



ORIGINAL CONTRIBUTION

Perceived Reading Comprehension and Pedagogical Practices: A Comparative Study with University Students of Basic Education

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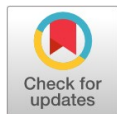
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Abstract— Reading comprehension is a competence of great importance in university education, especially for future teachers who will have to guide reading processes in different educational contexts. Explicit teaching, scaffolding, feedback, and digital resources can be used to promote its development through pedagogical practices. Comprehension is the perception of reading comprehension and the perception of pedagogical practices by university students of Basic Education according to their institution of origin. A non-experimental, descriptive, comparative and cross-sectional quantitative study was developed. To protect institutional confidentiality, three higher education institutions in Ecuador were identified by codes. A total of 221 eighth-semester students from these institutions participated. A 20-item questionnaire validated by five experts and pilot test was administered. Both scales demonstrated acceptable internal consistency. Differences between institutions were tested by one-way analysis of variance with Tukey's post hoc comparisons. Differences were identified among the institutions in perceived reading comprehension and perceived pedagogical practices. Institution C showed higher perceived reading comprehension than Institution B, whereas Institution A reported higher perceived pedagogical practices than Institution B. Nevertheless, the magnitude of the institutional differences was limited. However, the study is limited by its cross-sectional design and reliance on self-reported data, which may restrict causal interpretation and introduce response bias.

Index Terms— Reading comprehension, Perceived practices, Pedagogical practices, Initial teacher training, Higher education

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Introduction

Reading comprehension is a transversal competence that enables students to interpret information, relate ideas, make inferences, and build important academic knowledge. This process is not only about literal recognition, but also involves linguistic, cognitive, metacognitive, and sociocultural components in learning. Furthermore, university reading involves selecting relevant information, evaluating arguments, and identifying the credibility of various academic sources (Ghimire & Mokhtari, 2025). Reading difficulties can affect student's autonomy, self-regulation, and performance in different educational experiences (Nizam Md Yusoff et al., 2026). The present study investigates reading comprehension by students' self-perceptions of their comprehension abilities, not by an objective performance-based reading test. Therefore, perceived reading comprehension should be regarded as a self-reported construct that does not necessarily reflect actual reading performance.

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Learning in higher education is based on reading and interpreting scientific articles, specialised books, curricular documents and complex disciplinary materials. However, university admission does not guarantee that all students have developed adequate competencies to cope with those academic demands. Some students limit their reading to what is required and prefer short academic content shared via digital platforms (Cekiso et al., 2025). Such practices may therefore encourage fragmented, superficial reading that is not oriented toward the critical interpretation of academic knowledge.

Other studies have also found more problems with processing of implicit information, with linking ideas and with critical evaluation of the arguments given. More frequent than the problems of retrieving explicit information from within the texts were the limitations (Miranda-Espinoza et al., 2025). So understanding is not only to find data, but also to explain the meanings, deduce information and take reasoned positions regarding the content. When these skills are lacking, they can affect academic achievement, retention at the university, and appropriation of professional knowledge (Urrutia et al., 2024).

The problem is particularly relevant in initial teacher training as future teachers teach reading in different educational contexts. In addition, they must know pedagogical, scientific, and curricular texts concerning their future profession, in addition to meeting their own university requirements. The students in teacher training possessed limited reading competence and fewer strategies of a cognitively complex nature (Niyibizi & Nepomuscene Singirankabo, 2026). Therefore, these deficiencies could hinder their ability to lead reading processes, to select resources, and support later school learning.

In the same way, the future teachers showed an adequate oral fluency, but they obtained poor results in the in-depth interpretation of the texts. This finding confirms that reading accurately or quickly does not lead to a full construction of academic meaning (Maute, 2026). Moreover, the literal and critical levels of performance improved, although problems in inferential comprehension persisted. This dimension is crucial for information deduction, prior knowledge integration and relationship explanation that is not explicitly stated in the text (San Martín, 2025).

However, reading comprehension difficulties are not only dependent on individual capabilities and cannot be attributed solely to students. In this process, vocabulary, motivation, working memory, prior knowledge, self-regulation, reading experiences accumulated throughout the educational journey are involved. Intrinsic motivation correlates with fluency, vocabulary, and comprehension of different types of texts (Urrutia et al., 2024). Moreover, beliefs about knowledge and learning approaches condition the effort devoted to complex reading tasks (Paguay-Escobar et al., 2025).

Sociocultural, educational, and demographic factors are also taken into account, leading to different reading experiences among university students. Because of this, institutions need pedagogical approaches that are sensitive to the characteristics, needs, and contexts of the people taking part in the learning process (Garil, 2024). This view prevents the explanation of difficulties by personal deficits and allows for shared responsibility between students, teachers, and institutions. Thus, reading comprehension should be worked through coordinated, continuous, and contextualised actions in the processes of professional training.

In this sense, pedagogical practices are a fundamental component in the promotion of deep reading skills and the prevention of persistent difficulties. Explicit instruction, guided reading, cognitive modelling, reflective questioning, and feedback all facilitate conscious student involvement. However, the implementation of a strategy is not a guarantee of its effectiveness, it is contingent upon its implementation, frequency and contextual relevance. Beliefs and teacher self-efficacy influence the use of explicit and differentiated practices in reading instruction (Bleukx et al., 2024).

Therefore, in an effort to improve reading comprehension, it is necessary to combine pedagogical innovation, teacher support, and participation in well-planned experiences. The strategies should respond to the identified purposes, text characteristics, and educational needs, as determined through systematic evaluation processes. Furthermore, academic literacy should be embedded transversally within the subjects and not be treated as an individual responsibility (Bassett & Macnaught, 2024). Thus reading practices can be related to discursive genres, curricular activities, and specific issues of teacher training.

