REVISTA CÁTEDRA

Use of the Educaplay Educational Platform in the Literacy Process of Primary Education Students (ISCED Level 1)

Uso de la plataforma educativa Educaplay en el proceso de lectoescritura en estudiantes de educación primaria (nivel ISCED 1)

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(Received on: 19/07/2025; Accepted on: 1/08/2025; Final version received on: 12/12/2025

Suggested citation: Pesántez-Carmona, E. y Cevallos-Benavides D. (2026). Use of the Educaplay Educational Platform in the Literacy Process of Primary Education Students (ISCED Level 1). *Revista Cátedra, 9*(1), 90-112.

Abstract

This research was conducted in a public school located in the urban center of Cuenca, Ecuador, with primary school students (ISCED Level 1) who are experiencing difficulties in developing literacy skills. To address this problem, a pedagogical intervention was designed based on the Technological Pedagogical Content Knowledge (TPACK) model and the theoretical foundations of constructivism and constructionism, integrating the use of the Educaplay educational platform as a technological resource for developing interactive activities. The research adopts a mixed-methods approach and is structured using

Sequential Transformative Design (DITRAS). Data collection included observations of classroom sessions with and without the use of technology, a survey administered to primary school teachers at the institution, and interviews with experts in the field of Language and Literature. The results show that the interactive activities designed in Educaplay significantly increased aspects such as attention, motivation, and academic performance of the students, especially with regard to phonological and syllabic skills and reading comprehension. In conclusion, the pedagogical intervention, based on the global-analytical approach and the development of linguistic awareness and reading comprehension in the early stages, combined with the appropriate use of interactive activities on the Educaplay platform, fosters meaningful, motivating, and autonomous learning in the initial phases of the reading process.

Keywords

Linguistic awareness, Educaplay, literacy, global-analytical method.

Resumen

La presente investigación se llevó a cabo en una unidad educativa fiscal ubicada en el centro urbano de la ciudad de Cuenca-Ecuador, con estudiantes de Educación Primaria (Nivel ISCED 1), quienes presentan dificultades en el desarrollo de habilidades de lectoescritura. Con el propósito de atender esta problemática, se diseñó una intervención pedagógica sustentada en el modelo Conocimiento Tecnológico Pedagógico del Contenido (TPACK) y en fundamentos teóricos del constructivismo y el construccionismo, integrando el uso de la plataforma educativa Educaplay como recurso tecnológico para el desarrollo de actividades interactivas. La investigación adopta un enfoque mixto y se estructura mediante el Diseño Transformativo Secuencial (DITRAS). Para su desarrollo, se realizaron observaciones de sesiones de clase con y sin el uso de tecnología, una encuesta dirigida a docentes de primaria de la institución, y entrevistas a expertos en el área de Lengua y Literatura. Los resultados evidencian que las actividades interactivas diseñadas en Educaplay incrementaron significativamente aspectos como la atención, la motivación y el desempeño académico de los estudiantes, especialmente, en lo que respecta a habilidades fonológicas, silábicas y a la comprensión lectora. En conclusión, la intervención pedagógica, sustentada en el enfoque global-analítico y en el desarrollo de las conciencias lingüísticas y la comprensión lectora en etapas iniciales, combinada con el uso adecuado de actividades interactivas en la plataforma Educaplay, favorece un aprendizaje significativo, motivador y autónomo en las primeras fases del proceso lector.

Palabras clave

Conciencias lingüísticas, Educaplay, lectoescritura, método global-analítico.

1. Introduction

Today, education is a fundamental pillar that guarantees students' rights to receive a quality education tailored to their needs. The United Nations Educational, Scientific and Cultural Organization (2023) emphasizes its position on technology in education:

> Learning to live both with and without digital technology; taking what is necessary from an abundance of information, but ignoring what is not; letting technology help, but never supplant, the human connection on which teaching and learning are based… We must focus on learning

> outcomes, not on the digital contribution. To contribute to improving learning, digital technology should not replace face-to-face interaction with teachers, but rather complement it (p. 24).

Therefore, quality education must be grounded in the principles of social equity and the pressing need to ensure truly inclusive educational processes. In some educational contexts, inclusion is considered a way of managing the needs exclusively of students with disabilities. However, in the international context, this concept involves a much broader vision related to "a reform that supports and addresses the diversity of all learners" (United Nations Educational, Scientific and Cultural Organization, 2009, p. 6). This means that educational processes must consider disabilities and, in addition, the different learning difficulties and styles of students.

SDG 4 calls for "ensuring inclusive and equitable quality education" (UN, 2015, p. 16), which requires strengthening literacy instruction from the earliest stages. International assessments demonstrate this urgency; for example, The PIACC program showed that Mexico is at level 2 in reading proficiency, while Ecuador has 38% of its students at level 1 (National Institute for Educational Evaluation, 2019, pp. 23–54); similarly, PISA-D reported that "51% of 15-year-olds have low reading performance" (National Institute for Educational Evaluation, 2018, p. 41), and the ERCE revealed that "44% of 3rd-grade students and 68.8% of 6th-grade students are at the minimum proficiency level" (UNESCO, 2022, p. 12).

At the national level, the Ser Estudiante test revealed that 58% of elementary school students do not reach the minimum level in Language and Literature and that 68% present "6 or more spelling errors in their compositions" (National Institute for Educational Evaluation, 2025, pp. 25–35). Finally, Ecuadorian legislation on education guarantees inclusive education and establishes that:

> All students must be assessed, if necessary, to determine their educational needs and the characteristics of the education they require. The education system will promote the early detection and intervention of special learning difficulties and learning-related factors that put these children and young people at risk, and will take measures to promote their recovery and prevent them from falling behind or being excluded from school (Ministry of Education, 2012, p. 7).

This inclusive approach highlights the commitment to protecting students' rights and addressing their needs promptly. In this context, analyzing and understanding the ambitious demands of the outside world is fundamental to providing quality education and implementing education laws at the smallest levels.

