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Global reading and writing methodology: analysis of a software implementation on first-graders

Metodología global de lectura y escritura: análisis de la implementación de un software en estudiantes de grado primero

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Contents

ABSTRACT:

The purpose of the following article is to show the results after designing and applying a literacy software, which was based on the reading and writing Global Method. Among the most challenging issues to work on, it was visible some reading and writing processes of teaching centered on pronunciation and reproduction of the written code; students' lack of interest on literacy activities during classes and a low parents/carers' monitoring of students' learning process on these two abilities.
Keywords: Global methodology, reading, writing, first grade

RESUMEN:

El propósito del presente artículo es evidenciar los resultados al cabo de diseñar y aplicar un software de lectoescritura, el cual se basó en el Método Global de lectura y escritura. Entre las problemáticas más álgidas a trabajar, fue visible procesos lectoescrituales centrados en la pronunciación y en la repetición del código escrito; estudiantes con falta de interés hacia las actividades de alfabetización durante las clases y el bajo acompañamiento de los padres/acudientes en el proceso de aprendizaje en estas dos habilidades.
Palabras clave: Metodología global, lectura, escritura, grado primero

1. Introduction

The fact of teaching how to read and write in early education levels is a concerning situation for all the educational community (School, Family and Society); therefore, presenting new methodologies -based on researches from subject matter experts and the use of digital aids- might benefit specific populations. This paper shows the results of a study accomplished during the year 2018, which made emphasis on first-graders who were beginning their literacy process. Even though the research focused on these participants, their teachers had benefits in terms of knowing new forms of teaching children how to read and write and had the chance to evaluate their own procedures. It is relevant to mention that there are many methods, approaches and methodologies about literacy teaching; however, the key is to know which ones are the most suitable for specific contexts and people, since when referring about teaching and learning literacy, there are not such "good" or "bad" methods, they are instead badly applied.

Implementing a new pedagogical proposal in reading and writing implies to start from a characterization about all literacy methods. Thus, when teachers know many aspects from the synthetic as well as the analytic approach, they have the capacity of better comprehending their practice, which allows them to adapt methodological strategies in specific contexts to singular population; as a result, after knowing and studying the educational reality in the unit of analysis who participated in this study, the global method is implemented through virtual way, in order to improve the students' literacy process; likewise, their teachers would know a new teaching proposal that can be doubled, modified and adapted, according to the necessities of their future students. The ones who benefited the most from this research were the children who participated in it, since it was appreciated that they had more solid basis as they expressed in their mother tongue (Spanish) in a written way, and as they understood it in a natural way; all elements based on the science and some educational theories, because the software was designed by taking into account the epistemology selected, without the intention of a hit-or-miss maneuver.

This research was somehow relevant, because it was the first time the global method was implemented virtually in this city, well there are not register about it. The reason of selecting this modality comes from several reasons connected to this study statement of the problem: teaching instructions that made students pronounce and repeat graphemes without a deep understanding about the discourse. Also, a lack of intrinsic motivation these students had at the moment of participating in reading and writing class activities. Lastly, parents/carers who partially accompany children at home when working on these two communicative skills. Consequently, the fact of children learns under this premises (global approach and virtuality), let them learn through comprehension instead of reproduction; their intrinsic motivation increased due to the nature of their generation, for the reason that nowadays students are surrounded by electronic devices and they feel quite identified by accessing to the content in this way (virtually). Finally, the possibility to develop an autonomous learning, which does not depend of parents/carers' presence at any time: "The essential element of our definition of autonomous learning is its self-directed and volitional nature; it is what a person chooses to do rather than what he or she is mandated to do" (Ployhart, Call & McFarland, 2017, p. 180).

1.1. Literature review

First of all, in this section an epistemology description about the matter of this article is going to be developed; then, the concept 'global method' will be defined for the readers to have a better understanding in the findings section. It is relevant to mention that the global method took place at the end of the 19th century, but it was at the beginning of 20th where it was spread widely in the educational field. This reading and writing method is a practice that generates a rupture in the teaching paradigm at that time, since it changes completely the way a person must assimilate reading (reading as a whole); specifically, to learn reading in a global form, under the psychological vision that declares people perceive the world first as a complete reality and then analyzing the details, this procedure is known in the psychology discipline as 'Principle of Globalization': "Principle of globalization: captures the reality in a syncretic (syncretism) way, so learning must happen globally. With this principle, learning is the product of multiple connections and relations between the new and the already learned" (Marro, 2016, p. 14). Likewise, reading from this perspective seeks for comprehension and understanding of ideas immersed in the written code, either in phrases or sentences, but neither in syllables, sounds nor fractioned words; hence, it goes from general to particular. In accordance with Spanos (2017) "Global reading is a method by which students learn to identify and to recognize the whole word before they are introduced to its formal elements, the letters by which it is composed" (p. 64).

