

# Factors influencing the development of reading competencies in Peruvian students in second-grade of secondary education

## Factores que influyen en el desarrollo de las competencias lectoras en estudiantes peruanos de 2° grado de secundaria

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### **Abstract**

This research focuses on identifying how various individual, family and school factors are related to the development of reading literacy among secondary school students in public schools in urban Peru. This competence is operationalised as the score obtained in the 2019 Censal Student Assessment. Among the most important results, it stands out that (for) in this specific context, pedagogical practices are not related to the development of reading literacy. It is the factors of the family context, specifically the socio-economic context, that have the greatest influence on this variable. This sets up an important problem, given that the evidence on school effectiveness and factors associated with learning indicate that the teaching action is the factor that should have the greatest influence on the development of student learning. Thus, in the last section of this document, some aspects that could be intervening and distorting the possible relationship between pedagogical practices and student learning are discussed.

*Keywords:* Learning, teacher, pedagogical practices, socioeconomic status, secondary school.

## Resumen

La presente investigación se centra en identificar la forma cómo diversos factores individuales, familiares y escolares se relacionan con el desarrollo de la competencia lectora que presentan los estudiantes de secundaria de escuelas públicas del área urbana de Perú. Dicha competencia se operativiza como el puntaje obtenido en la Evaluación Censal de Estudiantes del año 2019. Entre los hallazgos más importante, se tiene que, las prácticas pedagógicas no guardan relación con el desarrollo de la competencia lectora. Por el contrario, son los factores del contexto familiar, en específico el socioeconómico, los que influyen en mayor medida sobre dicha variable. Esto configura una problemática importante, dado que la evidencia sobre la eficacia escolar y los factores asociados al aprendizaje señalan que la acción docente es el factor que debería tener una mayor influencia sobre el desarrollo de aprendizaje de los estudiantes. Así, en la última sección de este documento se discute sobre algunos posibles aspectos que podrían estar interviniendo y distorsionando la relación entre las prácticas pedagógicas y el aprendizaje de los estudiantes. Es necesario considerar esos factores para poder comprender y abordar la problemática mencionada previamente. La investigación presentada es un primer paso para entender la complejidad de la relación entre los diferentes factores y el desarrollo de la competencia lectora en los estudiantes de secundaria de Perú.

*Palabras clave:* Aprendizajes, docente, práctica pedagógica, nivel socioeconómico, escuela secundaria.

## Introduction

The present research focuses on determining which factors would be related to the development of reading literacy achieved by students in second-grade of secondary education (ISCED 2) from public schools in urban areas of Peru. The results of the Student Census Evaluation (ECE) and the data provided by the different actors of the educational community (students, teachers and principals) were used in the questionnaires of associated factors collected together with said test.

## A black box called learning

Academic performance reflects the development of competence in the education system and is measured by the average grade obtained by stu-

dents. This qualification must reflect specific learning and the ability to apply it in real situations (Ertmet & Newby, 2013), which is synthesized from the teacher's actions, their interaction with the socio-school context and the attitudes and aptitudes of the students. Thus, the teacher's way of teaching is the key to the development of student learning and competencies (Ausbel, 1976; Hammonds & Lamar, 1972; Lloyd & Fernyhough, 1999). The relationship between the teacher's actions, the school context and the socio-family and personal characteristics of the student influence the development of competencies (Coleman, 1966; La Serna, 2011, Martín et al., 2008). In addition, the socio-family characteristics of the student are important in explaining the differences in academic performance throughout schooling (Berger & Toma, 1994; Coleman, 1966; Hanushek and Taylor, 1990; Summer & Wolfe, 1977), especially in secondary school. (Martín et al., 2008; Risso et al., 2010).

The evidence on the characteristics of teachers is ambiguous. According to Berger and Toma (1994), there is no significant relationship between student performance and the teacher's years of work experience, nor between variables such as teacher's salary and educational level. However, Fuller and Clarke (1990), in their research for developing countries, found that the characteristics of schools play an important role in the development of competencies.

In line with the aforementioned (above), several studies have concluded that the school environment and socioeconomic conditions have an impact on the academic performance of students. According to Harbinson and Hanushek (1992), the quality of the school infrastructure and the learning materials used by the teacher are positively correlated with student performance in Brazil. In addition, access to basic services and technology is also related to improvements in academic performance. Mizala and Romaguera (1999) in Bolivia, found that socio-family and racial variables have a high degree of explanation of academic performance, followed by school management and teacher characteristics, especially experience and the use of homework.

Research in Peru reveals that pedagogical strategies and teacher training are important in explaining differences in performance between students. According to Beltrán and Seinfeld (2012) the educational level of the teacher influences performance in Reading and Mathematics. Cueto et al. (2008) find that curricular coverage and feedback strategies in class are positively related to performance in Reading and Mathematics, but

are correlated with students' socioeconomic status. Likewise, Servan and Tantalean (2011) found that teachers with postgraduate degrees have students with high scores in Reading and Mathematics. In addition, the use of didactic strategies and feedback are positively and importantly related to performance.