This study was conducted in a public school located in the urban area of Cuenca, in the province of Azuay, where it was identified that primary school students (ISCED Level 1), afternoon session, exhibit significant difficulties in developing literacy skills. According to the results of the diagnostic test administered at the beginning of the school year, a group of students was identified who present more severe problems with the development of these skills and who, although they do not have a prior psychoeducational diagnosis, show signs related to learning difficulties. Learning difficulties are defined as "various problems that share the undeniable fact of difficulty in learning optimally, that is, effectively, within the established timeframe, and without extraordinary human and material resources" (Romero-Pérez & Lavigne-Cerván, 2005, p. 9).

On the other hand, the adverse circumstances facing the Ecuadorian education system, such as the reduction of class hours in the afternoon session, established in the guidelines to guarantee educational continuity during the national energy crisis (Ministry of Education, 2024), are factors that hinder the normal development of planned activities in educational institutions and exacerbate the situation for this group of students. In this context, it is necessary to implement a pedagogical strategy to compensate for lost time and ensure that students can reinforce their learning at home.

Given the problem described, the following research question is posed: How can the development of literacy skills be strengthened in primary school students (ISCED Level 1)? This research seeks to analyze the pedagogical strategies that can be implemented inside and outside the classroom to strengthen the literacy skills of this group of students. In this sense, it is considered necessary to select the most appropriate methods for teaching literacy. Based on the research question, the general objective is to strengthen the literacy skills of primary school students (ISCED Level 1) through interactive activities on the Educaplay educational platform. To this end, the following specific objectives are established: to identify the main difficulties in the literacy process of this group of students; to design an educational intervention proposal that adapts to the TPAK model and includes interactive activities from the Educaplay platform for literacy development; and to assess student progress throughout the process. This study summarizes the most relevant elements and considerations developed in the thesis work of Pesántez-Carmona and Cevallos-Benavides (2025), which focused on the use of the Educaplay platform as an educational resource to strengthen the literacy process in primary school students (ISCED Level 1). Regarding the organization of the article, section 2 presents the concepts and theoretical foundations related to the research; section 3 presents a review of studies and experiences on the use of digital resources in literacy; section 4 describes the methodology employed; section 5 shows the results obtained during the implementation of Educaplay; and finally, section 6 presents the conclusions of the study.

2. Literature review

2.1 Language teaching methodology and national curriculum for the development of literacy

The Ecuadorian curriculum posits that learning to read and write is a multifaceted process, encompassing four main areas that must be addressed simultaneously. These areas are: the language system, written production, text comprehension, and written culture. This holistic view recognizes that the development of reading and writing is not limited to technical aspects but also includes social and cognitive practices. In this context, the language system consists of learning the alphabetic code, developing linguistic awareness, and mastering spelling (Ministry of Education, 2016, p. 76).

2.2 Initial teaching of the alphabetic code and linguistic awareness

Learning the alphabetic code is fundamental to literacy processes, allowing students to understand the relationship between sounds and graphemes. However, in traditional schools, teaching the alphabetic code is often confused with teaching literacy, since knowing how to read and write is much more than learning a code and correctly forming letters. This is why the Language and Literature curriculum "suggests a path for teaching the phoneme-grapheme relationship (alphabetic code), whose objective is to overcome the associative methods of rote memorization" (Ministry of Education, 2016, p. 80). This phonological path

includes three stages. The first consists of developing linguistic awareness, the second, the phoneme-grapheme relationship, and the third, conventional orthographic writing.

This curricular proposal is not entirely feasible, since it suggests that the teacher should not intervene in syllable formation and that this process should develop intuitively in the student. This idea is far removed from what is intended and what actually happens in the classroom. Students in the early stages of literacy already struggle with identifying and memorizing the similar sounds of some letters of the alphabet. If the teacher doesn't intervene to explain that these letters, when combined with vowels or other consonants, form syllables, and that these in turn generate other sounds, reading will be much more complex and the learning process much slower. It is not surprising, then, that in assessments administered by the National Institute for Educational Evaluation to fourth-grade students, 66.8% have difficulties with spelling, particularly with the use of accent marks: "Level 0.- The text presents six or more spelling errors (use of accent marks on acute, grave, and proparoxytone words; use of capital letters)." (National Institute for Educational Evaluation, 2025, p. 33). These results confirm that syllabic awareness has not been addressed at previous levels. At this point, it is crucial to consider that linguistic awareness, including syllabic awareness, must be developed simultaneously.

2.2.1 Linguistic awareness

As previously stated, an essential element for learning to read and write is the development of linguistic awareness, which manifests itself in the understanding of various levels of language: lexical, semantic, syntactic, and phonological. The development of linguistic awareness not only allows for the identification and manipulation of language units but is also fundamental for accessing the writing system in a comprehensive and functional way. In this regard, the Ministry of Education of Ecuador recognizes that its development is fundamental for literacy learning and explains the following:

> The development of linguistic awareness encompasses the development of lexical awareness (word morphology and the word as the smallest unit of speech), semantic awareness (the meaning of words, phrases, sentences, and longer texts), syntactic awareness (the relationship between words within a sentence), and phonological awareness (sounds). The latter is primarily addressed in relation to phoneme-grapheme correspondence (Ministry of Education, 2016, p. 79)

The development of each of the linguistic awareness levels mentioned in the curriculum plays a crucial role in literacy learning and must be addressed simultaneously. These levels of awareness are interconnected, enabling children to understand, construct, and produce language meaningfully. Therefore, from a pedagogical perspective, teachers must be able to design integrated, engaging, and contextualized activities that foster metalinguistic reflection from the earliest years of schooling.

2.3 The teacher's role as a mediator of language learning

The constructivist educational approach considers that all students, as native speakers, arrive at school with cognitive, affective, and motor skills. That is, they possess prior knowledge upon which new learning is built. In this sense, "the role of the school is precisely to mediate the learning that students do not acquire on their own" (Ministry of Education, 2016, p. 83). Thus, the teacher's role serves as scaffolding for students to connect their prior knowledge with new experiences.

The curriculum guidelines establish that “at the Elementary Basic Education level, the teacher has the responsibility to teach reading and writing” (Ministry of Education, 2016, p. 76), using the phonological approach detailed above. Consequently, the Language and Literature curriculum addresses specific skills that integrate the use of Information and Communication Technologies (ICTs) to improve oral communication, reading, and writing abilities. In this sense, the teacher's role consists of adopting "a fundamental role as mediator, facilitator, and creator of the necessary conditions for learning to occur" (Aboal et al., 2015, p. 233). In other words, the teacher must not only have sufficient mastery of the content the students are learning but must also be able to diversify the use of teaching resources to address different learning styles.