In the educational field, the global method -also known as "whole word method" or "generating phrase method"- was notorious due to its applicability in children with cognitive limitations and/or special educational needs. In words of Chartier (2015) "It is why the whole word method was also called global method or look-and-say. It leaves the codes out and focuses on units beyond words, i.e. on the understanding of texts" (p. 86). Likewise, this idea is supported by Jadán, Guerrero, López, Cáliz & Bravo (2015), who demonstrated in a literacy inquiry that:

The authors proposed a literacy method designed for children with Down syndrome. The method is based on a Global Method, which teaches children to read and recognize words as a whole, rather than breaking the word into individual letters or groups of letters (p. 14846).

On the other hand, Quintero, Valencia & Gil (2018) assert that the global method and the incursion of Information and Communication Technologies (ICT) have served as an inspiration to software programmers, who based on this literacy method have created a myriad of virtual-

educational material for different kind of population: "The ICT used with teaching methods made leaning activities less boring and more interesting. The pupils are motivated to read or to pronounce aloud what they perceive" (Tshiunza, Shilongo, Bina, 2017, p. 121). Equally, the global method is also known as "Decroly method"; a procedure that comprehends language as a whole, focusing on generalities at the beginning and in singularities at the end:

The analytic or global method is the first one to be described. The method's finality is the teaching of reading and writing, through the words and the sentences without the necessity of paying attention to the smallest units. Only at the end the kid will be able to recognize the letters and the syllables that formed the words (Blanco, 2017, p. 9).

In brief, the global method is a literacy procedure that favors the development of reading and writing skills, through a natural and psychological comprehensible way. Secondly, it is going to be explained what is understood by first graders; a population characterized by a series of academic changes as well as psychological ones. Regarding Quintero & Valencia (2018), this educational stage is the first step and the basis to acquire knowledge through reading and writing properly, although preschoolers also perform literacy activities, the intention in here is that they get familiar with literacy and enjoy being in contact with materials related to those skills. Likewise, in accordance with Elrod & Fortenberry (2018), "First graders are typically 6 – 7 years old and are embarking on their first year of elementary school, making for an excellent time to introduce them to matters of health and wellness" (p. 19).

This educational level is of utmost importance, because students become more active participants during classes. Moreover, in this stage imagination begins to be apart from what is real, and activities for them need to have a higher degree of action. As they investigate and start making connections with previous knowledge, they "absorb" everything what they perceive and what they learn from adults and even their peers. In accordance with Gaitan (2017), "Another key aspect is the first graders' behavior, taking into account the kids' age, first graders learn lots of things from the world and from people near them" (p. 7). Similarly, behaviors in this human development stage demonstrate intrinsic motivational practices toward learning in all aspects; specifically, in all that the world has in its objective reality.

Nevertheless -previously knowing that first graders perceive the world like that- in Colombia reading and writing learning are used to be erroneously focused on repetition; children are not responsible, since they only perform all what is guided by the teacher; a practice based on phonemes and graphemes, which leaves messages comprehension aside. Biologically, first graders are able to develop both activities; particular connections while spelling and messages within complete words or phrases. Regarding this, Freeman, Townsend & Templeton (2019) emphasize that "The first graders also began to develop an attentiveness to relations between morphological word families, realizing that sometimes when words are spelled the same, they can also have related meanings—the spelling–meaning connection" (p. 472). More that the constituent components of literacy, first-grade students exhibit creativity and concretism in their tasks, the same as flexibility of changing and attraction for what represents novelty. A fundamental element of advantage, and superior psychic process, is memory at their age, which favors learning of diverse concepts along their living experience. The requirement for what is concrete in their contact with the reality is recurrent, inasmuch as they discover everything through their senses; equally, their cognitive skill to remember big amounts of information does not start yet. Therefore, reading must focus on connections between pictures and whole words rather than letters with vowels. In words of Peteranetz (2016), "Declarative knowledge includes knowledge about one's own cognitive abilities and factors that influence learning and performance. For example, most first graders recognize that it is more difficult to remember how to spell a ten-letter word than a three-letter word" (p. 68).