Some research indicates that the socioeconomic context of the student and the classroom, rurality, and the leadership of the school principal influence the effectiveness of the teacher and his practice for the development of competencies. According to Belfi et al. (2015) and Creemers and Kyriakides (2007), teachers in schools with students from vulnerable contexts are perceived as less effective than their peers in schools with students from more privileged contexts, since poverty hinders aspects such as planning, learning monitoring and school management. These findings suggest that student performance varies by context, both at the macro level between developed and developing countries, and for particular social strata and groups of individuals. In the Latin American context, the pedagogical leadership of principals is important in improving educational quality, especially in contexts of socioeconomic vulnerability (Freire & Miranda, 2014; Horn & Marfán, 2010; Leithwood et al., 2008, Ministry of Education, 2018).

The reviewed research indicates that the interaction between pedagogical practices, pedagogical leadership and student learning is crucial in the development of competencies. Thus, it is necessary to identify this relationship in specific contexts to develop tools and actions that improve the learning process and strengthen teaching action.

## **Good pedagogical practices and learning development**

Constructivism refers to learning as an active construction by the student, adaptable to new knowledge (Phillips, 1995; Ortega & Romero, 2020; Von Glasersfeld, 1996). Thus, the National Curriculum for Basic Education (CNEB) of Peru adopts a competency-based approach within a socio-constructivist framework (Ministry of Education, 2016a). In addition, learning within schools is circumscribed to a set of activities directed towards a particular purpose, which is known as the teaching-learning process (La Serna, 2011). In this process, constructivism

positions the teacher as a mediator between the student and learning to develop useful skills for proper development in society (Hernández et al., 2003).

Considering empirical evidence, it has been identified that certain teacher pedagogical practices are positively related to the development of competencies, such as the appropriate climate in the classroom, mastery of the subject, exposure to learning opportunities, and collaboration between teachers. (Arcia & Laguna, 2004; Arenas and Ámbros, 2021; Fuller & Clarke, 1990; Martín et al., 2022; Monge & Gómez, 2020; Murillo & Martínez, 2018; Willms & Somer, 2001). Likewise, the teacher's decisions about the use of resources, strategies and types of materials to which students are exposed in the classroom (Balarin, 2016; Campos et al., 2014; Caro et al., 2015; Cueto et al., 2008; Hanushek & Woessmann, 2009).

Research in the Peruvian context has found a positive relationship between student achievement and collaboration between school teachers. Thus, Caro (2003) finds that meeting activities between teachers within the school is positively and significantly associated with the performance achieved by students in Mathematics. On the other hand, the Ministry of Education (2017) highlights the importance of collaborative work between teachers to enhance the impact of strategies for teaching reading (those focused on the meaning of the text and not on the repetition of content) and the improvement of pedagogical practice (Caro, 2003; Cueto et al., 2008). In addition, practices focused on repetition of content and passive resolution of exercises are negatively related to the development of competencies (Caro, 2003; Cueto et al, 2008).

According to the Ministry of Education (2016b) and Martínez et al. (2022), the impact of the teacher's teaching strategies on the development of reading is significant. Students with teachers who focus their strategies on content repetition obtain 9.0% of one standard deviation (SD) less performance than those with teachers with less passive strategies. In addition, in regions of socioeconomic vulnerability, such as the jungle, the coefficient increases to 11.3% of a SD. Likewise, the Ministry of Education (2017) mentions that students who receive a pedagogical practice that reflects a solid knowledge of the curricular area (mainly in Mathematics) and an approach with constructivist principles have an increase in their performance throughout schooling.

When strategies focused on the meaning of texts rather than repetition are used, the achievement gap between students of high and low socioeconomic status is reduced.

In summary, the pedagogical action of the teacher influences the development of competencies, and there are more effective pedagogical practices than others depending on the context in which they are applied. For example, the implementation of technologies may not have an impact on learning in vulnerable contexts. However, this relation is not absolute, it depends on how other factors influence the context. It is important to identify the relationships between pedagogical practices and learning in each particular context.

### **Reading literacy in the Student Census Assessment**

The ECE is the main tool of the Peruvian Ministry of Education to measure the development of competencies at the national level. This large-scale standardized test aims to provide information on student learning achievements and compare the results over time to report on the evolution of learning (Ministry of Education, 2016b).

For the year 2019, the Ministry of Education (2020a) reports that students in 2nd and 4th grade of primary school were evaluated (165,658 and 125,540 students from 5,976 and 4,799 schools respectively) and 2nd grade of secondary school (511,874 students from 13,437 schools), using multiple-choice questions in a paper-and-pencil format. In addition, information was collected from different actors in the educational community (students, parents, teachers and principals) through questionnaires. For the secondary level, the Communication area test was built considering evaluating one of the competencies proposed by the CNEB. Specifically, the competence “Read various texts written in their mother tongue” and the three capacities defined for it: obtain information from the written text, infer and interpret the meaning of the text, and reflect on the form, content, and context of the text (Ministry of Education, 2016a, 2022a). The Communication test approached these capacities through five types of written texts, grouped into two textual formats and in three different types of contexts. Table I shows the organization of the texts that the evaluation had in this area.

Table I. Organization of the test content in the area of Communication in ECE

Types of text	Text format	Contexts
- Narrative	- Continuous	- Educational
- Expository	- Discontinuous	- Public
- Descriptive		- Recreational
- Argumentative		
- Instructive		

Source: Ministry of Education and Vocational Training (2020a)

## Collection of teacher's pedagogical practices in ECE

The Office of Learning Quality Measurement (UMC) of the Minedu developed a questionnaire to collect information on the characteristics, perceptions and pedagogical practices of teachers, focusing on characteristics of the constructivist approach and seeking those that influence educational performance. The questionnaire included scales related to the teacher's pedagogical practice, including those related to the type of reading material the teacher uses and the frequency with which it is presented to students. Also, those related to the pedagogical practices of reading, classroom climate and students' perception of the pedagogical practice of their teachers (Rodríguez, Jenaro & Castaño, 2022). Table II shows the items of these scales.