2.4 Methodological approaches to literacy

There are various teaching methods for the literacy process. Traditionally, three main approaches are distinguished: synthetic, global or analytical, and mixed. Below is a comparative table summarizing the main characteristics of each method, its subtypes, and the sources that support them.

Method	Models/subtypes	Description	Source
Synthetic	Alphabetic, Syllabic, Phonic/phonemic	It progresses from the smallest units (letters or syllables) to more complex units (words and phrases).	Lucas- Griñán (2014); Puñales-Ávila et al. (2017); Tangarife-Chalarca et al. (2016)
Alphabetic			Puñales-Ávila et al. (2017)
Syllabic		It consists of memorizing the alphabet and combining them to form syllables and words.	Lucas- Griñán (2014); Puñales-Ávila et al. (2017)
Phonic/Phonemic		Progressive instruction of vowels and letters, followed by combining them to form syllables and then words;	Lucas- Griñán (2014); Puñales-Ávila et al. (2017)
Analytic-Global		It is based on teaching letter sounds and direct, inverse, and complex syllables;	Lucas- Griñán (2014); Tangarife-Chalarca et al. (2016); Puñales-Ávila et al. (2017)

Mixed or Eclectic	It begins with recognizing complex units (words or phrases) and progresses to analyzing their constituent elements;	Lucas- Griñán (2014); Tangarife-Chalarca et al. (2016); Puñales-Ávila et al. (2017)

Table 1. Methods for teaching literacy

2. 5 The global method as an integrative approach to the proposal

Currently, contributions from constructivist learning theories have superseded the debate on methods for teaching the alphabetic code. Indeed, teachers must focus on understanding how students learn and utilize the resources of different methods, prioritizing meaning and functionality. Thus, authors like Aboal et al. (2015) point out that teachers should, "on the one hand, motivate children to read and write through real-life experiences, making them feel the need to communicate. On the other hand, create functional situations in which children see that written language is useful" (p. 252). However, it is crucial to consider that "in each eye fixation, the reader perceives a set of graphic elements as a whole" (Higueras-Gámez, 2017, p. 8). The author notes that, in this process, the brain interprets the information from each glance and reads it. It has been shown that during reading, fixations occupy most of the time. In this sense, it follows that fewer fixations lead to greater speed and fluency in reading.

From this analytical perspective, a global analytical approach is adopted for the introduction of the alphabetic code. This approach consists of analyzing and breaking down sentences or words into the smallest unit of written language. This is done while also considering the development of linguistic awareness, as stated by the Ministry of Education (2016): "to enable students to construct the conventional orthography of the language, based on phonological and semantic reflection" (p. 82). It is important to consider that, in this process, students may face various difficulties, such as confusion with phonemes, difficulty segmenting words into syllables, and complications structuring sentences. Therefore, it is necessary to address these difficulties through the development of linguistic awareness.

2.6 Learning theories that underpin the use of ICTs

The integration of ICT in the pedagogical field must be based on learning theories to give meaning to its use in educational contexts. Among the most relevant approaches are Piaget's constructivism, Vygotsky's socio-constructivism, and Papert's constructionism. According to Ackermann (200):

> Papert's constructionism, in contrast, focuses more on the art of learning, or 'learning to learn', and on the significance of making things in learning. Papert is interested in how learners engage in a conversation with [their own or other people's] artifacts, and how these conversations boost self-directed learning, and ultimately facilitate the construction of new knowledge Papert's constructionism, in contrast, focuses more on the art of learning, or "learning to learn," and on the importance of creating

> things during the learning process. Papert is interested in how students engage in conversations with artifacts—their own or others'—and how these conversations enhance self-directed learning and ultimately facilitate the construction of new knowledge.] (p.1).

Despite its orientation toward technology-mediated learning, constructionism retains its constructivist foundations by placing the student at the center of cognitive and social development. Both Piaget and Vygotsky emphasize that activity is the driving force of mental development, albeit with different nuances: "Piaget focuses on the relationship with the material world, while Vygotsky prioritizes interpersonal interaction through reason, affectivity, and instincts" (Aparicio-Gómez & Ostos-Ortiz, 2018, p. 116). Within this framework, constructivist and socio-constructivist approaches conceive of learning as a continuous process influenced by experiences, stimuli, and social interaction. Therefore, the traditional concept of reading readiness is being questioned, since "the concept of reading readiness, so fashionable in the past, has been criticized, even leading to the coining of the derogatory term 'reading readiness theorists'" (Aboal et al., 2015, p. 250).

The introduction of technology in educational settings aligns with the principles of constructivism, by encouraging the creation of tangible products that strengthen reflection and collaboration. Papert and Harel (1991) explain that:

> Constructionism—the word spelled with an n as opposed to the word spelled with a v—has the same connotation as constructivism: learning as the creation of knowledge structures, independent of the circumstances of learning. He then adds the idea that this occurs particularly opportunely in a context where the learner is consciously engaged in constructing a public entity, be it a sandcastle on the beach or a theory of the universe (p. 2).

In this way, technology not only supports the acquisition of content but also fosters meaningful learning based on knowledge construction, interaction with society, and self-regulation. Therefore, incorporating technology into the classroom involves adapting spaces where students actively participate, enabling them to create, explore, and transform their environment, thus consolidating learning with personal and social significance.

2.7 TPACK Model

The TPACK model, developed by Mishra and Koehker in 2006, aims to guide teachers in the effective integration of technology into educational processes. In other words, for a teacher to use technological tools meaningfully, they must master curricular content, teaching methodologies, and technological knowledge. Salas-Rueda corroborates this, stating that technological, pedagogical, and disciplinary knowledge foster the creation of innovative and creative spaces for learning and teaching (Salas-Rueda, 2019, p. 3).