2. Design

This study employed a mixed-method research design, since it gives relevance to intersubjectivities in a determined context; equally, due to objectivity from data collection techniques. In consequence, it is not the disjointed implementation of quantitative and qualitative techniques, but the way they interrelate among themselves in order to nourish the process and their respective products; this linkage allows getting estimable results at the time of performing the analysis. According to Ackermann (2017), "Qualitative, quantitative, and mixed-method research designs are allowing a greater range of approaches to find the best way to answer a research question" (p. 123). Thus, both slopes complement each other, with the intention of allowing a better comprehension of conclusions and results from this study. Further, the approach

to this investigation is based on a hermeneutical perspective, because it prioritizes the meaning and experiences that people from a specific group live:

The idea of the hermeneutic approach is that a research project (e.g., literature review or concept development) should be carried out as an iterative process (so-called hermeneutic circle), in which the researcher's initial understanding of the research issue is refined in the course of multiple iterations (Lubarski & Poeppelbuss, 2016, p. 4).

Accordingly, in this research there is decanting to this approach, insomuch as it lets observe the interpretation from the units of analysis as they interact with the environment and their peers.

The intention of this research focuses on facts that characterize all participants along the investigation procedure; similarly, it enriches and gives value of affectional bond among them. The case study labor also gives continuity to the particular behavioral descriptions of a singular scenario, since this characterization benefits deeply all the research staff as they collect final data. This research selected a sample of 242 students; boys and girls from first grade who studied in the following schools: Jorge Eliécer Gaitán, Finca La Mesa and Jorge Robledo. Three public entities that are located in different areas of Medellín city, Colombia. The representative sample was taken from 16 groups (646 students from this educational level), calculated with 5% in margin of error and 95% in confidence level. Consequently, the population had to fulfill the following requirements (selection criteria):

- To have 5 or 6 years of age.
- To be an active student in the school who have not interrupted his studies during the last year.
- To evidence a low level of reading comprehension and writing production, as well as a low stimulation towards reading and writing activities that are presented in the regular classes. Moreover, to have a lack of following-up by parents/carers.

The instruments that were used throughout the research process had an intrinsic relation with the specific objectives: An academic pre-test that measured reading comprehension and writing productions; as a consequence, after applying and analyzing the results of this test, a software designed through a global reading and writing methodology -created by the research team- took the respective information to enrich and focus its intention to this particular participant. Secondly, a non-participant observation. This technique helped the researchers perceive and document all behaviors that students performed while using the respective literacy software.

Therefore, this procedure allowed to identify factors that made the software to be modified or reinforced by the research team, according to the students' attitudes and aptitudes towards it. Finally, a post-test was implemented in order to know how the participants improved in these two skills (reading and writing). Both, the pre-test and post-test used the same items, then comparisons between them were objectively made after all the investigation labor. Table 1 explains how these were organized is presented, in which dependent variables, the measurement scale and the analysis model are established:

Table 1
Organization of dependent variables, measurable
instrument and its measurement scale.

Dependent Variables	Questions from the test that allowed to measure variables	Measurement scale	Analysis model
Textual Comprehension (literal level)	1) Find the couple and draw a line between them 3) Select with an (x) the correct image according to the statement		Bartlett's sphericity test was used to accomplish the factor analysis; likewise, the research methodology was evaluated with the CIPP model protocol from Stufflebeam, wich test four aspects from the investigation process: Context, input, process and product
Textual Comprehension (inferential level)	5) Your teacher will read the following story twice. Then, select the correct answers	(low) (Poor) (Fair) (Good)	
Writing production	2) Write the word according to the picture		

4) Organize the sentences correctly	(Excellent)	
6) Complete the sentence with the missing letters		
7) Answer the following questions according to the pictures		
8) Write the missing word on the line		

Source: authors' elaboration

It is relevant to mention that this research worked with one independent variable (global reading and writing methodology) and four dependent ones (textual comprehension in literal level, textual comprehension in inferential level and writing production). Now, the validation process corresponding to the tests (pre-test and post-test) are presented. Firstly, a test -or an academic examination about reading comprehension and writing production- is designed based on the curricular guidelines that Colombian Ministry of National Education (CMNE) proposes to elementary levels in this country. Accordingly, a pilot test is applied in order to know how functional, analytic and valid this instrument is. To accomplish this, the pre-test is taken by only 140 students from the whole participants (242). This selection was made through a random procedure, and the test was therefore administered during three days, having in mind that the population from this study belonged to three different schools and they also had different schedules in the subject named Lengua Castellana. After finishing the examination process, every single test was graded by the research team, and these results were inserted in the software Statistical Package for the Social Sciences (SPSS) in order to perform the validation system:

Table 2
Instrument validity test through KMO
evaluation and Sphericity of Bartlett.