Taking into account the limitations due to the availability of data, this research tries to identify and quantify the relationship between the pedagogical practices of the Communication teacher and the performance of students in urban public schools in Peru, using ECE data from 2019. Thus, it is hypothesized that these practices have an impact on student performance in Reading. The following sections detail the analytical strategy used to make the corresponding estimates and the results derived from its application in order to verify the proposed hypothesis.

**Table II.** Description of the scales related to pedagogical practices and the items that compose them

Group	Scale	Items that make up the scale
Use of materials	Reading different types of text	<ul style="list-style-type: none"> <li>- Argumentative (opinion pieces, posters, newspaper editorials, etc.).</li> <li>- Expositive (scientific papers, monographs, etc.).</li> <li>- Descriptive (encyclopedic articles, descriptive infographics, etc.).</li> <li>- Literary narrative text (anecdotes, short stories, comics, chronicles, etc.).</li> <li>- Non-literary narratives (biographies, news, etc.).</li> <li>- Instructive (manuals, recommendations text, recipes, etc.)</li> </ul>
	Reading different types of text formats	<ul style="list-style-type: none"> <li>- Continuous (organized in paragraphs without tables or diagrams).</li> <li>- Discontinuous (infographics, graphs, charts).</li> <li>- Mixed (contains paragraphs along with graphics or charts).</li> <li>- Multiples (two or more texts on the same subject).</li> </ul>
Pedagogical practices	Pedagogical reading practices	<ul style="list-style-type: none"> <li>- I encourage students to express their opinion about the texts read.</li> <li>- I help students to relate the stories they read with their lives.</li> <li>- I show students how the information in the text is based on what they already know.</li> <li>- I ask questions that motivate students to actively participate.</li> <li>- I set clear goals for student learning.</li> <li>- I ask questions to verify if the students have understood what I have taught them.</li> <li>- At the beginning of the class, I present a brief summary of the previous class.</li> <li>- I tell the students what they have to learn.</li> </ul>
Classroom climate	Discipline climate in the classroom	<ul style="list-style-type: none"> <li>- Many students do not listen to what I say.</li> <li>- There is noise and disorder.</li> <li>- I have to wait a long time for the students to be silent.</li> <li>- Students cannot work well.</li> <li>- Students do not begin work until long after class begins.</li> </ul>
Student perception	Student perception of their teachers' pedagogical practices	<ul style="list-style-type: none"> <li>- At the beginning of the classes they explain to us what we are going to do and learn.</li> <li>- At the beginning of the class they make us remember what we did in the previous class.</li> <li>- They use examples from everyday life and current events to explain the topics.</li> <li>- At the beginning of the class they ask us what we know about the subject that we will see.</li> <li>- They ask us to argue our ideas.</li> <li>- They ask us questions to make sure we have understood the topic.</li> <li>- When reviewing our work or exams, they leave us notes explaining what we should improve on.</li> <li>- They notice when we make a mistake when answering a question and they explain it to us.</li> <li>- They give us recommendations on how to better learn what we are taught.</li> <li>- They explain to us what we will learn when they give us a class assignment.</li> </ul>

Source: Ministry of Education and Vocational Training (2022b)



## Methodology

### Participants

The target population corresponds to communication students and teachers in 2nd grade of secondary school in urban state schools in Peru who participated in the ECE in 2019. The total number of students in the sample used was 114,093. from whom there was information on their reading performance and factors associated with their family background. Likewise, 5,568 teachers and 1,609 principals (or schools) who answered questionnaires with information on their personal and contextual characteristics were considered.

### Variables

The criterion variable is the score attained by the student on the ECE in Reading. The predictor variables correspond to information collected in the associated factors questionnaires applied together with the test. Sociodemographic and perception variables of students, teachers and principals are considered. The student variables are presented in Table III. The scales were built by the UMC of the Minedu and are valid and reliable (Ministry of Education, 2020b).

Table III. Description of variables related to student characteristics

Indicator	Calculation	Description
Student performance	Rasch Model	Measure of a student's ability in a competency evaluated at a given grade level of schooling. It is a scale centered at 500 points.
Student gender	Student's report	0 = Male 1 = Female
Student's native language	Student's report	0 = Spanish 1 = Original language
Assistance to pre-school education	Student's report	0 = Did not attend pre-school education 1 = Attended pre-school education

(Continued)

Table III. Description of variables related to student characteristics (Continued)

Indicator	Calculation	Description
Repetition	Student's report	0 = Did not repeat any school grade 1 = Repeated a school grade
Socioeconomic Index	Principal component analysis	Score that represents the economic potential of the family to cover and satisfy needs, as well as to increase access to personal and social development opportunities.
Beliefs about reading: Reading as a natural talent	Confirmatory factor analysis	Student beliefs that reflect an understanding of reading ability as natural or unchangeable.
Beliefs about reading: Reading as a learned competence	Confirmatory factor analysis	Student beliefs that reflect an understanding of reading as a skill that can be developed with effort and time.
Reading self-efficacy	Confirmatory factor analysis	Student's perception of their ability to develop reading activities.
Pedagogical practices (general)	Confirmatory factor analysis	Student perception about the actions carried out by the teacher in order to facilitate and guide their learning.
Coexistence: manifestations of physical, verbal and/or psychological violence by teachers	Confirmatory factor analysis	This scale includes the forms of aggression carried out by teachers that the student witnesses, both physically and verbally or psychologically. In this sense, "physical violence" is understood as any act that causes damage or pain, and "verbal violence" or "psychological" as emotional damage without any kind of physical contact.
Coexistence: relationship between students	Confirmatory factor analysis	This scale seeks to find out how the student feels about the relationship they have with their classmates, and with this, to identify if the interpersonal relationships that develop are positive or not.
Coexistence: sense of belonging	Confirmatory factor analysis	This scale seeks to know the level of student identification with their school.