2.8. Educaplay in the literacy process

The Educaplay digital platform is a highly versatile educational tool that allows users to create their own pedagogical content by designing interactive activities. No advanced programming knowledge is required, so teachers can easily and quickly create their own activities and share them via web links, blogs, or educational platforms (Páez-Quinde et al., 2022, p. 37). With the recent development and integration of Artificial Intelligence, this platform has experienced significant improvements through a virtual assistant and prompts, making it possible to design activities in less time. However, it is important to note

that this capability comes at a cost, as do services such as student registration and activity reporting.

3. Methods and materials

The research was conducted using a mixed-methods approach based on Sequential Transformative Design (DITRAS), which allowed for the integration of quantitative and qualitative techniques to understand in detail the difficulties experienced by primary school students (ISCED Level 1) in learning to read and write. The study was carried out in a public school located in the city of Cuenca, Azuay province, specifically during the afternoon session, where a group of students with significant difficulties in developing the alphabetic code, linguistic awareness, and reading comprehension was identified.

The sample was selected non-probabilistically, taking into account the nature of the problem. Twenty-four students from the level, twenty-two primary school teachers, and two language and literature experts participated, the latter providing specialized criteria to strengthen the interpretation of the findings.

Different techniques were combined in the data collection. Two observation checklists were used: one to record student performance during a class without technology and another to evaluate the effect of interactive activities developed in Educaplay. A Likert-type survey was also administered to teachers to identify their perceptions related to literacy instruction and the integration of technological resources. Additionally, semi-structured interviews were conducted with two specialists, who provided insights into the reading and writing process, the methodological approach, and recurring difficulties at this level. Results from the second and third trimester institutional assessments were also collected, aligned with categories such as phonological, lexical, and semantic awareness, as well as reading comprehension.

Data analysis was performed using differentiated procedures according to the nature of the data. Quantitative information was processed using SPSS, which allowed for the generation of descriptive statistics and the determination of the reliability of the instruments used. For this purpose, Cronbach's alpha coefficient was used, with values ranging from 0.792 to 0.992, indicating high internal consistency. Regarding the qualitative data, interview and observation transcripts were organized and coded using MAXQDA, following the corresponding coding processes. This allowed for the construction of interpretive matrices by category and the establishment of relationships between the findings.

Finally, the results underwent methodological triangulation, integrating information from surveys, observations, interviews, and academic assessments. Based on these inputs, the theoretical framework and discussion were developed, comparing the findings with previous studies related to the use of ICT, literacy instruction, and the application of the whole-word approach. This process allowed for the generation of well-founded conclusions that guide the proposal for academic strengthening through interactive resources.

4. Results

4.1 Observation sheet without the use of technology

This analysis stems from the observation of a literacy class session with primary school students (ISCED Level 1). Among the most relevant aspects noted in the observation sheet, without the use of Educaplay, was low student attention and participation. Only 16.67% showed consistent attention to the teacher's instructions and directions. The overall level

of interest was limited, with only 20.8% of students maintaining interest throughout the activity. Enthusiasm for the class was also scarce, with only 20% of students participating during the reading and writing activity. Therefore, the lack of interactivity and student motivation resulted in limited voluntary participation. These results align with Salas-Rueda's (2019) findings, who argues that when technology is not meaningfully integrated, it limits students' intrinsic motivation and active engagement.

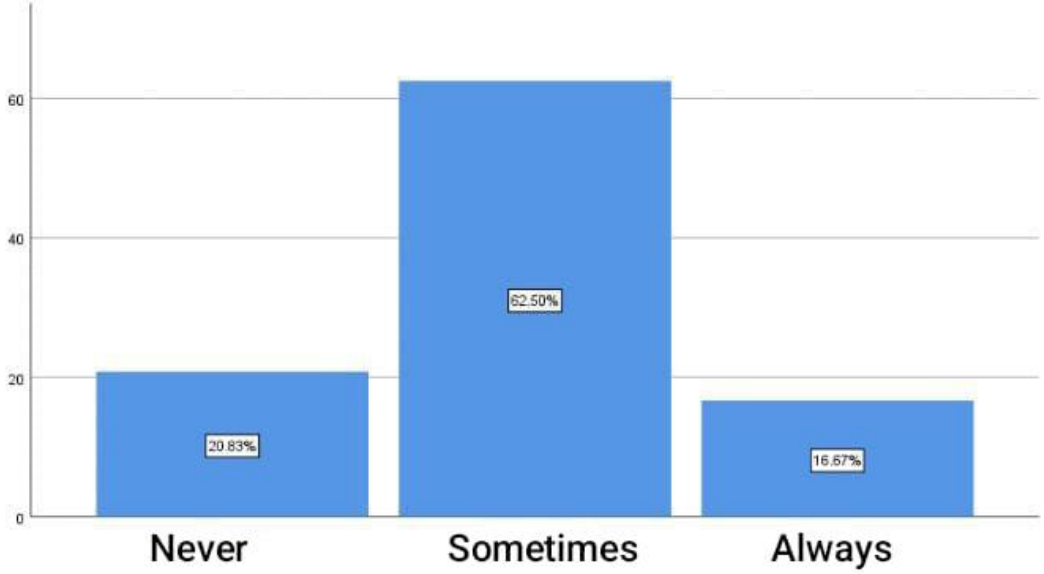

Figure 1. Percentage of student attention in a class session without using Educaplay

4.2 Second Quarter Summative Assessment

To characterize the level of development of students' literacy skills, the second-term summative assessment is used as a reference. This assessment allows for the evaluation of the basic skills that enable the development of literacy at the level of linguistic awareness, as well as initial reading comprehension. A frequency table corresponding to each category is presented below.

Variable	Meets	Percentage	Does not meet	Percentage
Phonological comprehension	19	79.2	5	20.8
Lexical comprehension	1	4.2	23	95.8
Syllabic comprehension	12	50	12	50
Morphological comprehension. Creation of new words by adding a suffix	17	70.8	7	29.2
Syntactic comprehension	15	62.5	9	37.5

Semantic comprehension. Words that belong to the same category	16	66.7	8	33.3
Reading comprehension	5	20.8	19	79.2
Total number of students evaluated	24	100	24	100

Table 2. Results of the second quarter summative assessment

Thus, a high percentage of students demonstrate moderate proficiency in phonology (79.2%) and morphology (70.8%), while syllabic and semantic skills show a balanced level of 50% and 66.7%, respectively. However, lexical and reading comprehension skills are alarmingly weak, as indicated in the table, with 4.2% and 20%, respectively, exhibiting a significant level of difficulty. These data align with the "Being a Student" report (National Institute for Educational Evaluation, 2005), which indicates that 68% of students make more than six spelling errors and have serious difficulties structuring sentences and understanding written texts. Therefore, these results allow us to identify the students' strengths and main weaknesses, facilitating the design of a relevant pedagogical intervention that encompasses all literacy skills, as each one has potential for improvement.

