Reading Ability as a Learning Experience and Meaning Making in Class: the Case of Greek Primary Schools

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Abstract

The purpose of the research is to study students' performance in the field of reading literacy. Overall, 155 pupils aged between 11 and 12 were involved in the research study. The collection of the sample was done by Greek public primary schools in urban and semi-urban areas. According to the results, there are statistically significant differences in pupils' performance in terms of gender and age, while statistically insignificant is the difference in the level of geographical deviations. A significant proportion of the sample showed that students are unable to approach the performance base, facing serious difficulties in recovering information. Especially, their difficulty in interpreting and correlating information to make a decision about the content of reading is clear in our data. Based on the results of the statistical analysis, the students' attitudes towards reading, the reading strategies and their views on the role of school in reading capacity and application of reading skills are positively related, but reading skills in comprehension level of the content and meaning making is not related to the above factors.

Keywords: reading, text comprehension, language semantics, school, child

Introduction

Reading and reading literacy as we focus at this research, is a function of the general term Literacy as we know it the last two decades, (Kress (1997, 2003).

Reading literacy in terms of the International Student Assessment (PISA) understands, uses, and reflects on written texts, in order to achieve one's goals, to develop one's knowledge and potential, and to participate in society. This option may be partly different of the modes and functions of the well-known linguist Halliday in understanding what language is in terms of reading capacity , (Halliday. M.A.K., & Hasan, R. (1989).

Kress (1997, 2003) describes significant differences between the words and images as long as society changes in a rather visually concentrated education and society,

Reading differences are dependent on the way modes are processed and how particular modes activate a meaning-making process for the reader. In multimodal texts, compared with print-based texts, the reader will use various senses (sight, hearing, tactile, kinesthetic) to respond to other modes (Bates1976). Organizations such as PISA reflect empirical knowledge and assume to what extent adolescents are able to understand and integrate texts they are confronted with in their everyday lives. This opportunity as a research with children as a indicative process gave us a challenge to search the data in reading with children at Greek schools. Criteria such as reading speed take a back seat in our case. PISA measures the following dimensions:

a. .Retrieve texts and access them

b. Interpret and integrate texts

c. Reflect and evaluate texts

Critical communication of reading materials focuses deeper than the cognitive components of reading, the decoding of words and the perception of the meaning of the text. It is therefore intended to approach issues dealing with motivation and participation in written material "(Eurydice, 2011: 7). In short, understanding the text (reading literacy) is "... the ability to extract meaning from the written text for some purpose", (Vellutino, 2003: 51). Moreover, in PIRLS research (Mullis, Martin,

Gonzalez, & Kennedy, 2003: 33), reading literacy is the ability to understand and use those written forms of language required by society and / or valued by the individual. Young readers can make meaning from a variety of texts. They read so that they learn, participate in reading communities and enjoy this dimension of human communication. These purposes refer to the self-realization of the individual, both as a person and as a member of society (Mullis, et al., 2003).

According to the aforementioned definitions, the individual, during the reading of the text is not limited to the decoding of the written discourse, but seeks to interpret the content, reflect on it and ultimately understand it, with the goal of using it in a pragmatic rather than theoretical background. This can be conedered as a methodological approach of language acquisition.

Memory plays an important role regarding the reading comprehension process, on the part of the reader (Papadopoulou Sm., 2004). This is a classical opinion in the area. In the Borella and de Ribaupierre research (2014) it was observed that working memory, wherein information coding processes are usually conducted explains a significant part of the performance variation in understanding the text, regardless of any age influence.

Another important factor is reading strategies. Reading strategies highlight both strategies that readers manage their interaction with the text and their potential ability to understand the text. When conceptual knowledge is inadequate or when text literacy is low, reading strategies play a major role in reading literacy, (McNamara, 2004).

 According to Graesser (2007: 6), these are "*cognitive or behavioral actions that have been adopted under specific contextual situations to improve certain aspects of understanding."* According to Afflerbach, Pearson and Paris (2008: 368), the reading strategies are *those specific, deliberate and goal-oriented mental processes that control and modulate the efforts of the reader to decode a text, understand its words and construct its meaning*. The results of a limited Greek study such as ours revealed moderate interrelationships between knowledge of cognitive strategies, knowledge of metacognitive strategies and reading literacy. Awareness of cognitive strategies and metacognitive strategies explained the 7.7% and 8.1% of the variance, respectively, in reading comprehension over and above the reading accuracy and reading fluency that explain together 35% of the total variance, and significant differences, in terms of the frequency of use and the type of strategies among competent and weak learners (Anastasiou & Griva, 2009, Bakhtin, MM, 1986).