Source: Ministry of Education (2016b) and Ministry of Education and Vocational Training (2022b)

The characteristics and perceptions of teachers and principals are shown in Table IV. As with the student scales, these were prepared by the Minedu UMC and are valid and reliable (Ministry of Education, 2020b).

Table IV. Description of variables related to the characteristics of the teacher and principal

Indicator	Calculation	Description
Teacher gender	Teacher's report	0 = Male 1 = Female
Teacher's educational level Qualifications	Teacher's report	0 = Full college education at most. 1 = Postgraduate studies at least (master's and/or doctorate)
Teaching experience	Teacher's report	0 = Novice (Equal to or less than 5 years of teaching experience) 1 = Experienced (5+ years of teaching experience)
Curricular coverage	Confirmatory factor analysis	Frequency with which the Communication teacher addresses different topics related to the area in class.
Reading different types of text	Confirmatory factor analysis	Frequency with which the Communication teacher suggested to his students the reading of different types of texts.
Reading different text formats	Confirmatory factor analysis	Frequency with which the Communication teacher suggested to his students the reading of different text formats.
Self-efficacy on teaching reading	Confirmatory factor analysis	Confidence of the Communication teacher in his ability to develop reading competence among his students.
Reading as a natural talent	Confirmatory factor analysis	Communication teacher's belief that reading competence is an innate ability.
Reading as a learned competence	Confirmatory factor analysis	Communication teacher's belief that reading competence is a skill acquired with effort and dedication.
Reading self-efficacy	Confirmatory factor analysis	Confidence of the Communication teacher in his own reading competence.
Reading pedagogical practices	Confirmatory factor analysis	Frequency with which the Communication teacher implements a set of favorable practices to the learning of their students.
Interaction with other faculty	Confirmatory factor analysis	Frequency with which the Communication teacher interacts with their peers in order to improve the teaching process.
Classroom discipline climate	Confirmatory factor analysis	Frequency with which disruptive events occur in the class (noise, disorder, etc.) that arise from the teaching-learning processes.
Principal gender	Principal's report	0 = Male 1 = Female

(Continued)

Table IV. Description of variables related to the characteristics of the teacher and principal (Continued)

Indicator	Calculation	Description
Principal's educational level	Principal's report	0 = Full college education at most. 1 = Postgraduate studies at least (master's and/or doctorate)
Principal experience	Principal's report	0 = Novice (Equal to or less than 5 years of teaching experience) 1 = Experienced (5+ years of teaching experience)
Pedagogical Leadership: Strategic Planning	Confirmatory factor analysis	Priority that the principal gives to activities related to the monitoring of planning, supervision, and achievement of goals, as well as the management of development opportunities and participation within the school.
Pedagogical Leadership: Involvement in the educational work	Confirmatory factor analysis	Frequency with which the principal monitors and supervises different aspects of teacher work (for example, planning activities, teaching practices, time use, and parent-teacher relationship).

Source: Ministry of Education and Vocational Training (2022b)

## Analytical strategy

For data analysis, two stages were considered. The first focuses on performing a descriptive analysis of the characteristics of the selected sample. The second, given the nested structure of the data in an educational context (Gaviria & Castro, 2005; Raudenbush & Bryk, 2002), proposes three multilevel structure models to analyze the relationship that different factors have with ECE performance.

For this stage, a model that incorporated only the characteristics of the students was estimated. Then, based on the previous model, variables related to the teacher and her practice were included. Lastly, variables related to the principal were added. For the model adjustment, the AIC and BIC indicators were taken into account. These indicators were evaluated to decrease as the models became more complex. Analyzes were performed using the *lmer* function of the R language package *lme4* (Bates et al., 2014).

The scales used were standardized with a mean of 0 and SD of 1. The multilevel models took the students and their characteristics as level 1 and the characteristics of the teachers and principals grouped in the classrooms as level 2. Being a representative sample of the urban area, weights built by the UMC were used for data analysis.

## Results

The results obtained in this research are presented in two sections. Firstly, the distribution of the main characteristics of the sample is presented (Table V) and then the correlations between the variables used are analyzed. Second, models and the effects of variables on performance are examined. To do this, the fit indices of each model are compared.

Gender distribution is equal between men and women. Also, most of the students speak Spanish and most come from urban state schools. Regarding the socioeconomic status, 68.93% belong to the low and very low level. Only 7.06% belong to the high level. 6.51% of students have not attended pre-school education (3 to 5 years) and 17.68% have repeated at least one grade.

Table VI shows the distribution of teachers and principals characteristics according to gender, experience, and educational level. It should be mentioned that 62.59% of the teachers are women. On the contrary, among principals they represent 32.57%. In addition, 37.39% of teachers have postgraduate studies. In the case of directors, 69.42% of them have a postgraduate degree. Finally, more than 80.00% of both groups are experienced professionals.