4.3 Teacher survey

The survey results show that the greatest difficulty in literacy processes lies in phonological and syntactic skills. In this regard, structuring coherent sentences presents a significant challenge for students, reinforcing the assessment results. On the other hand, although respondents reported less difficulty with lexical and semantic skills, these remained present in a considerable number of responses. Regarding writing whole words and reading comprehension, professionals believe that students face moderate barriers, suggesting a need to strengthen their decoding and reading comprehension skills.

Regarding the use of technology in literacy learning processes, the results indicate that most teachers surveyed use interactive platforms such as Educaplay, Wordwall, Liveworksheets, Genially, and Kahoot for this purpose. They frequently use these platforms at the beginning of a class, during content development, or as reinforcement activities for homework.

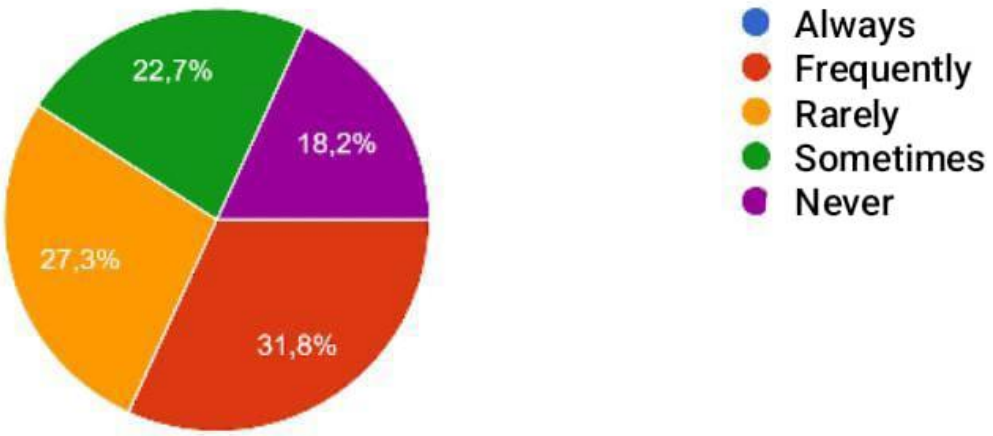

Figure 2. Frequency with which teachers use Educaplay for teaching literacy

When asked about the frequency of use of the Educaplay platform, it became clear that, although the employability rate varies considerably, participants are familiar with it, indicating a positive level of technological familiarity. Furthermore, they agreed that incorporating these tools fosters student motivation and participation through timely feedback. This idea is supported by the findings of Páez-Quinde et al. (2022), who argue that Educaplay promotes meaningful student participation by allowing them to interact with graded activities without requiring high levels of digital literacy.

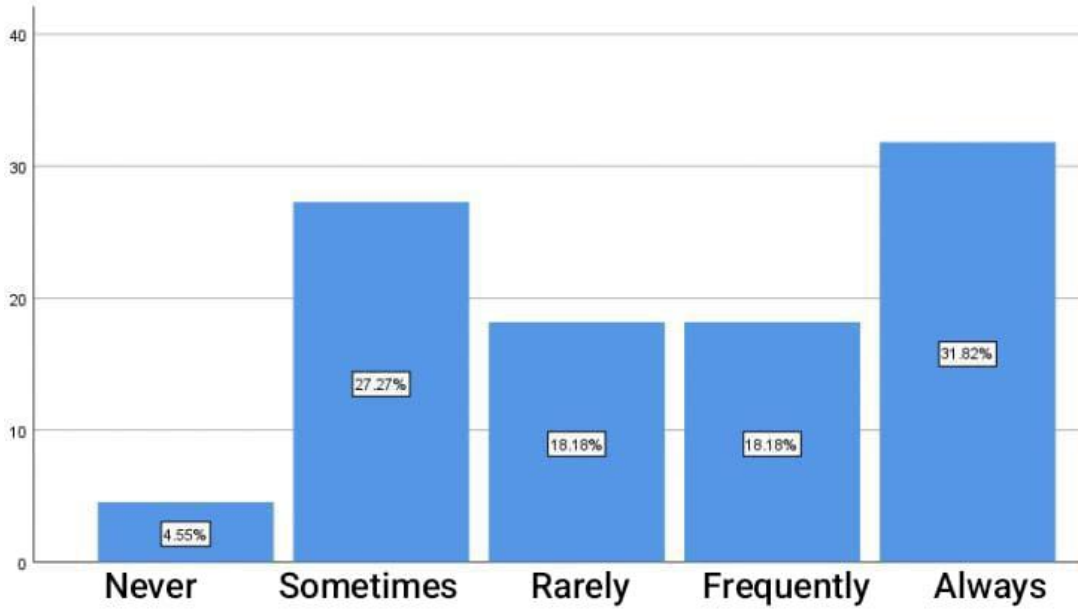

Figure 3. Percentage of application of the global method in the teaching of literacy

The indicators suggest that, of the literacy methods consulted—including whole-word, alphabetic, syllabic, phonetic, and mixed—the whole-word method stands out with the highest percentage of use, at 31.8%, in situations where it is "always" used. On the other hand, the syllabic method is used frequently, at over 54.5%. Meanwhile, the phonetic method represents a percentage of 40.9%. Therefore, these results demonstrate a consensus regarding the frequent use of mixed methods, especially the whole-word method. This relates to the findings of Lucas-Griñán (2014), who points out that eclectic methods allow for responding to different learning styles.