Other critical factors that usually have a significant impact on pupils' reading skills are the family and environmental stimulation (Deci & Ryan, 2002), the economic and cultural status of the family (Van Voorhis, Maier, Epstein, Lloyd, & Leung, 2013), reading which is noted for pleasure as an aesthetic value (Clark & Rumbold, 2006), literacy and word recognition skills (Perfetti & Hart, 2001) as well as text issues such as vocabulary enrichment, syntax, thematic preferences, title, presence of illustration in the book which accompanies the text, as well as content development and understanding of ideological issues or episodes within the text, (Porpodas, 2002: 415).

Research part

Purpose and objectives

The purpose of the limited research is to indicate and evaluate the performance of 5th and 6th grade students in the field of reading literacy. In particular, both the descriptive and the interpretive approach to the phenomenon are sought. The choice of the particular thematic nucleus was based on the fact that in the Greek literature, research on the development of literacy as a phenomenon as well as the processes used for processing written texts is shorter compared to the international literature (Αϊδίνης 2012: 30, Παπαδοπούλου 2004).

Data collection method selection

For the collection of data and the subsequent assessment of students, a three-step questionnaire (reading, reading, schooling - linguistic activities) was set up where the answers are given on a 5-point Likert-type scale, as well as a test comprising of three texts and a total of 60 questions. The questionnaire is an easy-to-use and cost-effective means of collecting information that enables researchers to express themselves anonymously, honestly, while the data collected with it can be classified, processed and exploited with relative ease.

As far as the test questions are concerned, these are structured into three categories. Each category includes 20 questions. The first category includes the information retrieval questions. In this case, students are asked to locate in the text an explicitly mentioned piece of information or request. The second category includes interpretation questions, where students

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are required to understand the meaning and explain it, in accordance with the aim of the question. In this case, students are asked to find a synonym or an antonym, to interpret a metaphor or extract the information from a section of the text. The third category includes questions related to correlating text information or asking for a decision based on information linking. Students are asked, either to draw a conclusion from different parts of the text, or to make a decision in a real environment based on the acquired information of the text or their pre-existing knowledge.

The test includes 37 closed-type multiple choice questions on the basis of international specifications, where students are asked to choose a correct answer among four options, and 23 open-ended and short-term questions. The overall student score is the percentage that results as a quotient of the total of the correct answers to the sum of the questions, while, for methodological reasons, success rates are exported for each of the categories of questions.

Sampling

The sample was selected using the stratified random sampling method. According to Robson (2010: 310), this method "involves distinguishing the population in a number of groups or strata, where members of a group share a particular feature or attributes." In this case, the specific feature sought for the survey is 5th and 6th grade students. Based on this characteristic, schools from Attica and Ioannina in Greece (Europe) were sought. The schools were coded on the basis of the list and their selection was made by being randomly drawn.

Reliability and validity

In order to assess the reliability of the questionnaire, the IBM SPSS v21 statistical program was used and the Cronbach's alpha index was utilized, with values greater than 0.7 being considered satisfactory / acceptable (Spector, 1992). The total confidence level of the questionnaire is 0.77 and is acceptable. Furthermore, with respect to the reliability and validity of the test, the biserial point correlation coefficient was used. This factor helps the investigators-educators find out, whether the question-items options are correct. Based on the result of the second table, it is noted that all sixty questions are properly adjusted, while the value of 0.93 shows an almost perfect application.

Research Questions

Based on the available information and the data derived from the international literature, the following working hypotheses were made:

1) The performance of girls is better than that of boys, as is the case with similar researches? (Elley, 1992. Mullis et. al., 2003, Mullis, Martin, Kennedy, & Foy, 2007. OECD/UNESCO Institute for Statistics, 2003. OECD, 2007. OECD, 2014. OECD, 2016)

2) Do sixth graders get better grades than fifth graders? (Φράγκος, 1972)

3) Do students residing in urban environments get better grades/scores than those in semi-urban environments? (OECD, 2007). Moreover, which of the three categories of questions and what type of text are the students expected to score better in?