Digital environments have complicated university reading even more, particularly in the selection, organization and critical evaluation of information (Yu et al., 2023). There is more access to academic content and technology resources, which have an educational value that depends on the criteria used to interpret and compare the information (Valero-Ancco et al., 2025).

Despite research advances, numerous studies have examined reading comprehension within a single institution or specific population. Likewise, valid instruments have been developed to assess comprehension and metacognitive awareness in university students in teacher training programs (Puentes et al., 2025). However, other studies have analysed pedagogical practices without directly relating them to the reading comprehension perceived by the students. In this sense, it is still necessary to compare both variables across different institutional contexts, from an educational and non-hierarchical interpretation.

Based on the problematic situation presented, the following research question was formulated: Are there differences in perceived reading comprehension and perceived pedagogical practices according to the institution of origin? In response to this question, the study aimed to compare both variables among university students of Basic Education belonging to three institutions. Hypothetically, the null hypothesis emerged, which established that there were no statistically significant differences between the means obtained by the students from the three institutions. For its part, the alternative hypothesis maintained that at least one institution presented a statistically different mean in one of the evaluated variables.

Theoretical Foundation

Reading comprehension

Reading comprehension is a dynamic process, in which the reader constructs meaning by integrating the text, the context, and his/her background knowledge. This process is more than just decoding; it entails understanding information, putting ideas together, and finding connections among various pieces of the material (Ghimire & Mokhtari, 2025; Shabbir et al., 2024). Moreover, understanding is based on linguistic, cognitive, and metacognitive resources which are integrated in every academic reading encounter. Therefore, reading comprises information retrieval, inference, and critical judgement in terms of the intention, coherence, and credibility of the text.

Comprehension integrates lexical, textual, and discursive levels from a cognitive perspective. Linked to vocabulary, working memory and motivation, these variables do not act in isolation, rather, they intervene in an articulated way in the processing and construction of meaning. Vocabulary served as a mediator between cognitive variables and reading comprehension outcomes among university students (Sowmya & Guruprasad, 2026; Urrutia et al., 2024). Likewise, intrinsic motivation favoured fluency and comprehension, especially when the tasks involved the interpretation of short and specialised texts.

Literal comprehension enables the recognition of explicit data, the identification of main ideas, and the location of information directly expressed in the read content. In contrast, inferential comprehension is a process of synthesising prior knowledge, inferring relationships, and filling in missing information. Critical comprehension, in turn, comprises the evaluation of arguments, comparison of sources, awareness of discursive intentions and the assumption of justified positions on the content. University research showed better results in explicit tasks, but greater difficulties in inferential and critical processes (Farman et al., 2025; Miranda-Espinoza et al., 2025).

In teacher training, the inferential dimension becomes relevant because it requires interpreting, deducing, and explaining complex relationships during reading. Future teachers need to master these operations to understand academic texts and subsequently guide reading processes in diverse school contexts. However, Basic Education students achieved better results in the literal and critical levels, while they scored lower in the inferential dimension (Ambreen, 2026; San Martín, 2025). This result highlighted the need to strengthen strategies that promote integration, deep interpretation, and active with engagement with texts.

Metacognition complements these levels because it allows for planning reading, monitoring comprehension, and evaluating the effectiveness of the strategies used. Among these strategies are setting goals, activating prior knowledge, re-reading, summarising, questioning ideas, and verifying the credibility of information (Ghimire & Mokhtari, 2025). Their conscious application promotes self-regulation, although their declared presence does not guarantee high reading performance in all contexts. Therefore, university assessment must integrate comprehension and metacognitive awareness through valid and reliable instruments (Puente et al., 2025).

For this reason, reading comprehension represents a multidimensional competence related to learning, self-regulation, and university education. Its evaluation should consider literal, inferential, and critical levels, along with cognitive, affective, and metacognitive factors associated with performance. This perspective is especially relevant for future teachers, who must understand complex texts and teach reading strategies in a well-founded manner. Therefore, analysing this construct allows for the identification of educational needs and guiding of pedagogical practices tailored to the characteristics of the students.

Difficulties in reading comprehension in university education

Reading comprehension difficulties in higher education are related to cognitive, linguistic, motivational, academic, and sociocultural factors. These difficulties manifest when interpreting implicit information, constructing inferences, and evaluating arguments that require higher-order thinking skills (Albarico & Deiparine, 2025). Moreover, university demands require autonomy, disciplinary knowledge, and criteria to evaluate content from various digital environments. Similarly, reading limitations can affect academic learning and the ability to critically evaluate information generated through emerging technologies (Galagala & Bacarrisas, 2025).

Among the linguistic factors, vocabulary allows for recognising semantic relationships and interpreting specialised expressions, as well as constructing coherent representations of the content. However, frequent use of metacognitive strategies does not guarantee better results when lexical and inferential limitations persist during reading. A university study found a high use of these strategies, but did not identify a significant relationship with assessed reading comprehension (Hammad, 2023). In this sense, reading performance requires integrating conscious strategies, linguistic competencies, and the ability to deduce information not directly expressed.

Likewise, metacognitive awareness allows for the identification of difficulties, modification of procedures, and verification of whether the constructed meaning is coherent with the text. However, university students showed moderate levels of global awareness and lower results in support strategies and problem-solving. These limitations partially explained the difficulties encountered in monitoring comprehension and responding to linguistically complex content (Al-khreshheh & Al Basheer Ben Ali, 2023). Therefore, university education should explicitly teach planning, monitoring, and evaluation processes applicable at different stages of reading.