4.4 Interview with experts in the area of Language and Literature

In the qualitative analysis of the interviews, a systematic coding process was carried out using the MAXQDA program. This software allowed for the organization and classification of the responses to the nine questions asked of each interviewee. It is important to note that this program "allows for the calculation of code application through a clear use of coding frequency while also allowing the visualization of the codes in the document" (Casasempere, 2024, p. 2). From the systematic coding, recurring patterns and words were identified among the interviewees, which facilitated the clear and concise structuring of the main analysis results. The main findings are presented below:

Criteria based on objectives	Expert 1	Coding	Expert 2	Coding	Analisis
Difficulties in reading and writing	Focus on intrinsic student factors and pedagogical deficiencies.	A.1. Lack of motivation towards reading and writing, A.2. Absence of relevant and contextualized processes, A.3. Lack of connection with the learning environment, A.4. Loss of interest in reading due to previous negative experiences, A.5. Mismatch between curriculum and teaching practice.	Focus on cognitive, developmental, and sociocultural barriers.	B.1. Limitations of adult-centrism in education, B.2. Critique of traditional methodologies, B.3. Errors in oral language,	Both experts agree that literacy difficulties stem from internal factors within the student, as well as from the teaching environment.
Intervention proposal	Communicative approach supported by the use of technology, gamification, and an eclectic method of literacy instruction. Emphasis on pedagogical and curricular mastery, incorporating the positive aspects of		Reflective use of technology and relevant, contextualized hybrid methodologies for developing linguistic awareness.	B.4. Communicative approach, B.5. Gamification, B.4. Accessibility, B.5. Educational relevance, B.6. Feedback, B.7. Emotional self-regulation, B.8. Methodological	

	traditional methodologies.		syncretism, B.9. Linguistic awareness, B.10. Whole language approach, B.10. Reading for life, B.11. Logical thinking, B.12. Respecting the child's pace and world.	
Assessment of student progress	Student progress is determined by the ability to self-regulate their learning, motivated by achievements and feedback.	A.6. Incorporation of educational technologies, A.7. Readings based on student interests, A.8. Gamification, A.9. Games with pedagogical purpose, A.10. Eclectic method, A.11. Appreciation of traditional methods, A.12. Communicative approach, A.13. Curriculum mastery.		They emphasize the importance of integrating educational technologies through methodological syncretism for literacy instruction, giving meaning to the communicative approach for the individual's development within society.

Table 3. Coding and interpretation of interviews

Experts explain literacy difficulties from a holistic perspective that integrates internal student factors, environmental conditions, and limitations in teaching practice. This aligns

with Aboal et al. (2015), who emphasize the need to create meaningful experiences tailored to children's interests. The development of linguistic awareness within the communicative approach is also highlighted, promoting the use of relevant technology and eclectic methods to address diversity. According to Higueras-Gámez (2007) and the Ecuadorian curriculum (Ministry of Education, 2016), progress assessment should focus on autonomy, self-correction, and guided self-evaluation. They add that asynchronous learning enhances the meaningful construction of knowledge.

4.5 Intervention process

Based on the positive results and the great reception the Educaplay platform received during in-person classes, a pedagogical intervention process is being implemented to strengthen the literacy skills of this group of students. This intervention includes the design of interactive activities on the Educaplay platform, which focus on developing linguistic awareness and reading comprehension. It is important to note that the activities proposed on the platform are sent as academic reinforcement assignments. Therefore, students must complete them at home.

To implement this proposal, students receive a detailed explanation of the steps to access the platform. A video tutorial is also created and shared in the WhatsApp group so parents can support them in this process. To track student participation, an academic plan is purchased for the Educaplay platform. This plan allows for the enrollment of an unlimited number of participants and generates an invitation code that students can use to access and complete the activities. Their participation is automatically recorded, including the number of plays, time spent, and their lowest and highest scores.

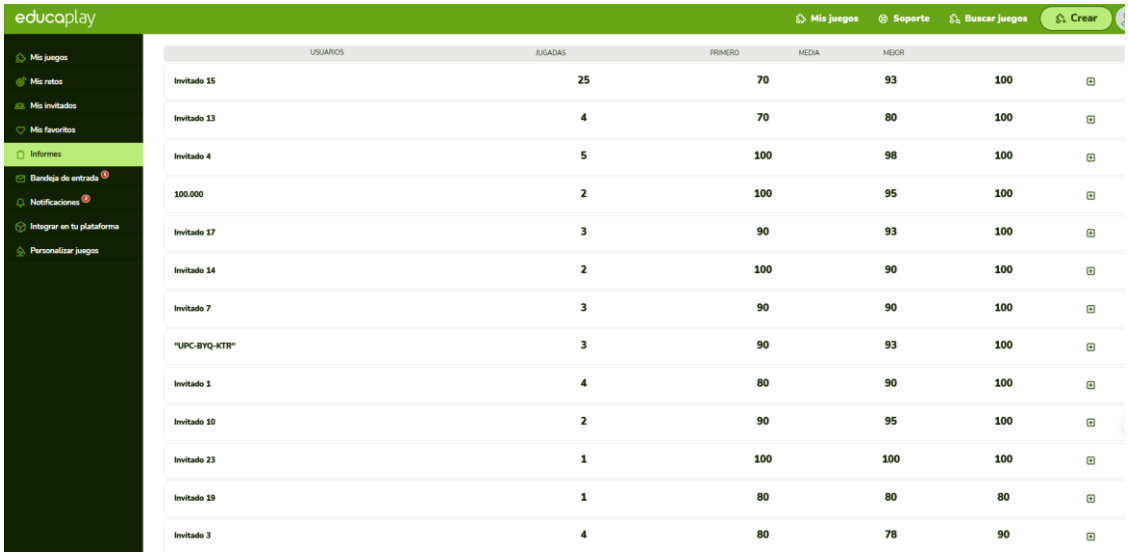

Figure 4. Report on student interactivity on the Educaplay platform

The platform's report suggests that students tend to repeat the same number of attempts until they achieve the highest score. As they repeat the activity, the time they spend completing it decreases. These results provide insight into the impact of immediate feedback and the importance of repetition in the learning process.