In order to evaluate performance based on gender and to find a possible difference between the two categories, the t-test was used to test and compare the averages of both genders. The t-test is used to compare the averages of two sets of values that differ with respect to a particular feature. For the use of the t-test, the necessary conditions are that there are no extreme values, the dependent variable is quantitative, while the independent one is qualitative and includes two values. In this case, the students' performance is defined as the quantitative variable, while gender is defined as a two-value qualitative variable, where the boys are registered under the value 1 and the girls under the value 2. Regarding the hypotheses, they are worded as follows:

Zero Hypothesis (H_0): There is no statistically important difference observed between the averages of the two groups.

Alternative Hypothesis (H_1): There is a statistically important difference observed between the averages of the two groups.
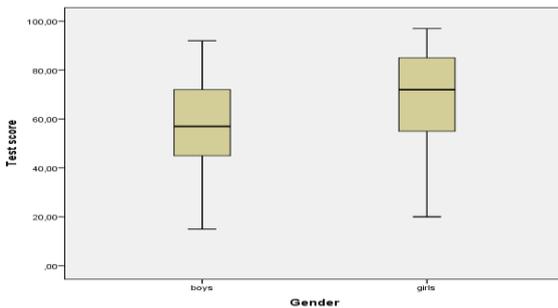
For the control of extreme values, the above box plots were constructed. The first box plot shows the range of the boys' score/performance and the second one of the girls'.

It is observed that there are no extreme values in the sample, as far as gender is concerned. As far as boys are concerned, both the maximum and the minimum performance lack compared to those of the girls. The same is true for the average score, where girls are seen to outweigh the boys.

In the regularity test regarding the boys, control over the Shapiro-Wilk criterion (1965) suggests that the equality hypothesis cannot be dismissed at a 5% level ($p\text{-}value = 0.063 > 0.05$). In contrast, for the girls, the check indicates that the equality hypothesis must be rejected at a 5% level ($p\text{-}value = 0.000 < 0.05$). Therefore, a non-parametric control was applied, in order to control the existence of a possible statistically significant difference between the genders. In the non-parametric check, the zero hypothesis (H_0), according to which, there is no statistically important difference observed between the averages of the two groups, should be rejected. This is because the value of $p =, 000 < 0.05$. So, the alternative hypothesis (H_1), according to which there is a statistically important difference observed between the averages of the two groups, is accepted.

Results

Positive correlations were found between its three scales questionnaire, which, however, are not related to student performance, although there seems to be a clear trend towards a statistically significant outcome between the performance and the scale of attitudes towards reading. In particular, regarding the scales, it is noticed how better they are students' attitudes towards reading, when they use reading strategies more than in regular class. In addition, the better opinion they have about it proves effectiveness of the school in the cultivation of reading literacy. We also observed that pupils of the sixth grade had a better average performance compared with the fifth-grade pupils, girls scored better than boys, while most performance varies in price levels "Moderate" or "fairly good".

Results in the class/ grade-based assessment

Zero Hypothesis (H_0): There is no statistically important difference observed between the averages of the two classes/ grades.

Alternative Hypothesis (H_1): There is a statistically important difference observed between the averages of the two classes/ grades.
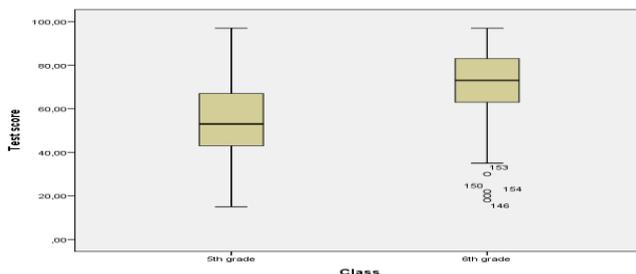
It is observed that there are four extreme values in the sample, as far as gender is concerned. More specifically, in the box plot representing the value range of the sixth graders, it is noted that the students' performances coded with numbers 146, 150, 153 and 154 represent extreme values. Due to their small number and due to the size of the aggregate sample, it is possible to remove them, to make possible the continuation of the process. As far as the average performance is concerned, it seems that the sixth graders' grades are significantly superior.