Figure I shows the correlations between the different student indices and performance in Reading. The diagonal presents the distribution of the index among the students. Below the diagonal, the data distribution

Table V. Distribution of students by sociodemographic features and educational trajectory

Features		Proportion (%)
Gender	Male	49.43
	Female	50.57
First language	Indigenous	8.59
	Spanish	91.41
Socioeconomic status	High	7.60
	Medium	23.47
	Low	33.04
	Very low	35.89
Preschool education	Attended	93.49
	Did not attend	6.51
Repetition	Repeated	17.68
	Did not repeat	82.32

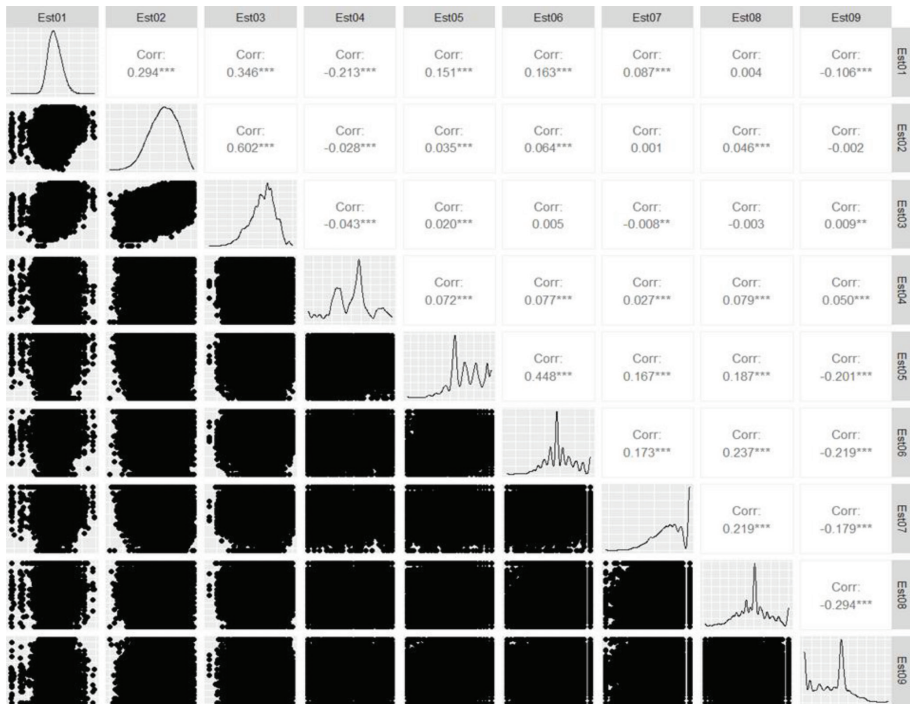
Source: Compiled by author

Table VI. Distribution of teachers and principals by features of gender and professional career

Feature		Teacher	Principal
Gender	Male	37.41	67.43
	Female	62.59	32.57
Teaching experience	Novice	14.67	19.33
	Experienced	85.33	80.67
Educational level Qualifications	College education at most	62.61	30.58
	Postgraduate (master's and/or doctorate)	37.39	69.42

Source: Compiled by author

Figure I. Correlations between Reading performance and student reported indices



\*\*\*p<.001; \*\*p<.01; \*p<.05

Note: Est01: Reading Performance. Est02: Socioeconomic index of the student. Est03: Average socioeconomic index of students in the school. Est04: Beliefs about reading: reading as a natural talent. Est05: Beliefs about reading: reading as a learned competence. Est06: Reading self-efficacy. Est07: Pedagogical practices (general). Est08: Coexistence: relationship between students. Est09: Coexistence: sense of belonging.