4.6 Main findings from the Observation sheet using Educaplay

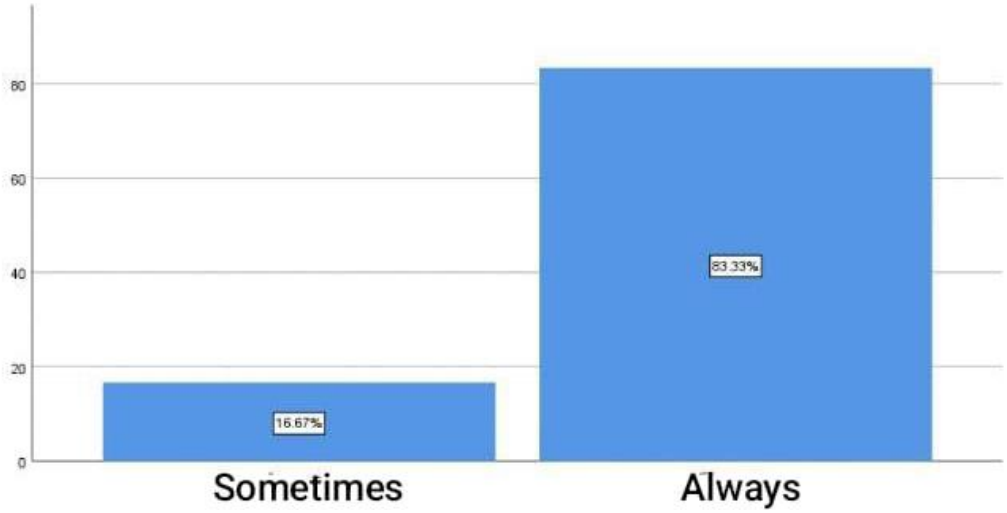

Figure 5. Percentage of student attention using Educaplay

As shown in the graph, the literacy class session, conducted with the same group of students and incorporating interactive activities from the Educaplay platform to develop language awareness, yielded significant positive results. 83% of the students maintained consistent attention, and 62.5% remained interested throughout the activity. Similarly, the results indicate a high level of enthusiasm and excitement among the students when interacting with the Educaplay educational platform.

Figure 6 Students interacting with the Educaplay platform

As can be seen in the image, student participation is active, their attention focused on identifying the correct answer to obtain the highest score. Therefore, as they develop the proposed activities, they not only strengthen their literacy skills but also become familiar with the use of technology for educational purposes. This significant change can be explained by Papert's constructivist theory, which posits that learning is enhanced when students interact with tangible digital objects (Papert, 1991). Consequently, this strategy fosters self-regulation and motivation through immediate feedback, factors also highlighted by the experts interviewed.

For the third-quarter summative assessment, which was administered after the implementation of the pedagogical approach, the categories of analysis used in the second-quarter assessment were maintained, specifically linguistic awareness (lexical, syllabic,

phonological, and syntactic) as well as reading comprehension in its initial stages. It is important to clarify that this is not an identical test to the one administered in the second term, nor is it a post-test. Rather, it is a different assessment specifically designed to evaluate the student's progress after the intervention. To this end, the specific content of the instrument was modified. For example, new words were included for segmentation, different sentences were used to assess syntactic awareness, and a different reading comprehension exercise was used, with equivalent levels of complexity. The following table details the results obtained in this assessment:

Variable	Meets	Percentage	Does not meet	Percentage
Phonological comprehension	21	87.5	3	12.5
Lexical comprehension	8	33.33	16	66.7
Syllabic comprehension	18	75	6	25
Morphological comprehension. Creation of new words by adding a suffix	19	79.2	5	20.8
Syntactic comprehension	20	83.3	4	16.7
Semantic comprehension. Words that belong to the same category	16	66.7	8	33.3
Reading comprehension	20	83.3	4	16.7
Total number of students evaluated	24	100	24	100

Table 4. Third Quarter Assessment Results

The following cumulative bar chart shows the results obtained in the second and third trimester assessments, allowing for a visual and comparative analysis of the variations in the development of reading and writing skills among this group of students. The chart's structure represents the combined performance levels in each of the assessed categories (linguistic awareness and reading comprehension), both before and after the medium-term pedagogical intervention using the Educaplay platform. The chart allows observation of the distribution of achievement levels by skill and a comparison of progress between the two trimesters. This visualization is useful for demonstrating the improvements achieved after the intervention, as it shows the increase in students who performed satisfactorily and the decrease in those with significant difficulties.

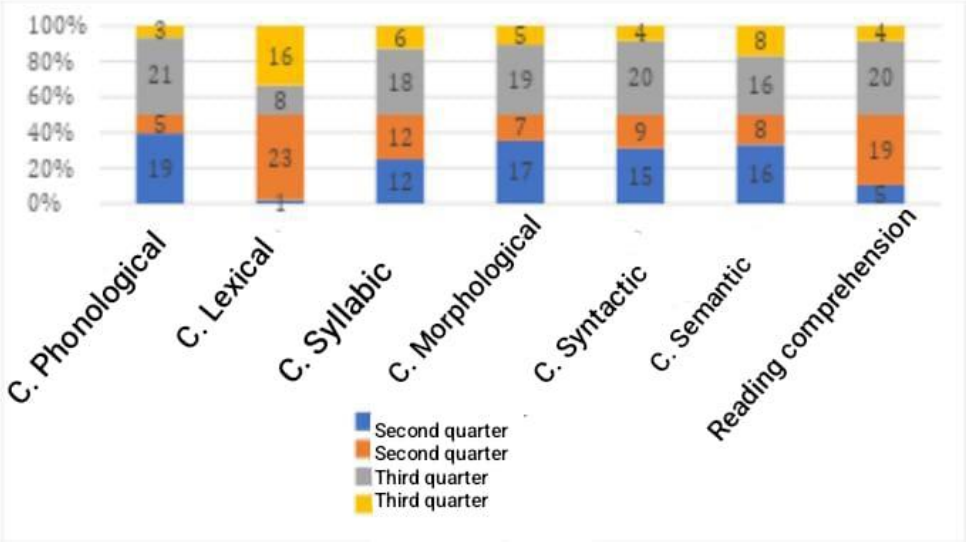

Figure 7. Percentage of results from the second and third quarter assessments

5. Discussion of the results

The results obtained from methodological triangulation allow us to understand the complexity of the significant difficulties faced by primary school students (ISCED Level 1) in the literacy learning process. This finding coincides with the report from the National Institute for Educational Evaluation (2025), which clearly shows that a significant percentage of students fail to consolidate basic reading comprehension skills in their initial stages. According to Romero-Pérez and Lavigne-Cerván, this problem can be associated with interrelated factors such as poverty, malnutrition, and especially with decontextualized pedagogical practices that limit students' meaningful learning (Romero-Pérez & Lavigne-Cerván, 2005). Therefore, these results validate the need for a specific intervention to address this problem.