Regularity check

	Class	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Test score	5th grade	,063	77	,200*	,980	77	,257
	6th grade	,147	74	,000	,933	74	,001

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

In the regularity test, regarding the fifth grade, Shapiro-Wilk's test suggests that the equality hypothesis cannot be rejected at a 5% significance level (*p-value = 0.257> 0.05*). On the contrary, as far as the sixth grade is concerned, the check suggests that the equality hypothesis should be rejected at a 5% significance level (*p-value = 0.001 <0.05*). Therefore, non-parametric control was applied , in order to control the existence of a possible difference between classes/ grades.

Correlations		Test score	Attitudes towards reading	School's role	Reading strategies
Test score	Pearson Correlation	1	,149	,067	,108
	Sig. (2-tailed)		,065	,410	,181
	N	155	155	155	155
Attitudes towards reading	Pearson Correlation	,149	1	,438**	,586**
	Sig. (2-tailed)	,065		,000	,000
	N	155	155	155	155
School's role	Pearson Correlation	,067	,438**	1	,387**
	Sig. (2-tailed)	,410	,000		,000
	N	155	155	155	155
Reading strategies	Pearson Correlation	,108	,586**	,387**	1
	Sig. (2-tailed)	,181	,000	,000	
	N	155	155	155	155

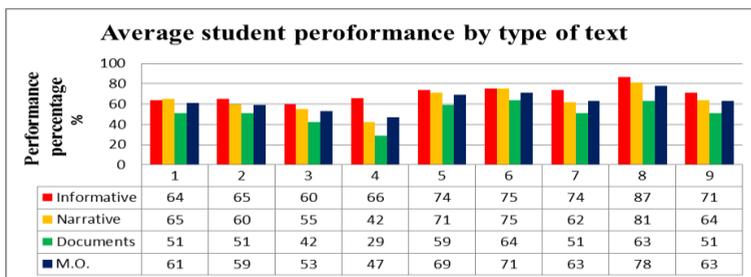**. Correlation is significant at the 0.01 level (2-tailed).

Based on the results of the table, it is observed that the correlation coefficient (r = 0,438 **) regarding the attitudes towards reading and the role of the school is positive, indicating a moderate connection and is statistically significant at a significance level of p = 0.01, whereas, regarding the attitudes towards reading and reading strategies, the correlation coefficient (r = 0.586 **) is positive, indicating a moderate connection, and is statistically significant at a significance level of p = 0.01. Moreover, the reading strategies are positively correlated with the role of the school, since the correlation coefficient is positive (r = 0.387 **), indicating little connection. On the contrary, in terms of test score, this is not related to a scale, although there is a clear trend observed, as far as reading attitudes are concerned, towards a statistically significant result.

Classes/ Grades averages per question category

According to our results the averages of the eight groups of the two classes/grades and to the type of question give the answer to the last research question: students achieve better performance in information retrieval questions. The average performance of the eight groups examined is 70% in the information retrieval category, 62% in the interpretation questions and 56% in the information correlation questions, while the overall average performance is 63%. Regarding the retrieval questions, it is noted that it is the question category, where students that participated in our research achieve the best performance.

Classes/Grades averages per text category

As can be seen from the table below, students generally perform better in informative texts, with the exception of the fifth grade students in the elementary school of Ioannina, which is a smaller city in comparison with Athens and the sixth grade students of the elementary school in the area of Anatoli, Ioannina. On the contrary, the non-continuous text consisting of documents is the type of text, where students systematically score their worst performances according to the average. As the data show, the average of the classes/grades is 71% in the informative text, 64% in the narrative text and 51% in the non-continuous text with documents, tables and maps.

Average student peroformance by type of text									
	1	2	3	4	5	6	7	8	9
Informative	64	65	60	66	74	75	74	87	71
Narrative	65	60	55	42	71	75	62	81	64
Documents	51	51	42	29	59	64	51	63	51
M.O.	61	59	53	47	69	71	63	78	63

Students' performance classification based on test score/ performance

Based on their score/performance, students were conventionally classified into five categories. The "very bad" value includes the range of values 0-35, the "poor" one includes a range of 36-49, the "moderate" consists of a range of 50-69, while the "fairly good" has a range of 70-84 and, finally, the "excellent" performance contains a range of 85-100.