KMO AND BARTLETT'S TEST		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy: 678		
Bartlett's Test of Sphericity	Approx. Chi-Square	198.405
	Df	28
	Sig.	.000
COMMUNALITIES		
1) Find the couple and draw a line between them	1.000	.717
2) Write the word according to the picture	1.000	.494
3) Select with an (x) the correct image according to the statement	1.000	.671
4) Organize the sentences correctly	1.000	.550
5) Your teacher will read the following story twice. Then, select the correct answers	1.000	.811
6) Complete the sentence with the missing letters	1.000	.444
7) Answer the following questions according to the pictures	1.000	.731
8) Write the missing word on the line	1.000	.369

Source: Statistical Package for the Social Science (Version 19.0; IBM, 2012).

As this instrument was applied to 140 students, the previous chart shows its validity, inasmuch as the measurement of KMO adequacy is 0.678, above what is set epistemologically (0.5); besides, Sphericity of Bartlett's Test is 0.000, less than 0.05 in its degree of signification.

3. Results and discussion

In this section, findings from the implementation of data collection techniques -just the ones that have to do with reading comprehension in literal level- are going to be demonstrated. First, results from the pre-test applying in parallel will be shown, it means outcomes from a Control Group (CG) (141 students) and an Experimental Group (EG) (141 students), equivalent to 6 school groups from first grade; thus, both collectivities will be described in detail, based on their academic performance, prior they use the literacy software proposed by the research team. Second, different sections from the non-participant observation chart -that were filled out along several lessons while the EG used the literacy software- will also be presented to appreciate students' academic modification in terms of the dependent variables. Third, results from the post-test implementation will equally be shown, in order to know the impact that the global reading and writing methodology software had in the students that used it. First of all, the variable textual comprehension in literal level is displayed, verified through two items from the pre-test: 1) Find the couple and draw a line between them. 3) Select with an (x) the correct image according to the statement. These are the results from both, the CG and the EG:

Table 3
Pre-test. Textual comprehension
in literal level (CG).

Questions that measure literal competence	(Low)	(Poor)	(Fair)	(Good)	(Excellent)	Total of responses per point
Question 1): Find the couple and draw a line between them	14	40	72	11	4	141
Question 3): Select with an (x) the correct image according to the statement	20	49	63	4	5	141

Source: authors' elaboration

Table 4
Pre-test. Textual comprehension
in literal level (EG)

Questions that measure literal competence	(Low)	(Poor)	(Fair)	(Good)	(Excellent)	Total of responses per point
Question 1): Find the couple and draw a line between them	10	51	66	8	6	141
Question 3):	23	41	67	6	4	141

Select with an (x) the correct image according to the statement						

As it is evident, there is not a strong difference between academic results of these two groups; indeed, the percentages show that the CG was a little bit below the experimental one, when inferior points of the measurement scale are analyzed:
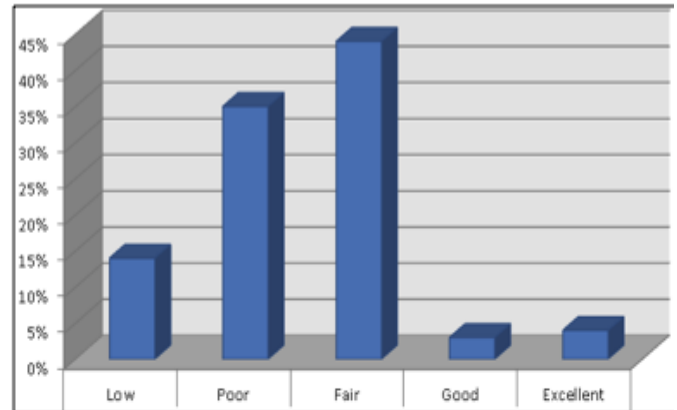
Figure 1