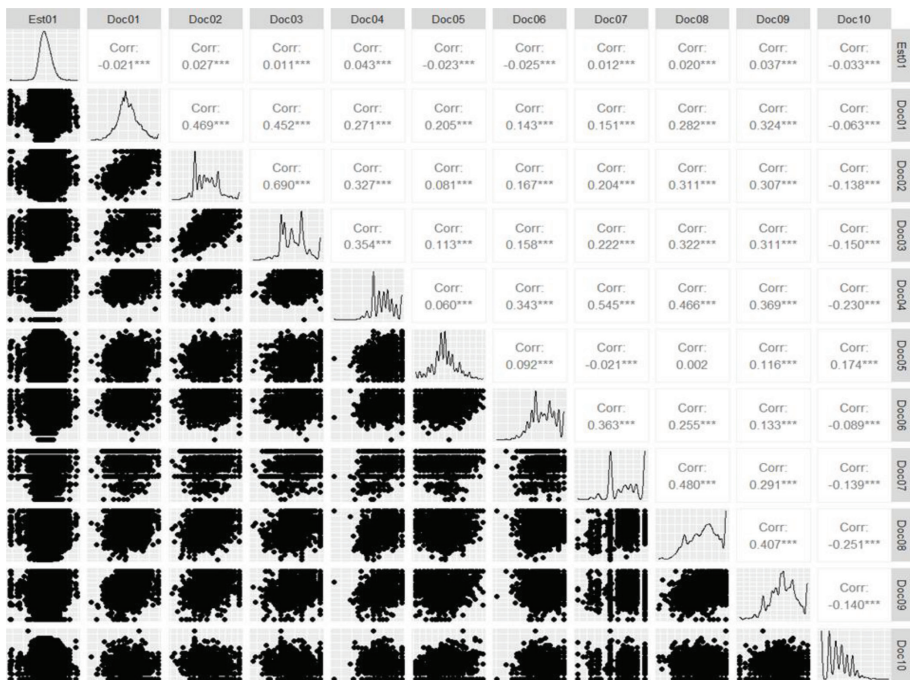
Source: Compiled by author

among the correlated variables is observed. Among the indices that most correlate with performance, the socioeconomic index (ISE) of the school (.346) stands out along with the individual student index (.294). “Coexistence: relationship between students” does not present a statistically significant correlation with performance and “beliefs about reading: reading as a natural talent” is negatively related to the latter.

The “coexistence: sense of belonging” index is negatively related to performance. This indicates that the higher the level of identification of the student with the school, the lower the performance tends to be. This relationship may be influenced by variables not considered in the study.

Regarding the relationship between the teacher's indices and performance, figure II shows that they all reach statistical significance. However,

Figure II. Correlations between Reading performance and teacher-reported index

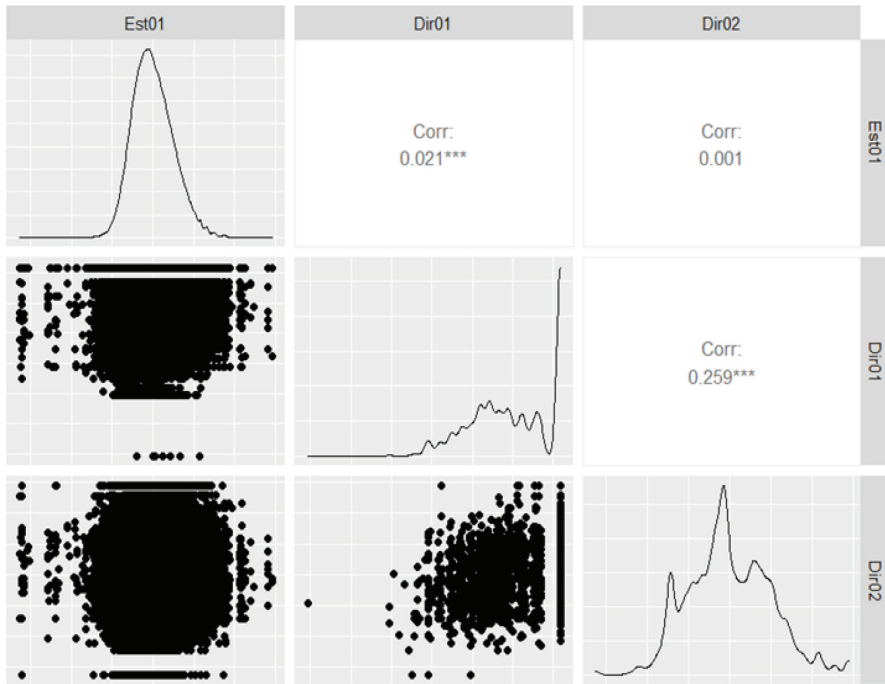


\*\*\*p < 0,001; \*\*p < 0,01; \*p < 0,05

Note: Est01: Reading achievement. Doc01: Curricular coverage. Doc02: Reading different types of text. Doc03: Reading different text formats. Doc04: Self-efficacy on teaching reading. Doc05: Reading as a natural talent. Doc06: Reading as a learned competence. Doc07: Reading self-efficacy. Doc08: Reading pedagogical practices. Doc09: Interaction with other faculty. Doc10: Classroom discipline climate.

Source: Compiled by author

Figure III. Correlations between reading performance and principal-reported rates



\*\*\*p < .001; \*\*p < .01; \*p < .05

Note: Est01: Reading Achievement. Dir01: Pedagogical leadership: strategic planning. Dir02: Pedagogical leadership: Involvement in the educational work.

Source: Compiled by author

the coefficients are quite small (less than .05). Likewise, three of the indices are negatively related to performance: curricular coverage, reading as a natural talent and disciplinary climate in the classroom. All reported indices present medium size correlations among them.

Figure III shows the indexes reported by the director. Despite reaching statistical significance, the strategic planning index presents a fairly small coefficient (less than .05).

### Associated factor models

The results from the four models are presented in Tables VII and VIII. Table VII presents the effects at the level of student variables and Table