Cases weighted by Test score
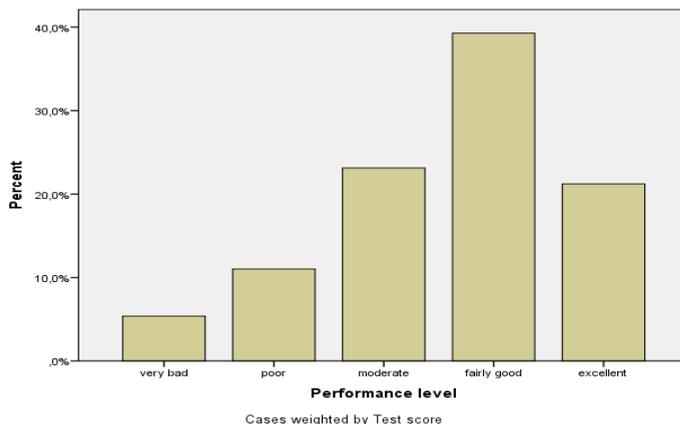
According to the table depicting performance, there appears to be an excellence of the "fairly good" performance. There are still very small differences between performances that are characterized "very bad", "poor" and "excellent. "Moderate" performances seem to appear with the second highest frequency.

It is noted that the high number of "fairly good" performances is due to the inclusion of performances that could be simply referred to as "good".

Discussion

As we already observed, the better the students' attitudes towards reading are, the more they use reading strategies. In addition, the better their opinion about the effectiveness of the school in the cultivation of reading literacy is, the more positive their attitude towards reading, while they use reading strategies more frequently.

It was observed that sixth grade students had a better average performance compared to fifth-grade ones, girls scored better than boys, while most performances ranged at "moderate" or "fairly good" values. 28.4% of students failed to reach the base, exhibiting serious weaknesses in interpreting and correlating information processes. It is noted that this percentage is almost in line with the results of the PISA surveys, as 21.3% of the Greek sample students were found under level 2 in 2009, while this figure exceeded 25% in 2015 (OECD, 2010a, OECD, 2016).

With regard to the first research question that girls' performance is expected to be better than that of boys, the finding was consistent with the findings of international surveys (Elley, 1992; Mullis et al., 2003; Mullis et al., OECD / UNESCO Institute for Statistics, 2003. OECD, 2007. OECD, 2014. OECD,2016). Moreover, the consequence of the superiority of girl students' performance is also reflected by the fact that their averages exceeded in seven of the eight groups examined, with the difference ranging from 2% to 21%,. Also, in five cases a double-digit difference between the girls' and boys' averages was observed. In particular, the average performance of the boys is 56.3%, and of the girls is 67.9%. This difference in average performance between the two genders is 11.6% and was identified as statistically significant.

The difference in average performance is interpreted by a number of factors. According to results of the PISA survey (OECD / UNESCO Institute for Statistics, 2003: 181) in comparison with our study's results the coefficient of the variable corresponding to reading out of personal pleasure is positively related to predicting a student's performance in the field of text comprehension. It can be assumed that students, who spend more time reading for pleasure as an aesthetic value of language, come in contact with a larger variety of written texts and display a more positive attitude towards reading. It is noted that these students tend to have higher scores in the field of reading literacy, even after taking into account other factors such as gender, number of siblings, economic, social and cultural situation as well as the level of wealth in the country. In the present study it was observed that girl students report a more positive attitude towards reading. In particular, girl students are found to be friendlier to reading, spend more time daily reading non-school books, and feel more joyful than boy students, when they receive a book as a gift. At the same time, their attitude to reading is also established by the frequency of their visits to book-affiliated places/ venues. In addition, the type of text affects the level of understanding and is likely to be a significant contributor to performance. Narrative texts, as reported, include stories, novels and poems (Primor et al., 2011).

Concerning the second research question, regarding the difference between the classes/ grades, there is a significant difference between the averages of the groups, which was characterized as statistically significant. Inevitably, the sixth graders, due to fact that they had more impulses and experience, exhibited better performance, although the maximum performance (97%) is the same and common for both classes/ grades. The fifth graders in this research presented a higher incidence of "very bad" and "poor" performance scores than the sixth graders, a finding that is consistent with an earlier study (Φράγκος, 1972).