Item 1 from the pre-test, equivalent to literal comprehension.
3 school groups from first grade = 141 students. (CG).
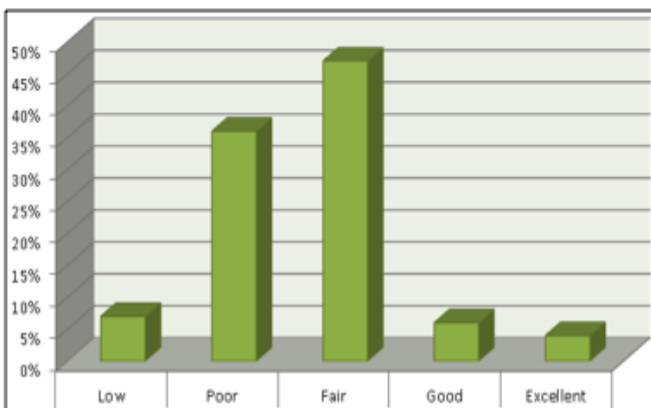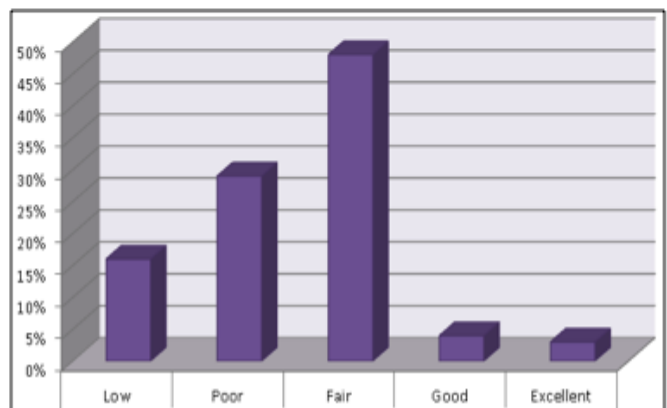

Source: authors' elaboration

Figure 2

Item 2 from the pre-test, equivalent to literal comprehension.
3 school groups from first grade = 141 students. (CG).

Source: authors' elaboration

Figure 3

Item 1 from the pre-test, equivalent to literal comprehension.
3 school groups from first grade = 141 students. (EG).

Source: authors' elaboration

Figure 4

Item 2 from the pre-test, equivalent to literal comprehension.
3 school groups from first grade = 141 students. (EG).

Source: authors' elaboration

As it is evident, graphics from the pre-test in the CG as well as in the experimental one had similar degrees in the rubric scale, therefore this population had analog levels in this skill. Having as a reference the low results from the pre-test in the values Good (G) and Excellent (E), it could be referred that reading comprehension in literal level is a practice that is not quite developed in these students, although it is a basic skill distinguished by the understanding a reader can get, after perceiving information that is observable through the lines; in words of Liu (2019), "In literal reading, the reader only needs to read the lines, locating information, using context clues to supply meaning or identifying the explicitly stated relationships and organizational patterns" (p. 342). This is something that called the research team's attention, since a balanced result among all the units of analysis in this matter was something expected; nevertheless, these findings made even more relevant the literacy software implementation in this context. Regarding the importance of literal reading in elementary educational levels, it is stated the following:

> The development of reading skills from early levels is the key tool to successes not only in the academic context but also for personal development. Reading at literal level is the

starting point so students get the basic to develop comprehension reading skills at a higher level (Moya & Patricia, 2018, p. 15).

That is why these low levels appreciated in these students -in literal reading- make imperative actions by researchers in educational disciplines; for that reason, many methodologies emerge in order to cope with this issue; some of them accurate and some others not that pertinent for specific populations. Hence, the solution is not out there by a group of experts and scholars in reading and writing processes, but in the critical teacher's view about literacy approaches and methods, with the intention and capacity to take what is relevant from them and adjust didactically all educational elements for specific purposes; accordingly, particular methodologies appear and students would have more opportunities to learn and develop reading and writing skills naturally; didactics proposals that might go beyond school by transcending space and time, and also making parents and other participants of society collaborate in the learners' learning process. This idea is supported by Shugurova (2018), when he claims that "In fact, children learn in a natural way by being in the community alongside with their parents, relatives, mixed age children, and neighbors. This natural way is about freedom, care, and love" (p. 23). In addition, teaching how to read and write by having in mind previous researches in this field -and also educational advances through technological aids- helps to incorporate critically and harmonically the endless struggle between theory and practice: "The introduction of interactive technology in education provides ripe opportunity to improve feedback to students to support the link between theory and practice" (Dickson, 2015, p. 103). Moreover, the traditional fact of teaching in the same way teachers were taught is something extremely hard to overcome when referring to this Colombian context, nonetheless giving the opportunity for educators to realize about "new literacy approaches and methods" is a constant job that researchers must still do, through the publication of scientific articles and the participation of them in public academic events, where knowledge can be spread and optimal practices incorporated as well. The next finding presented is the non-participant observation chart, a tool that took part as the EG used the literacy software, which was designed based on the global reading and writing method, in order to make students improve their skills and their results from the pre-test in the variable textual comprehension in literal level:

Table 5
Non-participant observation chart -
textual comprehension in literal level

Learning Activities	The lack of this indicator was observed	It was observed only once	It was observed a few times	It was observed sometimes	It was observed frequently
The students recognize the intention/meaning of a text.			▧		
The students identify and relate images with texts.					▧
The students understand ideas displayed on cards, advertisements, posters, etc.				▧	

Source: authors' elaboration. Academic performances
by the EG during the literacy software usage

This observation chart was filled out based on the EG performance in this specific variable, exactly as they worked on the software activities. At first, they had difficulties when being familiar with the software interphase, and also with the way it works. Consequently, the research team had to show the students how to operate it and they evenly got more confidence and started using it on their own too. Here, the readers can get access to the four levels the students performed, so it can be perceived how the software design was:

http://edwinhenao.com/GM-Bairon(Nivel-1)/quiz.html

http://edwinhenao.com/GM-Bairon(Nivel-2)/quiz.html

http://edwinhenao.com/GM-Bairon(Nivel-3)/quiz.html

http://edwinhenao.com/GM-Bairon(Nivel-4)/quiz.html

Regarding the learning activities from the non-participant observation chart, the students recognized the intention/meaning of a text few times. This phenomenon happened because they sometimes thought that the written code only had extrinsic relation to the corresponding pictures from the software, therefore when they were asked to link some short phrases to different pictures out of the software -in which people performed the same actions- they made mistakes every once in a while:

> The reader makes a semantic network of opinions as they try to identify the meaning of a text. The reader uses language and visual skills to decode words and combine words and phrases that construct meaning. That is, links and syntactic connections are shaped, revised, and revisited in the reading process as a means for making and keeping coherence (Ahmadi, 2017, p. 3).

As a consequence, it was necessary an explanation by one of the researchers, who told the EG by exemplifying that words, phrases and sentences can be linked not only with images from the software but with others that shared the same characteristics, and also with action from the reality. Other learning activity observed was the students identify and relate images with texts. According to the observation level, this component was perceived frequently, since for the students it was easy to make connections between words, phrases and sentences with pictures from the software: "Most of the students claim that pictures help them in understanding the content of the text because pictures give them clearer context. Also, some of them think that pictures make the text more interesting" (Palupi & Maarif, 2017, p. 170). The benefits of implementing this global methodology software made the EG realize that reading is more than pronouncing well and repeating reading tasks without knowing anything about the message. On the other hand, with the last activity perceived during the software usage (The students understand ideas displayed on cards, advertisements, posters, etc.), the result after the observation was It was observed sometimes. This occurred because the EG not only identified these elements in the software more efficiently, but also with different graphic resources from the classroom. Hence, they take that developed ability while working in the literacy software and transfer it to other scenarios as they described orally the actions seen in flashcards, posters and images from magazines. Regarding this, Sanjaya (2018) indicates that:

Teaching descriptive text in spoken form at school can be done by asking students to describe orally something such as people they like in their family or their favorite places that they ever visited. In order to make them easy to describe the things orally, there must be such media supported as pictures, flash cards, videos and many more (p. 3).

In conclusion, three aspects from the variable textual comprehension in literal level were observed through the non-participant observation chart, and it was noticed a good performance by the EG; nevertheless, results from its influence was really tested as the sample took the post-test:

Table 6
Pot-test. Textual comprehension
in literal level (CG)

Questions that measure literal competence	(Low)	(Poor)	(Fair)	(Good)	(Excellent)	Total of responses per point
Question 1): Find the couple and draw a line between them	12	46	69	10	4	141
Question 3): Select with an (x) the correct image according to the statement	21	53	56	6	5	141

Source: authors' elaboration

Table 7
Post-test. Textual comprehension
in literal level (EG).