On the other hand, inferential and critical difficulties are related to low reading engagement, limited linguistic competence, and technological dependence. A study identified greater difficulties in constructing inferences and critically evaluating content that required higher-order cognitive

skills (Albarico & Deiparine, 2025). Although these results came from school students, their implications are relevant for those who are professionally preparing as future teachers. That is to say, initial training needs to strengthen skills that will later be taught, modelled, and evaluated within school classrooms.

Digital reading also requires students to locate, contrast, and critically evaluate information from different sources. These competencies are increasingly relevant in academic environments where digital and automated content coexist with conventional sources. Therefore, information credibility and source evaluation constitute complementary aspects of contemporary reading practices (Galagala & Bacarrisas, 2025).

Reading difficulties can also be related to the curricular preparation offered during university initial teacher training programs. Certain training materials focused primarily on basic reading skills, without sufficiently developing the foundations and strategies for comprehensive teaching. This orientation limited the opportunities for future teachers to acquire solid knowledge about reading pedagogy and educational intervention (Kuche et al., 2024). Therefore, the curricula need to incorporate updated content, practical activities, and evidence-based strategies on reading comprehension.

Complementarily, the practices presented by teachers showed a limited knowledge of the strategies of comprehension and limited usage of them during classes. The activities concentrated on vocabulary and traditional questions, whereas motivation, feedback, and textual participation remained limited (Olifant & Cekiso, 2022). The findings pointed out the responsibility of universities to prepare future teachers to teach reading explicitly. Initial teacher training must integrate theoretical knowledge, practical experiences, and reflective processes about reading mediation.

To meet the various reading needs of students and address these obstacles, institutional support, pedagogical time, relevant materials, and teacher training are necessary. The training needs of the teachers were related to teaching methods, didactic procedures, text selection and recognition of individual characteristics of learning (Akgün & Akçamete, 2023). Therefore, difficulties in understanding cannot be attributed solely to the student, but also to curricular, institutional, and pedagogical conditions.

Pedagogical practices related to reading comprehension

Pedagogical practices are the options, strategies, and resources used in guiding the construction of meanings in reading. These practices should be purposeful, mediated by the teacher, and adapted to the students' cognitive and linguistic needs. However, some contemporary strategies were implemented irregularly because of training, curricular, and institutional limitations (Macaj & Mëniku, 2025). The quality of reading instruction, however, depends not only on pedagogical knowledge but also on its systematic implementation.

Explicit instruction is a relevant practice because it allows for the explanation of procedures and the modelling of strategies before asking students to use them independently. This guidance shows the teacher how to ask questions, find main ideas, summarise content, and check for understanding. The intervention of computer resources and direct instruction enhanced metacognitive awareness, self-efficacy, and comprehension (Bulut & Yıldız, 2024). Thus, structured explanation can be combined with digital resources, as long as it has a clearly defined pedagogical purpose.

Likewise, scaffolding facilitates the gradual participation of the student through temporary supports adapted to their knowledge and reading difficulties. These supports include guiding questions, examples, graphic organisers, reformulations, and demonstrations that decrease as the reader's autonomy increases. An intercultural review identified contextual differences in scaffolding, although it confirmed its adaptation to specific linguistic needs (Wu & Bakar, 2025). In this sense, teacher mediation must respond to the level of performance, the cultural context, and the purpose of reading.

The activation of prior knowledge also promotes the integration of known information and new content presented in the texts. To achieve this, initial conversations, thematic anticipation, vocabulary teaching, and organisers that represent the relationships among concepts can be used. An intervention combined these strategies and produced early improvements in students with specific reading difficulties (Albalhareth, 2025). Although this result corresponded to school education, its principles can be incorporated during the pedagogical training of future teachers.

On the other hand, collaborative reading allows for the exchange of interpretations, the comparison of arguments, and the resolution of difficulties through the joint participation of students. Pair reading transferred to virtual environments showed improvements in fluency, comprehension, and self-concept as a reader. Likewise, the complete reading of texts expanded exposure to complete texts and promoted supportive discursive strategies among students (Akgün & Akçamete, 2023). These pieces of evidence support practices that go beyond fragmented exercises and favour sustained interaction with complete academic materials.

Digital resources can enhance teaching when they integrate content, interaction, feedback, and assessment into a coherent didactic sequence. A Genially and Kahoot-based model involved pre-reading activities, guided reading and gamified assessments to consolidate different levels of comprehension (Huamán Baldeón & López Regalado, 2025). In addition, the interactive games improved reading performance and led to positive attitudes toward the proposed activities (Ostovar-Namaghi et al., 2023). However, technology should be used as educational mediation, not as an automatic replacement of teacher guidance.

Feedback also enables the identification of errors, the clarification of difficulties, and the implementation of new actions during the process of reading comprehension. The better this practice feeds back into what was understood, where the problem occurred and how to improve it next time, the better it works. Furthermore, continued training improved specific practices, professional collaboration and sharing of materials for

teaching reading comprehension (Vanbuel et al., 2025). Therefore, teacher development should be based on reflection, institutional support, and evaluation of the strategies used in the classrooms.

In the initial teacher training, these practices have a double importance because they support the learning at the university and prepare for the school teaching. Future teachers should have the opportunity to work with explicit, collaborative, metacognitive, and digital strategies before implementation within their own professional practices. Therefore, the analysis of perceived pedagogical practices contributes to identifying formative differences and support needs across university institutions. This perspective links reading comprehension to the quality of the educational experience provided in the professional training.

