that the ability to detect, identify and manipulate the sound structure of language, in addition to being one of the strongest predictors of later success in reading (Ehri et al., 2001), is strictly related to reading difficulties (Melby-Lervåg et al., 2012).

Regarding vocabulary and oral comprehension skills, the results indicate a significant effect of the programme on fundamental linguistic skills for the development of reading comprehension, as pointed out by Gough and Tunmer (1986). Furthermore, knowledge of the meaning of words (vocabulary) helps children reflect on their phonological representations. Despite its recognised importance, opportunities for children to develop oral language skills may be limited in preschool (Snow et al., 1998).

Developing letters' knowledge is not a specific objective of the Decole Programme, but it can be sought as an important emergent literacy skill to be developed in preschool (NELP, 2008; Piasta, 2014; Rohde, 2015). The programme itself does not have this objective, but it can be adapted to work on this skill in a more systematic way. Even so, the results suggest a moderate effect of the intervention carried out with the Decole Programme. In fact, the activities with the "Tree of words" were planned to work with the letters of the alphabet and may have contributed to the effects obtained.

The results indicate the effectiveness of the Decole Programme, when applied in a natural classroom situation and by a properly trained and prepared teacher, for the development of emergent literacy skills, thus contributing to the scientific evidence of the use of theoretically based teaching methodologies. It is possible to attribute such effects to the structure of the Decole Programme, which is based on the dialogical reading of children's books with systematic activities involving questions related to oral

comprehension, prepared for the reading of each story. In fact, several studies have indicated the potential of shared and dialogic reading for the development of oral language (Barrera et al., 2019; Lyster et al., 2020; Shanagan & Lonigan, 2010; Viana & Ribeiro, 2014).

A limitation of the study is that the fidelity of the teacher's implementation of the programme was not examined. The results and the researcher's supervision indicate that the teacher followed the activities proposed by the programme. However, it would be important to know more about the teacher's ability to carry out interventions with a high degree of implementation fidelity.

Conclusion

The results obtained have implications for the professional development of preschool teachers and may improve the quality of early childhood education, contributing to ensure that emergent literacy skills are developed more effectively. The acceptability of the intervention by the teacher and the children was also an important effect of the intervention. The teacher considered the activities of the DECOLE Programme appropriate for the students' linguistic development and motivation and particularly appreciated their approach. The present study demonstrates that it is possible for preschool students to receive intervention in emergent literacy skills based on playful activities, with intentionality and systematisation for the learning context. The intervention was conducted in a natural environment, which is a strong point in terms of external validity. Research with educational programmes in a natural classroom situation is not common, since most of the studies found were conducted in small groups.

The results obtained so far suggest that the use of the Decole Programme in preschool classes can contribute to the development of fundamental skills and knowledge for the initial learning of reading and writing. Future research would be important to identify specific programme elements that could be particularly useful in promoting improvements in emergent literacy skills, as well as to determine the quality assurance mechanisms needed to ensure that intervention benefits remain replicable. Longitudinal studies aiming identifying the effects of participation in the programme on reading and writing skills in the first and second grade of elementary school would also be desirable.

References

- Almeida, A., Prust, A. P., Zauza, G., Batista, L.S., Seabra, A. G., Dias, N. M. (2018). Educação Infantil e Desempenho Cognitivo e Socioemocional. *Revista Psicopedagogia*, v. 35, n. 108, p. 281-95.
- Andrade, C. R. F.; Béfi-Lopes, D. M.; Fernandes, F. D. M.; Wertzner, W. H. (2016) ABFW: Teste de linguagem infantil nas áreas de Fonologia, Vocabulário, Fluência e Pragmática. Carapicuíba (SP): Pró-Fono,