Questions that measure literal competence	(Low)	(Poor)	(Fair)	(Good)	(Excellent)	Total of responses per point

Question 1): Find the couple and draw a line between them	6	11	72	27	25	141
Question 3): Select with an (x) the correct image according to the statement	14	15	68	26	18	141

Source: authors' elaboration

This time, it is evident that the EG got better results, although all participants -or the majority of them- did not get excellent points in the corresponding items, the increase in the outcomes was pleasing for the research team and the teachers. Comparing this with the pre-test: 25 students now got Excellent in the first question and 18 in the third one. Also, they got 27 participants got Good in the first question and 26 in the third one. These are the graphics with the percentages for a better understanding:
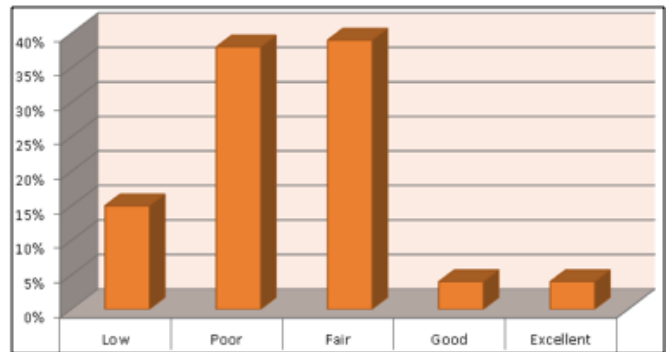

Figure 5

Item 1 from the post-test, equivalent to literal comprehension. 3 school groups from first grade = 141 students. (CG).

Source: authors' elaboration

Figure 6
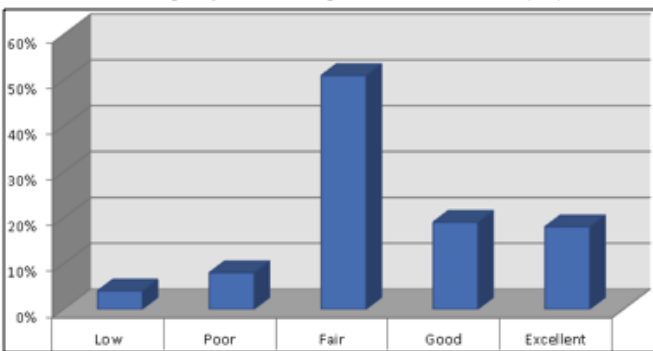
Item 2 from the post-test, equivalent to literal comprehension. 3 school groups from first grade = 141 students. (CG).

Source: authors' elaboration

Figure 7

Item 1 from the post-test, equivalent to literal comprehension. 3 school groups from first grade = 141 students. (EG).

Source: authors' elaboration

Figure 8
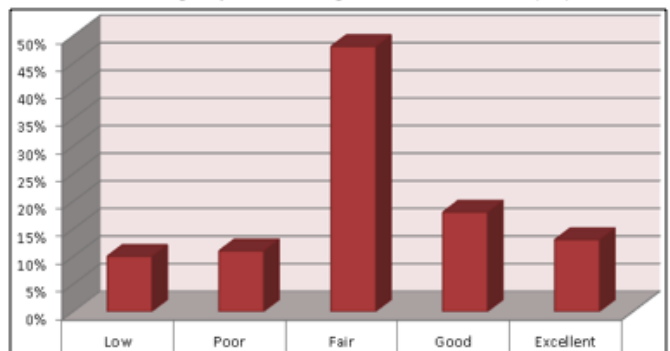
Item 2 from the post-test, equivalent to literal comprehension. 3 school groups from first grade = 141 students. (EG).

Source: authors' elaboration

It is noticed that the EG demonstrated better result, regarding the previous averages that the respective students got in the pre-test, as well as when comparing current results with the CG. Now these graphics are showing that literal reading competence keep its higher percentage in the option Fair, but also options Good and Excellent are above Low and Poor; it is not a notorious difference in terms of numbers, but in education -and mainly in reading and writing processes- this is a finding that elucidates the way literacy might be taught in specific contexts. According to De La Calle (2017), "Early literacy teaching must take in to account the findings of 21st century research. Therefore, the continuous training of teaching staff acquires special importance for the implementation of relevant educational intervention programs in the classroom" (p. 27). Hence, having as reference successful recent investigations in reading and writings processes, allow teachers to adjust, modify and/or implement new proposals in their teaching practices, this fact