Table VII. Individual-level effects on reading performance

	<b>Null model</b>	<b>Model 01</b>	<b>Model 02</b>	<b>Model 03</b>
Interceptor	-0.07***	-0.13***	-0.11***	-0.16***
	(0.01)	(0.01)	(0.02)	(0.02)
Student gender		0.03***	0.02***	0.02***
		(0.01)	(0.01)	(0.01)
First Language		-0.35***	-0.26***	-0.26***
		(0.01)	(0.01)	(0.01)
Socioeconomic index		0.12***	0.08***	0.08***
		(0.00)	(0.00)	(0.00)
Preschool education		0.18***	0.17***	0.17***
		(0.01)	(0.01)	(0.01)
Reptence		-0.33***	-0.33***	-0.33***
		(0.01)	(0.01)	(0.01)
Reading as a natural talent		-0.18***	-0.18***	-0.18***
		(0.00)	(0.00)	(0.00)
Reading as a learned competence		0.08***	0.08***	0.08***
		(0.00)	(0.00)	(0.00)
Reading self-efficacy		0.11***	0.11***	0.11***
		(0.00)	(0.00)	(0.00)
Perception on pedagogical practices		0.05***	0.05***	0.05***
		(0.00)	(0.00)	(0.00)
Sense of belonging		-0.04***	-0.04***	-0.04***
		(0.00)	(0.00)	(0.00)
Relationship between students		-0.07***	-0.07***	-0.07***
		(0.00)	(0.00)	(0.00)
AIC	303821.71	287824.71	285922.55	285943.12
BIC	303850.64	287959.74	286192.61	286261.39
Log Likelihood	-151907.85	-143898.36	-142933.28	-142938.56
Num. obs.	114093	114093	114093	114093
Num. groups: classroom	5568	5568	5568	5568
Var. classroom (Intercepto)	0.24	0.12	0.08	0.08
Var. Residual	0.76	0.68	0.68	0.68

\*\*\*p < .001; \*\*p < .01; \*p < .05

Source: Compiled by author

Table VIII. School-level effects on reading performance

	Null model	Model 01	Model 02	Model 03
Average socioeconomic index			0.23***	0.22***
			(0.01)	(0.01)
Student gender			0.01	0.01
			(0.01)	(0.01)
Teaching experience			-0.03*	-0.03*
			(0.01)	(0.01)
Teachers's educational level			0.06***	0.06***
			(0.01)	(0.01)
Curricular coverage.			-0.03***	-0.03***
			(0.01)	(0.01)
Reading different types of text			0.03***	0.03***
			(0.01)	(0.01)
Reading different text formats			-0.00	-0.00
			(0.01)	(0.01)
Self-efficacy on teaching reading			0.02**	0.02***
			(0.01)	(0.01)
Reading as a natural talent			0.01	0.01
			(0.00)	(0.00)
Reading as a learned competence			-0.00	-0.00
			(0.01)	(0.01)
Reading self-efficacy			-0.02**	-0.02***
			(0.01)	(0.01)
Reading pedagogical practices			0.01	0.01
			(0.01)	(0.01)
Interaction with other faculty			-0.02**	-0.02**
			(0.01)	(0.01)

(Continued)

Table VIII. School-level effects on reading performance (Continued)

	Null model	Model 01	Model 02	Model 03
Classroom discipline climate			-0.02***	-0.02***
			(0.00)	(0.00)
Principal gender				0.03***
				(0.01)
Principal's educational level				0.02
				(0.01)
Principal experience				0.04***
				(0.01)
Pedagogical Leadership: Strategic Planning				0.00
				(0.00)
Pedagogical Leadership: Involvement in the educational work				-0.01*
				(0.00)
AIC	303821.71	287824.71	285922.55	285943.12
BIC	303850.64	287959.74	286192.61	286261.39
Log Likelihood	-151907.85	-143898.36	-142933.28	-142938.56
Obs. num.	114093	114093	114093	114093
Gr. Num.: classroom	5568	5568	5568	5568
Var. classroom (Intercepto)	0.24	0.12	0.08	0.08
Var. Residual	0.76	0.68	0.68	0.68

\*\*\*p < .001; \*\*p < .01; \*p < .05

VIII the effects at the level of the school context. In addition, the values of the AIC and BIC goodness-of-fit indicators for each model are shown. The first model proposed is the null model, with the objective of estimating how much of the variance of performance is explained by the characteristics of the student (level 1) and the school context (level 2) by calculating the intraclass correlation (ICC). The ICC obtained is .24, which means that the school context variables would explain 24.0% of the performance variance.

The first model proposed is the null model, with the objective of estimating how much of the variance of performance is explained by the characteristics of the student (level 1) and the school context (level 2) by calculating the intraclass correlation (ICC). The ICC obtained is .24, which means that the school context variables would explain 24.0% of the performance variance.

Model 01 considers variables related to the student. All variables are statistically significant. The sex of the student does not present a significant effect ( $\beta_i=.03$ ). First language and repetition are relevant factors in their relationship with performance. Those students with a first original language obtain 35.0% of one SD less performance than their peers with Spanish as their mother tongue. Students who have repeated a grade obtain 33.0% of one SD less performance than those who have not repeated. Attending preschool education is related to a change in performance of 18.0% of a SD. However, the student's ISE presents a small coefficient ( $\beta_i=.12$ ), possibly due to the socioeconomic homogeneity of the sample used (table VIII).

The indices of perception of ability in reading and self-efficacy for reading have a negative effect on performance, with changes of 18.0% and 11.0% of one SD, respectively. However, it should be noted that performance also affects these scales. Those students with high achievement could present high levels of self-efficacy in reading. For these indices the correlation between both variables is small (less than .20).

The perception of students about the teacher's pedagogical practices has a low influence on performance ( $\beta_i=.05$ ). Perhaps due to desirability problems in the students' response. An indication of this is the accumulation of cases to the right in the scale density (figure 1), which implies little variability of the scale. The coefficients of these variables are similar in the following models, except for the student's ISE, which is reduced by including the school's average ISE.