- Barrera, S. D., Ribeiro, I., Viana, F. L. (2019). Efeitos de intervenções em Letramento emergente: uma revisão bibliográfica na base Scielo. *Psicologia: Teoria e Pesquisa*, 35.
- [Befi-Lopes, D. M.](#); Andrade, C. R. F.; [Fernandez, F. D. M.](#); [Wertzner, H. F.](#) (2000) . *ABFW - Teste para Avaliação de Linguagem Infantil*. 1a. ed. São Paulo: Pró - Fono Editora, 89p.
- Bleses, D. et al., (2018). Effective language and literacy instruction: Evaluating the importance of scripting and group size componentes. *Early Childhood Research Quarterly*, 42(1), 256-269.
- Capovilla, A; Capovilla, F. (2000) *Problemas de Leitura e Escrita: como identificar, prevenir e remediar, numa abordagem fonológica*. São Paulo, SP: Memnon.
- Capovilla, F. C. & Seabra, A. G. (2013). Teste Contrastivo de Compreensão Auditiva e de Leitura. In: A. G. Seabra, & N. M. Dias (Orgs.), *Avaliação Neuropsicológica Cognitiva: Leitura, escrita e aritmética*, (Vol. 3, pp. 29-5). São Paulo: Memnon.
- Catts, H. W., Herrera, S., Nielsen, D. C., & Bridges, M. S. (2015). Early prediction of reading comprehension within the simple view framework. *Reading and Writing: An Interdisciplinary Journal*, 28(9), 1407–1425.
- Dale, P. S., Logan, J., Bleses, D., Højen, A., Justice, L. (2018). Individual differences in response to a large-scale language and pre-literacy intervention for preschoolers in Denmark. *Learning and Individual Differences*, 68, 51-60.
- Ecalte, J., Labat, H., Le Cam, M., Rocher, T., Cros, L., Magnan, A. (2015). Evidence-based practices to stimulate emergent literacy skills in kindergarten in France: A large-scale study. *Teaching and Teacher Education*, 5, 102- 113.
- Ehri, L. C., Nunes, S. R., Willows, D. M., Schuster, B. V., Yaghoub-Zadeh, Z., & Shanahan, T. (2001). Phonemic Awareness Instruction Helps Children Learn to Read: Evidence From the National Reading Panel's Meta-Analysis. *Reading Research Quarterly*, 36(3), 250-287. doi.org/10.1598/RRQ.36.3.2
- Foorman, B. R., Herrera, S., Petscher, Y., Mitchell, A., & Truckenmiller, A. (2015). The structure of oral language and reading and their relation to comprehension in Kindergarten through Grade 2. *Reading and Writing: An Interdisciplinary Journal*, 28(5), 655–681. <https://doi.org/10.1007/s11145-015-9544-5>
- Gatto, R. K. S., & Barrera, S. D. (2022). Aplicação do Programa DECOLE em pré-escolares: efeitos positivos sobre consciência fonológica e compreensão oral. In: H. V. Corso e T. C. Pollo (Orgs.) *Intervenções com foco na aprendizagem: clínica e escola* (pp. 13-22). São Paulo, Vetor.
- Gough, P. B., & Tunmer, W. E. (1986). Decoding, reading, and reading disability. *Remedial and special education*, 7(1), 6-10.
- Hjetland, H. N., Brinchmann, E. I., Scherer, R., & Melby-Lervåg, M. (2017). Preschool predictors of later reading comprehension ability: A systematic review. *Campbell Systematic Reviews*, 13(1), 1-155.

- Hjetland, H. N., Lervåg, A., Lyster, S.-A. H., Hagtvet, B. E., Hulme, C., & Melby-Lervåg, M. (2019). Pathways to reading comprehension: A longitudinal study from 4 to 9 years of age. *Journal of Educational Psychology*, 111(5), 751–763.
- Hulme, C., & Snowling, M. J. (2013). Learning to read: What we know and what we need to understand better. *Child Development Perspectives*, 7(1), 1-5.
- Kruse, L. G., Spencer, T. D., Olszewski, A., & Goldstein, H. (2015). Small groups, big gains: efficacy of a tier phonological awareness intervention with preschoolers with early literacy deficits. *American Journal of Speech-Language Pathology*, 24(2), 189-205.
- Lennox M., Westerveld, M. F., & Trembath, D. (2018) Evaluating the effectiveness of PrepSTART, promoting oral language and emergent literacy skills in disadvantaged preparatory students. *Int J Speech Lang Pathol.*, 20(2), 191-201.
- Lervåg, A., Hulme, C., & Melby-Lervåg, M. (2017). Unpicking the developmental relationship between oral language skills and reading comprehension: It's simple, but complex. *Child Development*, 89(5), 1821–1838.
- Lyster, S.-A., Snowling, M., Hulme, C., & Lervåg, A. O. (2020). Preschool phonological, morphological and semantic skills explain it all: Following reading development through a 9-year period. *Journal of Research in Reading*, 44(1), 175–188.
- Morais, J., Leite, I., & Kolinsky, R. (2013). Entre a pré-leitura e a leitura hábil: Condições e patamares da aprendizagem. Em: M. R. Maluf e C.C. Martins (Orgs.). *Alfabetização no século XXI: Como se aprende a ler e escrever* (17-48). Porto Alegre, Penso.
- NELP (2008). National Early Literacy Panel, developing early literacy: report of the *National Early Literacy Panel*. Jessup: National Institute for Literacy. Retrieved from <http://lincs.ed.gov/publications/pdf/NELPReport09.pdf>
- Piasta, S. B. (2014). Assessment-guided differentiated instruction to support alphabet knowledge. *The Reading Teacher*, 68 (3), 202-201.
- Powell, D. R., Diamond, K. E., Burchinal, M. R., & Koehler, M. J. (2010). Effects of an early literacy professional development intervention on head start teachers and children. *Journal of Education Psychology*, 102(2), 299-312.
- Ribeiro, I., Costa, H., & Brandão, S. (2014). Avaliação do programa falar, ler e escrever no jardim da infância. In F. L. Viana, & I. Ribeiro (Orgs.), *Falar, ler e escrever: Propostas integradoras para jardim de infância* (pp.160-183). Lisboa, Portugal: Santillana.
- Rohde, L. (2015). The Comprehensive Emergent Literacy Model. *SAGE Open*, 5(1).
- Seabra, A. G., & Capovilla, F. C. (2012). Prova de consciência fonológica por produção oral. In A. G. Seabra, & N. M. Dias (Eds.), *Avaliação neuropsicológica cognitiva: Linguagem Oral* (Vol. 2, pp. 117-122). São Paulo, SP, Memnon.
- Shanahan, T. & Lonigan, C. J. (2010). The National Early Literacy Panel: a summary of the process and the report. *Educational Researcher*, 39 (4), 279–285.
- Snow, C. E., Burns, M. S. & Griffin, P. (1998). *Preventing reading difficulties in young children*. National Academies Press.