Methodology

Approach, design, and scope of the research

The research was quantitative in approach which the variables being measured in terms of numerical scores and analysed using statistical procedures. The study used a non-experimental design since the variables were not deliberately manipulated or treatment given to the participants. The cross-sectional design of the study was because the information was obtained during one academic period. It also had a descriptive and comparative scope. The descriptive part allowed to characterise the perceived reading comprehension and the perceived pedagogical practices. The comparative component allowed to analyse whether the scores varied according to the institution of origin.

The independent grouping variable was Institution, which had three levels: Institution A, Institution B, and Institution C. The dependent variables were perceived pedagogical practices and reading comprehension. The one-way analysis of variance was used to examine differences between the institutional means. The design permitted the comparison of students' formative experiences, but it did not permit causal relationships between the variables. Consequently, the results were interpreted as differences between specific institutional contexts.

Population, sample, and sampling strategy

The accessible population was 230 students from the eighth semester of the Basic Education program, from three higher education institutions of the Republic of Ecuador. This academic level was selected because the students had already completed the bulk of the pedagogical, disciplinary and pre-professional components of their training programs. The whole available population was invited to participate. The final sample consisted of 221 students (96.1%) of the identified population. Of these, 74 were from Institution A, 73 were from Institution B, and 74 were from Institution C. This even distribution enabled a comparison of the three institutional groups.

The recruitment strategy was census based, as the intention was to include the whole accessible population. Nevertheless, the final sample was considered non-probabilistic, since participation was based on the voluntary acceptance by the students. The inclusion criteria were: students over 18 years of age; officially enrolled in the eighth semester of Basic Education; and belonging to one of the three participating institutions. They also had to complete the entire questionnaire voluntarily and consent to the informed consent. Incomplete records, duplicate responses and questionnaires relating to students from other majors or semesters were excluded.

Context and institutional anonymisation

The study was conducted in three higher education institutions that offer the Basic Education program. The universities were identified as Institution A, Institution B, and Institution C to protect their confidentiality. The institutional coding was maintained throughout the collection, cleaning, processing, analysis, and presentation of results.

All three participating institutions were public higher education institutions located in urban contexts. These shared characteristics reduced some contextual heterogeneity among the institutions; however, other institutional factors, such as internal academic organisation, available resources, admission profiles, and pedagogical implementation, were not examined in this study and may have contributed to the observed differences.

The comparison had an exclusively research and educational purpose. In this sense, the results were not used to establish rankings, institutional hierarchies, or public evaluations of the quality of the participating universities.

Study variables

The first variable was reading comprehension, understood as the students' perceived ability to understand, interpret, relate, and evaluate information contained in academic texts. This variable was constructed into three dimensions. Recognition of main ideas, search for explicit information and distinction between main and secondary information were used as measures of literal comprehension. Inferential comprehension included relating ideas, deduction of meanings, and integration of prior knowledge.

The dimension of Critical Evaluation and Self-Regulation measured the perceived ability to analyse arguments, compare sources, monitor understanding, and change strategies when reading complex texts. The second variable was perceived pedagogical practices, which was defined as the frequency of students' recognition of teaching actions related to instruction and support in reading comprehension. This variable was composed of the dimensions of explicit teaching and scaffolding, metacognitive mediation and feedback, and collaboration and digital resources. The institution of origin functioned as an independent variable. Perceived reading comprehension and perceived pedagogical practices constituted the dependent variables used in the statistical comparisons.

Instrument

The perceived reading comprehension scale used five agreement-based response options: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, and 5 = strongly agree. The perceived pedagogical practices scale used five frequency-based response options: 1 = never, 2 = rarely, 3 = sometimes, 4 = frequently, and 5 = always.

Table I
Perceived reading comprehension scale and pedagogical practices in university students of basic education

Indicator	Item	Options				
	Dimension: literal comprehension					
Identification of the main idea	1. I identify the main idea in the academic texts I read.	5	4	3	2	1
Location of explicit information	2. I locate explicit information necessary to respond to academic activities.					
Differentiation of information	3. I distinguish the main ideas from the secondary details present in a text.					
	Dimension: Inferential comprehension	5	4	3	2	1
Relationship between ideas	4. I relate information from different paragraphs to draw conclusions.					
Deduction of meanings	5. I deduce meanings that are not directly expressed in the text.					
Integration of prior knowledge	6. I integrate my prior knowledge to understand new academic content.					
	Dimension: Critical evaluation and self-regulation	5	4	3	2	1
Evaluation of arguments	7. I evaluate whether the arguments in a text are sufficiently well-founded.					
Contrast of sources	8. I compare information from different sources before accepting a statement.					
Monitoring comprehension.	9. I check while reading if I am understanding the ideas presented.					
Adjustment of reading strategies	10. Change strategy when a text proves difficult to understand.					
Indicator	Items					
	Variable 2: Perceived pedagogical practices					
	Dimension: Explicit teaching and scaffolding	5	4	3	2	1
Explanation of the reader's purpose	11. My teachers clearly explain the purpose of the assigned readings.					
Modelling of procedures	12. My teachers model how to identify main ideas and relationships between concepts.					
Use of teaching aids	13. My teachers provide guides or organisers to facilitate the understanding of complex texts.					
Adaptation of teaching support	14. The teaching supports are adjusted to the reading difficulties presented by the students.					
	Dimension: Metacognitive mediation and feedback	5	4	3	2	1
Metacognitive supervision	15. My teachers teach strategies to monitor comprehension during reading.					
Reading self-assessment	16. My teachers promote self-assessment after completing reading activities.					
Specific feedback	17. I receive specific feedback on my reading comprehension difficulties.					