may benefit not only educators but also students in their learning experience. On the other hand, changes in education take time; thus, the implementation of new methodological proposals must be throughout long periods; as a consequence, students might likely internalize the concepts better and develop new skills at a time. It is not easy to make teachers realize that the kind of teaching they tend to perform can be improved by bearing in mind new tendencies in educational researches; nonetheless, it is an endless and an ongoing labor that academics, experts and scholars in this field must till focus on. In accordance with Vilanova, García, Chaparro & Natal (2016), "educational changes require not only curricular changes, but also teachers' reflections on their own implicit conceptions about teaching and learning, as they determine their relationship to knowledge and their practice" (p. 4). Thus, in order to see big changes in a particular educational scenario, didactics proposal must be present during large lapses of time; moreover, this implementation has to be coordinated with teachers' pedagogical knowledge and the syllabus of the educational institution. In addition, when the EG was exposed to the literacy software -and it evenly got the respective results in the post-test- it was clear that the linkage between images, words and also sounds was an a meaningful achievement; the global conception that proposed Decroly (1932), and the adaptation made by the research team -including words pronunciation, then participants did not need a teacher next to them doing this job- made students perceive reading as a whole, instead of an isolated practice focused on letters, consonants and syllables:

> reading teaching emphasizes on the animation, pictures, words and sound symbols such as the comprehensive use, set up a reading, strengthen students' perception and understanding of the information, storage, coding, language output, through the use of automation has trained the students' ability to read (p. 395).

When the students who used the software realized that reading was a whole understanding ability, they extrapolated that developed skill when taking the post-test; as a consequence, positive results in the corresponding items were evident. Another positive accomplishment with the EG results was the matter of conceiving repetition as a key aspect to design the software activities, as well as to make possible a truly students' learning process, insomuch as reading and writing are abilities developed through constancy; then the brain makes cognitive connections itself. In words of Roberton (2015), "repetition reinforces connections so that they become part of the brain's permanent circuitry. Each rereading not only facilitates a child's brain development, but offers opportunities to find new things in the illustrations and gain deeper insights from the story" (p. 3). As soon as the students accomplished the software activities, they noticed that knowledge was recycled, so they increased confidence and tasks were likewise done faster every time. Furthermore, they related previous learning with new concepts as they perceived new pictures, words and sounds. When this happened, they took more time to advance in the activities, but after a while then they were more agile too.

Finally, it cannot be denied that virtual resources are a way to approach students to work on academic activities, inasmuch as they consider these means as interactive, entertaining and funny learning forms. One more time, it is considered that the researchers from this study properly merged Decroly's pedagogical proposal when adapting his principles into literacy software that could be indeed worked virtually. This idea is supported by Katz & Halpern (2015) when asserting that: "In fact, several authors have noted that virtual environments manifest a unique set of characteristics that lead users to engage more with the content and learn as they interact with a subject" (p. 778). The fact of letting the EG work virtually, provided the students a real possibility to live a different concept of learning; besides, they could overcome a set of obstacles that may occur in a face to face class; for instance, through the software, they were able to repeat and do the activities as many times as they wanted, they had also the possibility to hear the pronunciation or words and phrases to check repeatedly without interruption; those advantages are not commonly present in a real Colombian scenario, in which every classroom commonly has about 40 and 45 students, and the teachers' methodology is mainly based on group work due to the amount of learners.

4. Conclusions

This literacy software, which was based on the reading and writing Global Method (Decroly, 1932), showed that is functional in first graders from some regular Colombian classrooms; nevertheless, in order to get more satisfying results, it is suggested to implement it more time; at least half of the year, then students might develop stronger literacy skills.

The well-known traditional-synthetic approach of reading and writing teaching can be overcome through the applying of new pedagogical proposal in literacy; likewise, Colombian educational

institutions should make teachers in elementary school understand that there are alternative reading and writing teaching methods and approaches, which are indeed functional due to findings from researches; a genuine situation that cannot be avoid by educators' eyes. This literacy software has the possibility to make students focus on meaning rather than the strict reproduction of the written code.

Consequently, it is demonstrated that when beginning learning how to read and write, it is not necessary to make emphasis on singularities in a language; those particular aspects can be worked in later grades. Students' interest on literacy activities increased due to the respective proposal was mediated by a virtual environment; therefore, it is one more time demonstrated that including technology during teaching-learning activities, let learners assimilate easier class contents; and at the same time, develops competences. Students' autonomous learning occurred, since they only needed the help of an adult at the beginning, when the software interphase was new for them. Then, parents/careers' monitoring was not necessary in this specific learning process.

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