- Storch, S. A. & Whitehurst, G. J. (2002). Oral language and code-related precursors to reading: evidence from a longitudinal structural model. *Developmental Psychology*, 38(6), 934-947.
- Thomas, N., Colin, C. & Leybaert, J. (2020) Interactive Reading to Improve Language and Emergent Literacy Skills of Preschool Children from Low Socioeconomic and Language-Minority Backgrounds. *Early Childhood Educ J* .48, 549–560.
- Tunmer, W. & Hoover, W. (2019). The cognitive foundations of learning to read: a framework for preventing and remediating reading difficulties. *Australian Journal of Learning Difficulties*. 24, 1-19.
- Viana, F. L. & Ribeiro, I. (2014). *Falar, Ler e Escrever: propostas integradoras para o Jardim da Infância*. Lisboa: Santillana.
- Viana, F. L., Ribeiro, I. & Barrera, S. D. (2017). *Decole – Desenvolvendo Competências de Letramento Emergente: Propostas integradoras para a Pré-Escola*. Porto Alegre, Penso.
- Wesseling, P. B. C., Christmann, C. A., & Lachmann, T. (2017). Shared Book Reading Promotes Not Only Language Development, But Also Grapheme Awareness in German Kindergarten Children. *Frontiers in Psychology*, 8, 364. <http://doi.org/10.3389/fpsyg.2017.00364>.
- Whitehurst, G. J. & Lonigan, C. J. (2003). Emergent literacy: Development from prereaders to readers. In S. B. Neuman and D. K. Dickinson (Eds). *Handbook of Early Literacy Research*, 11-29. New York: Guilford.

Bionotes

Regiane Kosmoski Silvestre Gatto is graduated in Pedagogy with qualification in Educational Guidance from UEPG - Universidade Estadual de Ponta Grossa – PR, Specialisation in Psychopedagogy (UNORP - União Das Faculdades do Norte Paulista), Specialisation in Special Education Hearing Impairment (Claretiano Batatais - SP). Professional experience with Early Childhood Education, Elementary Education, and Adult Literacy. Master's in Psychology by Postgraduate Programme in Psychology, Faculty of Philosophy, Sciences and Letters at USP Ribeirão Preto (SP 2018). Currently studying for a PhD in the Postgraduate Programme in Psychology at the Faculty of Philosophy, Sciences and Letters at USP Ribeirão Preto.

Email: rksgatto@hotmail.com

Orcid: 0000-0000-0728-9092

Sylvia Domingos Barrera is graduated in Psychology from the University of São Paulo (1985), with master's degree and PhD in School Psychology and Human Development from the University of São Paulo (1995; 2000). She is currently a PhD professor at the Faculty of Philosophy, Sciences and Letters of Ribeirão Preto (USP). She has experience in the areas of Educational Psychology and Cognitive Psychology, working

mainly on the following topics: literacy, phonological awareness, metalinguistic skills, learning difficulties, reading and writing.

Email: sdbarrera@ffclrp.usp.br

Orcid: 0000-0001-7924-2755

Received: October 2023

Published: December 2023