Cont...

Indicator	Item	5	4	3	2	1
	Dimension: Collaboration and digital resources					
Interaction between students	18. The activities allow for discussing interpretations and supporting arguments with other students.					
Mediation through digital resources	19. The digital resources used facilitate the understanding of academic texts.					
Critical evaluation of digital information	20. My teachers guide the critical evaluation of digital sources and content generated through artificial intelligence.					

The perceived reading comprehension scale consisted of 10 items. Items 1 to 3 corresponded to literal comprehension; items 4 to 6 assessed inferential comprehension; and items 7 to 10 examined evaluation and critical self-regulation. The perceived pedagogical practices scale also consisted of 10 items. Items 11 to 14 corresponded to explicit teaching and scaffolding; items 15 to 17 evaluated metacognitive mediation and feedback; and items 18 to 20 examined collaboration and digital resources.

The scores for each dimension were calculated by averaging their items. A global score for each variable was also obtained by averaging the corresponding 10 items. The scores of both variables were analysed independently and were not integrated into a single result, as they represented conceptually different constructs.

Content validity, pilot test, and reliability

The questionnaire was subjected to the judgement of five experts with experience in reading comprehension, teacher training, and research methodology. The raters assessed the clarity, relevance, coherence and correspondence of the items to the variables and dimensions defined. The observations made it possible to modify the wording and organization of the instrument before the pilot test.

Then, a pilot test was applied to 21 university students who have similar academic characteristics with target population. The final sample included 221 students, none of whom had participated in the pilot test. The pilot test enabled the verification of the understanding of the instructions, the clarity of the statements, the functioning of the response categories, and the time needed to complete the questionnaire.

Internal consistency was assessed using Cronbach's alpha and McDonald's omega in the pilot sample. The analyses were conducted separately for each of the two scales of the instrument. The perceived reading comprehension scale showed $\alpha = .875$ and $\omega = .897$, and the perceived pedagogical practices scale $\alpha = .800$ and $\omega = .896$. These coefficients showed good internal consistency for both scales and supported the use of the questionnaire in the final sample (see Table II).

Dimension-level internal consistency was also examined in the final analytical sample. Literal comprehension showed $\alpha = .805$ and $\omega = .805$; inferential comprehension, $\alpha = .739$ and $\omega = .740$; and critical evaluation and self-regulation, $\alpha = .802$ and $\omega = .803$. For perceived pedagogical practices, explicit teaching and scaffolding obtained $\alpha = .803$ and $\omega = .805$; metacognitive mediation and feedback, $\alpha = .717$ and $\omega = .720$; and collaboration and digital resources, $\alpha = .707$ and $\omega = .707$. These coefficients indicated acceptable to good internal consistency across the six dimensions.

Table II
Internal consistency of the instrument scales

Variable	Items	α Cronbach	ω McDonald
Perceived reading comprehension	1- 10	.875	.897
Perceived pedagogical practices	11-20	.800	.896

Data collection procedure

At first, the required academic authorisations were obtained at the three involved institutions. Later, access was provided to students who were in the eighth semester of the Basic Education. After completing the content validation and pilot test, the final application of the instrument was conducted in the three institutions.

The instrument was administered in a self-administered approach. Students were informed of the purpose of the research, data confidentiality, and the voluntary nature of participation prior to responding. The responses were checked for incompleteness, duplication or inconsistency in the records. The final dataset after cleaning consisted of 221 participants. The institutions were coded as A, B and C prior to starting the statistical processing. Finally, the items were codified with values from 1 to 5, according to the alternatives established in each scale.

Ethical considerations

The research was guided by the principles of autonomy, voluntariness, confidentiality and responsible use of information. The objectives, procedure and academic and scientific use of the results were explained to the participants. Participation was voluntary and preceded by obtaining informed consent. Students were free to refuse to participate or to withdraw at any time before completing and submitting the questionnaire without any academic penalty.

No data such as names, identification numbers, addresses, telephone numbers, personal e-mails etc. that could be directly identified were gathered. The database was coded and used exclusively for academic and scientific purposes. The digital information was stored in protected files and access was limited to the research team. The results were presented in aggregate form, avoiding the individual identification of the students.

Data analysis

The statistical processing and analysis were carried out using the statistical software Jamovi, version 2.717. Initially, the integrity of the database was verified, and possible duplicate records, out-of-range values, and incomplete responses were reviewed. The sociodemographic variables were described using frequencies and percentages. For the global and dimensional scores, means, standard deviations, minimum and maximum values, and 95% confidence intervals were calculated. The overall scores were obtained by averaging items 1 to 10 for perceived reading comprehension and items 11 to 20 for perceived pedagogical practices. Dimensional scores were also calculated using averages.

To compare the scores between the three institutions, a one-way analysis of variance was applied. The institution of origin constituted the independent factor, while the overall scores of the two variables constituted the dependent variables. The independence of the observations, the presence of outliers and the approximate distribution of the residuals were checked before the ANOVA. Homogeneity of variances was tested by Levene's test. When the assumption of homogeneity was met, conventional ANOVA and Tukey's post hoc comparisons were used. When the variances were not homogeneous, Welch's ANOVA and Games-Howell post hoc test were used.

Omega squared was used to estimate the magnitude of the differences. Results were interpreted using a combination of statistical significance, effect size and 95% confidence intervals. A statistical significance level of $p < .05$ was adopted. The main analyses focused on the general scores of perceived reading comprehension and perceived pedagogical practices. Further analyses were performed to compare dimensions. Significance values were adjusted using the Holm method.