Regarding the perceptions of the surveyed teachers, the quantitative results demonstrate a significant familiarity with the use of interactive tools in their teaching practice and a frequent use of eclectic methods, with the whole-word approach being one of the most frequently used. This teaching practice aligns with the proposal of Lucas-Griñán (2014), who points out that combined literacy methods better address the diversity of learning paces and styles. Furthermore, it was evident that the use of platforms such as Educaplay, Geneally, and Wordwall was positively valued by teachers as complementary educational resources. However, as Salas-Rueda (2019) states in the TPACK model, technological knowledge alone does not guarantee effective integration unless it is properly articulated with pedagogical and disciplinary knowledge. Nevertheless, despite the recognition of the benefits and pedagogical value offered by interactive tools, challenges remain in teacher training regarding the design and reflective application of educational platforms.

The qualitative analysis of interviews with specialists in the field of Language and Literature delves into the possible causes of the observed difficulties. The experts agree that the student's cognitive and developmental factors influence this process and that this phenomenon is exacerbated by decontextualized pedagogical practices disconnected from the child's interests. These observations align with the arguments of Aboal et al., who maintain that the development of literacy skills in the initial stages should be based on

meaningful experiences relevant to the child's world (Aboal et al., 2015). Similarly, the need to implement methodologies based on a communicative, gamified approach with a pedagogical focus on the meaning of language is highlighted. As Salas-Rueda indicates in 2019, when well-designed, these methodologies promote motivation, engagement, and emotional self-regulation.

Observations during classroom sessions with and without the use of Educaplay reveal a significant change in student participation. In the first class session, students showed little attention and participation, while in the technology-mediated class, 83% of students maintained sustained attention and demonstrated enthusiasm while participating in the activities. This finding supports Papert's assertion (in Ackermann) that learning is enhanced when students construct knowledge through motivating, manipulable, and meaningful means. It also reaffirms what experts have stated regarding the improvement of academic performance, self-regulation, and educational autonomy through motivation and immediate feedback.

Finally, the data obtained from the third-quarter summative assessment demonstrate a significant improvement in reading and writing skills. Following the integration of interactive activities into the Educaplay platform, the percentage of students who demonstrated significant progress in phonological awareness increased from 79.2% to 87.5%, while the percentage for reading comprehension rose from 20.8% to 83.3%. This result validates the findings of authors such as Salas-Rueda (2019) and Páez-Quinde et al. (2022), who agree that the planned implementation of platforms like Educaplay within a holistic-analytical approach can enhance the development of linguistic skills, provided it is appropriately contextualized to the student's environment and needs.

6. Conclusions

The research met its objectives. First, it identified that primary school students (ISCED Level 1) exhibit significant difficulties in developing literacy skills, particularly in lexical awareness, syllable segmentation, and reading comprehension. These findings were initially identified through the second-term summative assessment and subsequently corroborated by the perceptions of the surveyed teachers, who confirmed similar deficiencies in literacy, highlighting lexical awareness, syllable segmentation, and reading comprehension as the most critical aspects. Despite methodological efforts, they indicated that structural deficiencies persist at these levels, validating the need for a specific intervention to address this problem.

Second, the pedagogical intervention, designed using the TPACK model and implemented through interactive activities on the Educaplay platform, demonstrated a positive impact on the literacy learning process of primary school students (ISCED Level 1). The proposal integrated the components of content, focusing on linguistic awareness and reading comprehension; pedagogy, through playful strategies that fostered curiosity, motivation, and active participation; and technology, with interactive activities that offered immediate feedback and enabled independent practice of the exercises. The playful design encouraged curiosity and a desire for improvement through voluntary repetition of the exercises. This independent repetition facilitated memorization, the recognition of linguistic patterns, and the consolidation of basic written language concepts. Consequently, it enhanced the progressive development of linguistic awareness, which facilitates reading fluency and comprehension.

Thirdly, the instant feedback offered by Educaplay was a key factor in learning, allowing students to correct their errors immediately and better understand the concepts, thus reinforcing their literacy development and acquisition. On the other hand, the third-quarter summative assessment, administered at the end of the intervention, showed significant improvements in all evaluated dimensions, both in terms of academic performance and attitudes toward learning. These results confirm the positive impact of the intervention and reaffirm the value of technology as an effective resource for developing literacy skills in early childhood education students.

Finally, the use of interactive activities designed on the Educaplay platform proved to be an effective resource for strengthening literacy skills in elementary school students (ISCED Level 1). The intervention promoted a significant increase in motivation and in the acquisition of the alphabetic code and the development of linguistic awareness, as well as text comprehension in its initial stages. Through the repetition of exercises and immediate feedback, improvements were generated in both academic performance and students' attitudes toward learning to read and write.

Acknowledgments

To the distinguished authorities, teachers, and students of the educational institution who contributed to this research process, for the facilities and support, as well as for their valuable willingness and collaboration at each stage of the process.

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DIANA CEVALLOS-BENAVIDES: Conceptualization, methodology, formal analysis, research, data analysis, writing, supervision, final review.

Declaration of the use of artificial intelligence

The authors declare that they used the ChatGPT tool (OpenAI) partially during the manuscript preparation stage, specifically to assist with the syntactic restructuring of some paragraphs, as well as to generate alternative versions of titles and subtitles, which were subsequently reviewed and adjusted manually. Artificial intelligence was not used for writing the methodological design, data analysis, interpretation of results, or academic discussion. All content was reviewed and validated by the authors, who are responsible for the accuracy, coherence, and scientific rigor of the final text.