The third research question, about the performance differences between the students, regarding the area variable showed that there was no statistically significant difference. We examine here the student's performance in relation to the type of text and the type of question. The students showed better performance in the informative text (71%), followed by the narrative text (64%), while the worst performance was recorded in the non-continuous text (51%). The difference in student performance of this research between the informative text and the narrative one is not consistent with the results of the 2001 PIRLS research, where Greece participated (Mullis et al., 2003). The finding that students achieve better performance in continuous texts, compared to the non-continuous ones, is in agreement with a corresponding research in Cyprus (Vasiliadis et al., 2006). This is interpreted based on the type of questions contained in the non-continuous text, after, basically, utilized information-correlation questions. The average performance of the eight groups examined is 70% in the category of information retrieval, 62% in interpretation questions and 56% in information correlation questions. It has been argued that, as the degree of difficulty of questions increases, the degree of success of students is reduced .It is also quite possible that the difference in the types of text is due to their theme or their degree of difficulty.

As far as types of questions are concerned, the students, as mentioned, are managing, at quite a satisfactory level, to find information in the text. The recovery process involves the ability to decode the text on the part of the student. Some students' weaknesses are found mainly in questions that do not contain the elements mentioned in the text, such as the text, where the students had to reject the possible answers contained in the text.

 Moreover, there is an inability of the students, to divide information based on their morphological representation at a word level, and not on their graphic representation, since in the case of the question: "How many subway lines are there on the

map, according to the memorandum?" of the third text, the students did not decode the information correctly, scoring the lowest total performance in a question in this category.

In relation to the interpretation questions, the students scored good enough, but some difficulties in specific areas were observed. Students, especially fifth-grade students, are experiencing serious difficulties in finding synonyms or antonyms, as there are questions where the percentage of students is below the average. Indicatively, in the questions, where it was asked to find synonyms for the words "otherwise, necessary, beneficial" the percentages were 57%, 47% and 54% respectively, while for finding an antonym for the word "we were turning", the percentage reached 50 %. Problems are also found in the interpretation of metaphors, as shown by the examples of questions. "My professorial words escaped as if they were hieroglyphics. What is the meaning of the phrase?" (Average = 51%) and "Which hand took a tremendous sponge and made the soul an empty table? Interpret the phrase" (Average = 35%), despite the fact that the questions were formulated as a multiple choice. Finally, weaknesses are found in the field of semantic rendering of symbols and numerical data. On the questions, "Which month does the summer season include, according to the opening hours of the Acropolis Museum?" (Average = 44%), and "Morning and noon are expressed by which point of time?" (Average= 52%), where in the first case the students were asked to interpret the following symbol (-) between the months and, in the second case, to interpret the points of time of the choices, in order to select the correct answer.

Based on the current research, it was found that one in five students did not adequately correlate information to existing knowledge or use the information in everyday life. The finding that students are lacking in this category of questions is consistent with the results of another/ previous research (Elley, 1992).

Concerning the interpretation of student performance, there was no correlation with the questionnaire scales, although there is a clear trend towards a statistically significant effect of the scale of attitudes towards reading on test score/performance.

Also, it has been found that students who use reading strategies successfully when reading scientific papers, score better performance (Herman, Perkins, Hansen, & Gomez, 2010). Therefore, for the sample case, other parameters may have set the level of performance.

An important parameter is the frequency and quality of interactions between students and parents. The level of student reading literacy is significantly influenced by the interaction with their parents in pre-school age, although this effect at the age of 10 is not so significant, apart from their common and frequent visits to a library or a bookstore (Geske & Ozola, 2008). More generally, however, the overall impact of the family environment on reading literacy is high, since, according to research results, it has been found to be an important part of the overall variance of the correlation between , (Alivernini, Lucidi, Manganellia, & Di Leoa, 2011).

In addition, reading opportunities in the social environment appear to be very important. Inevitably, reduced reading opportunities potentially lead to reduced language comprehension, verbal skills, and the use of higher language skills in reading comprehension, thus increasing the knowledge base of the students with increased performance, while simultaneously lowering the corresponding lower-performance base (Stanovich, 1986). Finally, cultural practices and activities of parents with children, higher levels of social resources, the effects of the cultural and socio-economic situation of the family and pre-existing knowledge of students, all significantly affect academic performance in this field of reading performance and skills accompanied from this area, (Anderson & Cheung, Miller & Keenan, 2009).

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