Results

Characteristics of the participants by institution

The sample was composed of 221 students enrolled in the eighth semester of the Basic Education program. Participants were evenly divided among Institution A ($n = 74$; 33.5%), Institution B ($n = 73$; 33.0%), and Institution C ($n = 74$; 33.5%). The overall mean age was 23.2 years ($SD = 2.10$) and the range was 20–29 years. Of the total participants, 151 were women (68.3%), 64 were men (29.0%) and six preferred not to answer (2.7%) (see Table III).

Table III
Sociodemographic characteristics of the participants

Characteristic	Institution A	Institution B	Institution C	Total
Participants, n (%)	74 (33.5 %)	73 (33.0 %)	74 (33.5 %)	221 (100 %)
Woman, n (%)	53 (71.6 %)	49 (67.1 %)	49 (66.2 %)	151 (68.3 %)
Man, n (%)	19 (25.7 %)	21 (28.8 %)	24 (32.4 %)	64 (29.0 %)
Prefer not to answer, n (%)	2 (2.7 %)	3 (4.1 %)	1 (1.4 %)	6 (2.7 %)
Age, M (DE)	23.2 (2.08)	22.9 (2.04)	23.5 (2.17)	23.2 (2.10)
Age, minimum–maximum	20–28	20–29	20–27	20–29

Descriptive statistics by institution

The descriptive scores different among the three institutions, Institution C obtained the highest global mean in perceived reading comprehension ($M = 3.22$; $SD = 0.77$), followed by Institution A ($M = 3.16$; $SD = 0.82$). Institution B had the lowest mean score ($M = 2.89$; $SD = 0.86$). In the reading comprehension dimensions, Institution C obtained the highest average in the literal comprehension ($M = 3.42$; $SD = 0.95$) and the inferential comprehension ($M = 3.22$; $SD = 0.91$). Institution A had the highest average in evaluation and critical self-regulation ($M = 3.16$; $SD = 0.97$) and Institution B the lowest ($M = 2.80$; $SD = 1.03$).

In terms of perceived pedagogical practices, Institution A had the highest overall mean ($M = 3.32$; $SD = 0.78$), followed by Institution C ($M = 3.24$; $SD = 0.79$). Institution B once again obtained the lowest average ($M = 2.99$; $SD = 0.73$). Explicit teaching and scaffolding reached the highest

descriptive score in Institution A ($M = 3.42$; $SD = 1.03$). This institution also had the highest average in metacognitive mediation and feedback ($M = 3.32$; $SD = 1.04$). In collaboration and digital resources, Institutions A and C obtained equivalent means of 3.18 (see Table IV).

Table IV
Descriptive statistics of the variables by institution

Variable or dimension	Institution A, M (SD)	Institution B, M (SD)	Institution C, M (SD)
Literal comprehension	3.28 (1.06)	3.01 (1.05)	3.42 (0.95)
Inferential comprehension	3.03 (1.07)	2.88 (0.94)	3.22 (0.91)
Critical evaluation and self-regulation	3.16 (0.97)	2.80 (1.03)	3.07 (0.99)
Perceived overall reading comprehension score	3.16 (0.82)	2.89 (0.86)	3.22 (0.77)
Explicit teaching and scaffolding	3.42 (1.03)	3.03 (0.88)	3.30 (0.98)
Metacognitive mediation and feedback	3.32 (1.04)	2.97 (0.94)	3.23 (0.91)
Collaboration and digital resources	3.18 (0.88)	2.95 (0.90)	3.18 (1.04)
Overall score of perceived pedagogical practices	3.32 (0.78)	2.99 (0.73)	3.24 (0.79)

Assumption verification

The Shapiro-Wilk test identified statistically significant deviations from normality in perceived reading comprehension, $W = .982$, $p = .007$, and in perceived pedagogical practices, $W = .987$, $p = .035$. However, the inspection of the Q-Q plots did not show severe deviations from the expected distribution. Moreover, the groups had large and practically equivalent sizes. The Levene's test confirmed the homogeneity of variances for perceived reading comprehension, $F(2, 218) = 0.601$, $p = .549$, and for perceived pedagogical practices, $F(2, 218) = 0.248$, $p = .780$. Therefore, a conventional one-way ANOVA was applied, and Tukey's post hoc comparisons were used.

Comparison between institutions using ANOVA

The analysis of variance identified statistically significant differences in perceived overall reading comprehension according to the institution of origin, $F(2, 218) = 3.38$, $p = .036$, $\omega^2 = .021$. The effect size was small, indicating that the institution explained a small proportion of the variability observed in the scores (see Table V). Statistically significant differences were also found in the overall perceived pedagogical practices, $F(2, 218) = 3.76$, $p = .025$, $\omega^2 = .024$. The effect size was small, so institutional differences should be interpreted considering their limited practical relevance.

Table V
Results of the one-way analysis of variance

Variable	<i>F</i>	df between	df within	<i>p</i>	ω^2
Perceived overall reading comprehension	3.38	2	218	.036	.021
Perceived global pedagogical practices	3.76	2	218	.025	.024

Post hoc comparisons

Due to both analyses of variance being statistically significant and the assumption of homogeneity of variances being met, post hoc comparisons were conducted using the Tukey test. In perceived reading comprehension, Institution C presented a significantly higher score than Institution B, with a mean difference of 0.33 points, $p = .041$. No statistically significant differences were identified between Institutions A and B, mean difference = 0.27, $p = .114$, nor between Institutions A and C, mean difference = 0.06, $p = .897$.