The following models included school context variables, such as the teacher's pedagogical practice (model 02) and, later, principal variables (model 03). The results (table VIII) show that the school's average ISE has a medium impact on performance ( $\beta_i=.23$ ). This means that the schools with the highest average ISE achieve a higher performance in Reading. This could be related to conditions of socioeconomic segregation within the educational system. Variables such as teacher experience, educational level, curricular coverage, reading of various types of text, self-efficacy about teaching reading, self-efficacy about reading, interaction

with other teachers, and the climate of discipline in the classroom turn out to be statistically significant, but with coefficients too small to have any effect on performance. In model 03, none of the direct variables and their school management were relevant to student performance.

In relation to the goodness of fit of these models, it is observed that model 02 improves the values of the AIC and BIC compared to model 01, but the addition of variables related to the director and his management (model 03) do not contribute to the performance explanation.

Related to the fit goodness of these models, it is observed that model 02 improves the values of the AIC and BIC compared to model 01, but the addition of variables related to the director and his management (model 03) do not contribute to the performance explanation.

The results indicate that the socio-familiar context is the main factor influencing performance in Reading, especially grade repetition and the average ISE of the school. Teacher-related factors, such as their pedagogical practice and school management, are not related to reading performance. These results are contradictory to what was expected and raise the question of why teachers' pedagogical practices are not related to student achievement. Possible explanations will be discussed in the next section.

## Discussion

The research sought to establish a relationship between the teacher's pedagogical practice and the development of students' competencies in the area of Communication, through the use of multilevel regression models with data from the ECE of 2019. Taking this into account, below, is presented the discussion of the findings, the limitations of the study and some lines of research that in the future could complement what is stated in this document.

### **The results of the ECE 2019 in Reading among urban public school students are mainly associated with individual and attitudinal factors**

The results indicate that student performance is mainly linked to the socioeconomic and family context, with students in a situation of economic vulnerability having fewer learning opportunities. This indicates

that urban public schools are not succeeding in overcoming the socio-economic inequalities of their contexts. Thus, the evidence suggests that performance is determined by the socioeconomic starting point of the student, raising questions about how the school can deal with this inequality and what aspects need to be improved in teachers to achieve significant improvement.

Likewise, it is striking that the student's sex is not associated with differences in performance. Several investigations indicate that being a woman is usually associated with higher performance in the Communication area. On the contrary, this is not the case among Peruvian urban public school students. However, this could change if students from private and/or rural schools were considered in the analysis. In any case, these schools seem to be developing a similar amount of learning between male and female students. In line with the above, the size of the repetition effect is also striking. This invites us to reflect on the need to analyze in depth the relationship between both variables and the sense of causality that could exist between them (López & García, 2021).

Within the variables related to the perceptions of the students, the findings point to the importance of the belief about the nature of reading ability as something innate. The relationship of this variable with performance can be explained by a greater exposure to learning opportunities that students would be having, both inside and outside of school. Students exposed to more reading tasks are likely to perceive improvements in their reading ability and academic performance in this area. This shapes and feeds back the perception that reading skills are learned and modified.

### **The null relationship between the pedagogical practices of the teacher and the pedagogical leadership of the director could be related to factors of the Peruvian educational context and problems of desirability in the information report**

The fact that the variables related to the teacher and their pedagogical practice do not have an impact on performance makes sense given the overload of information that teachers receive from different fronts. On the one hand, there are the regulations, supporting documents and training that the Ministry of Education has developed and makes available to teachers and, on the other hand, the requirements and training of the local educational authorities

(regional education directorates and the local educational management units). Additionally, teachers must deal with the particular demands that educational institutions place on them. This leaves little time for teachers to process and apply this information in the classroom.

Also, the educational reforms promoted by the State to improve teaching quality in schools have failed due to the lack of articulation between the different levels of educational management and the constant changes in the approaches to interventions (Cuenca & Vargas, 2018). Likewise, teachers have not been able to appropriate curricular documents and effective pedagogical practices (Guerrero, 2009; León Zamora, 2018; Rivas, 2015). On the other hand, it should be considered that the collection of perceptions through multiple-choice questionnaires has a limitation associated with the difficulty of collecting honest responses due to desirability.

This result calls for reflection on the distance between what the teacher reports about his pedagogical practice and what happens in the classroom. Also, how much is known about the process that the teacher follows to materialize his pedagogical practice in class. In addition, it must be considered that these students have gone through school during a period of constant curricular changes (Cuenca, 2013; León Zamora, 2018; Rivas, 2015) and their learning may have been affected. In this sense, political instability and the lack of articulation between the different levels of the State can be a negative factor in the educational trajectory of students (de Belaunde, 2011; Matos Mar, 2011).

The results of the multilevel models show a low relationship between the variables associated with the teacher and academic performance. This indicates that the effectiveness of the teacher is not framed in a single aspect but in several related ones. Therefore, any action or intervention to improve teacher quality must consider the perceptions and beliefs of teachers and not only their knowledge or certification, both in their initial training and in service. It is also important to take into account that the questionnaire used considers certain pedagogical practices and it is possible that others not considered also have an effect on learning.

## **Study limitations and future lines of research**

At this point, it is important to mention the limitations of this investigation. Despite having proposed models that cover several aspects of the students' socio-educational context, this area remains extremely complex.

For this reason, further efforts should be made to identify ways to obtain objective and reliable measures that reflect the actual pedagogical practices of teachers.

The findings of this research suggest the need to carry out qualitative studies on the mechanisms used by teachers in their daily pedagogical practices in the classroom. In addition, having a system of objective observation in the classroom and analyzing contextual factors of the home such as the involvement of parents and the resources for learning to read within the home.

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