In perceived pedagogical practices, Institution A scored significantly higher than Institution B, with a mean difference of 0.33 points, $p = .026$. The differences between Institutions A and C, mean difference = 0.08, $p = .819$, and between Institutions B and C, mean difference = 0.25, $p = .110$, did not reach statistical significance (see Figure 1).

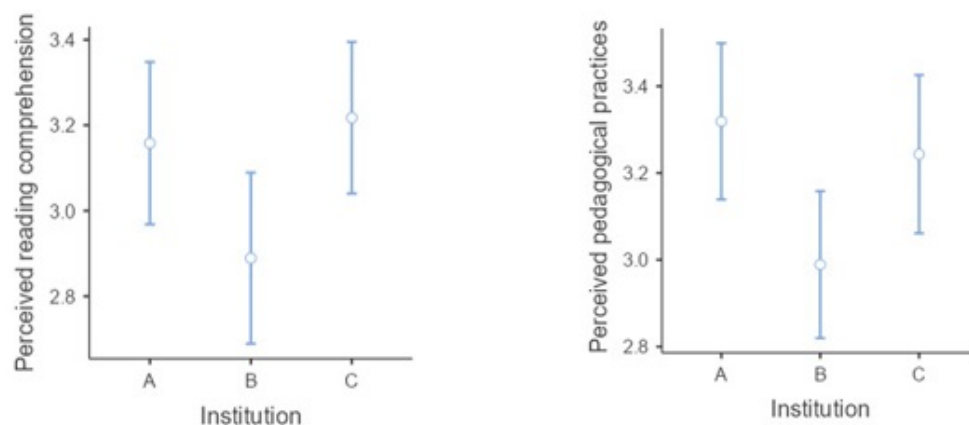


Fig. 1 Mean global scores for perceived reading comprehension and perceived pedagogical practices by institution Source: Authors' elaboration based on data analysed in Jamovi (Version 2.7.17).

Complementary dimensional analyses

Complementary analyses were conducted to examine institutional differences across the dimensions of perceived reading comprehension and perceived pedagogical practices. Although some unadjusted comparisons approached or reached the conventional significance threshold, none of the dimensional differences remained statistically significant after applying the Holm correction for multiple comparisons. Therefore, the dimensional results were interpreted as descriptive patterns rather than statistically confirmed institutional differences (see Table VI).

Table VI
Complementary dimensional comparisons by institution

Dimension	<i>F</i>	<i>Df</i>	<i>p</i>	Holm-adjusted <i>p</i>	ω^2
Literal comprehension	3.09	2, 218	.047	.272	.019
Inferential comprehension	2.20	2, 218	.113	.325	.011
Critical evaluation and self-regulation	2.53	2, 218	.082	.325	.014
Explicit teaching and scaffolding	3.14	2, 218	.045	.272	.019
Metacognitive mediation and feedback	2.54	2, 218	.081	.325	.014
Collaboration and digital resources	1.49	2, 218	.227	.325	.004

Discussion

The results showed differences in perceived reading comprehension and perceived pedagogical practices among the institutions. However, effect sizes for both variables were small. This finding implies that the institutional context accounted for only a small proportion of the variability observed. At the university level, comprehension also depends on vocabulary, motivation, working memory and the accumulated reading experiences (Urrutia et al., 2024). Therefore, the differences identified should be understood as contextual differences and not as a ranking of the participating institutions (Cekiso et al., 2025).

Institution C scored higher than Institution B in perceived reading comprehension. Institution A had an intermediate position and did not differ significantly from the other groups. This pattern is indicative of a gap that was concentrated in two specific contexts, and rather than a generalised separation. Previous university studies also found differences in the processing of explicit and implicit information (Miranda-Espinoza et al., 2025). Particular attention has been given to the difficulties of teacher training students in inferential comprehension, that is, the ability to combine ideas and infer information that is not explicitly stated (San Martín, 2025).

Scores on each dimension descriptively differed between institutions. Institution C had the higher score for literal and inferential comprehension while institution A had the highest descriptive mean for critical evaluation and self-regulation. However, none of the dimensional comparisons were statistically significant after Holm adjustment. Thus, these differences should be considered descriptive tendencies rather than statistically confirmed institutional differences. This conservative interpretation corresponds to the multidimensionality of reading comprehension, where cognitive and metacognitive processes may develop differently among students and contexts (Puente et al., 2025). In fact, previous studies have pointed out that the relationships between reading comprehension, characteristics of learning, and academic achievement may differ depending on the population studied (Sánchez-Domínguez et al., 2023).

Institution A scored higher than Institution B on perceived pedagogical practices. There was no statistically significant difference between Institutions A and C or between B and C. This result could be related to different ways of applying explicit teaching, scaffolding, feedback and metacognitive support. Teaching practices can often differ, depending on professional beliefs and the organisational conditions in each context (Bleukx et al., 2024). Institutional decisions also can shape, limit, or alter how teachers develop reading comprehension instruction (Smith et al., 2025).

Institution B had the lowest overall means in the two variables studied. This coincidence is relevant, but does not prove that the pedagogical practices produced the observed differences in reading comprehension. The cross-sectional design allowed for group comparisons but not for causal relationships or changes over time. Integration of academic literacy within the subjects can enhance participation and the processing of specialised texts (Bassett & Macnaught, 2024). Sustained experiences with whole texts can enhance comprehension and reader engagement through structured pedagogical mediation (Sutherland et al., 2023).

The results of the dimensions of collaboration and digital resources were similar in the institutions A and C. This demonstrates that the availability of technology is not the main differentiating factor between the two groups. Digital resources can support understanding when they are employed with defined purposes, guided activities, and areas of interaction. The articulated use of technologies and reading strategies was successful in different educational environments (Asdar et al., 2024). Collaborative reading activities were also moved to virtual spaces and improvements were observed, albeit their implementation in university requires pedagogical and contextual adjustments (Avşaroğlu & Yıldız, 2025).

The results supported the existence of institutional differences, but also considerable variation within each group. The small effects indicate that the institution should not be regarded as a sufficient explanation for students' perceptions. Pedagogical experiences may be affected by academic trajectories, reading habits and individual characteristics. Thus, universities must evaluate their practices with contextualised diagnostics and avoid uniform responses. This will help build reading comprehension without putting the burden of difficulty solely on the student or creating a hierarchy of institutions.

Practical implications

Because the effect sizes were small, the results here should not be viewed as evidence that institution-wide interventions are warranted. Rather, they identify small contextual differences that may be useful to inform further diagnosis. The following implications should, therefore, be interpreted as educational recommendations based on the present findings and the general literature on academic literacy and reading instruction collectively. It is also suggested that periodic reading comprehension assessments should be included in initial teacher training programs throughout university education. Such evaluations would allow literal, inferential, and critical comprehension needs to be detected before degree completion. The results could help guide tutoring, differentiated activities and academic support processes. The evaluation must include self-regulation and conscious use of strategies during the reading of specialised texts (Puentes et al., 2025).

In this regard, universities need to strengthen the pedagogical preparation of faculty responsible for disciplinary and professional training courses. Training actions can include modelling strategies, inferential questions, specific feedback, and shared analysis of classroom experiences. Moreover, it is advisable to promote teacher communities that allow for the review of materials and the agreement on common criteria for reading support. Sustained professional development processes favour specific changes in comprehension teaching practices (Vanbuel et al., 2025).

In turn, academic literacy should be integrated into the different subjects of the curriculum. Students need to work with scientific articles, curricular documents, and pedagogical texts linked to their future profession. This integration would allow reading procedures to be taught within real learning situations, without focusing them on a single subject. The balanced combination of traditional practices, technological resources, and hybrid modalities can enhance university participation and understanding (Huang et al., 2025).

In contrast, the use of digital resources must be accompanied by guidelines for selecting, contrasting and evaluating information. Activities may include source comparison, bias detection and verification of content produced by artificial intelligence. There is a possibility of automatically accepting digital responses when there are no clear academic criteria and teacher guidance. Information literacy training helps to use these tools according to the criteria of credibility and academic responsibility (Galagala & Bacarrisas, 2025).

Thus, institutional plans should include diagnosis, intervention and follow-up, instead of uniform actions across all groups. Decisions can be tailored to the strengths and needs found in each university context. It is also relevant to periodically assess the applicability of the implemented strategies and adjust their scope accordingly. This guidance would strengthen reading comprehension and pedagogical preparation among future teachers through contextualised responses.

Limitations

The study used a non-probabilistic sample consisting solely of eighth-semester Basic Education students. Additionally, the variables were assessed through self-report, so the responses reflected perceptions and could have been influenced by subjective evaluations. The cross-sectional design

allowed for comparisons between institutions, but did not enable the analysis of temporal changes or the establishment of causal relationships. Subsequent studies should incorporate samples from other majors and academic levels, along with objective reading comprehension tests. It would also be pertinent to develop longitudinal studies or educational interventions that allow for the examination of the evolution of reading competencies and the influence of specific pedagogical practices.

Although the three institutions were public and located in urban contexts, other institutional characteristics that could influence the results, such as resource availability, academic organisation, or student admission profiles, were not included in the analysis.

Conclusions

The study enabled the comparison of the perceived reading comprehension and the perceived pedagogical practices of Basic Education students from three higher education institutions. Both variables revealed statistically significant differences. Perceived reading comprehension of Institution C was higher than Institution B, and perceived pedagogical practices of Institution A was higher than Institution B.

The results obtained allowed the study to reject the null hypothesis of absence of differences between the institutional means. Likewise, the alternative hypothesis was supported because at least one institution showed a statistically different mean in each of the variables analysed. The decision was based on the results of the analysis of variance and post hoc comparisons conducted. Effect sizes were small so the institutional differences explained a small proportion of the variation in the scores. This result indicates that student perceptions may also be related to academic experiences, reading trajectories, and individual characteristics. Therefore, the findings should not be used to establish a hierarchy among the participating institutions.

Universities need to strengthen the assessment of reading competencies and review the strategies used during initial teacher training. Explicit teaching, feedback, metacognitive support, and critical source evaluation can be integrated into different subjects. These actions would allow the identified needs to be addressing the identified needs through contextualised proposals aimed at the professional development of future teachers.

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Conflict of interest

The authors declare that there is no conflict of interest related to the research, authorship, or publication of this article.

Author contributions

All authors contributed to the conceptualisation, methodology, investigation, data analysis, drafting, critical revision, and approval of the final manuscript. All authors have read and approved the final version of the manuscript.

Informed consent

Informed consent was obtained from all participants before data collection. Participation was voluntary, and no personally identifiable information was collected.

Data availability statement

The dataset is not publicly available because its disclosure could compromise the confidentiality of the participants and the anonymity of the participating institutions. Only aggregated results are presented in the manuscript.

Statement on the use of generative AI

Generative artificial intelligence tools were used exclusively for grammatical and stylistic editing and manuscript formatting. The authors assume full responsibility for the content, interpretation, and conclusions presented in this article.

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