Effects of the development of reading comprehension questions on learning improvement

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ABSTRACT

The process of teaching and learning to read has evolved in recent decades from an act centred on decoding action to a task of interaction between the reader and the text in which the reader's knowledge, goals and interests play an important role. In this sense, the importance of acquiring both specific vocabulary and reading skills will enable the mastery of the communicative conventions related to a specific context. Achieving the skills and competences necessary for academic and professional success implies that students take an active role in relation to the text in order to acquire coherent meaning from their reading. In contrast to this, the reality is that the resources used in the classroom with students to practise reading comprehension tend to focus on providing answers to a series of questions, preferably of a literal nature, through school texts. However, little work has been done on how students access textual information through teaching approaches that require active learning and stimulate the ability to think through expository texts in different languages (Spanish and English in this work). The objective of this study was to compare the level of written comprehension of two groups of students in the fifth year of Primary Education. One that worked on the elaboration of different types of questions using texts present in daily life in a cooperative way and another that exercised the written comprehension, with the same texts, answering different questions given by the teachers. A total of 116 pupils between 10 and 11 years of age (M = 10.62; SD = 0.43) participated in the study, of whom 48.7% were boys and 51.3% girls. The data collected point to the benefit of using this alternative methodology for the improvement of reading, and thus this teaching model is recommended to facilitate the learning of reading comprehension at different educational levels.

Keywords: reading comprehension, learning to read for specific purposes, decoding, question formulation, cooperative learning.

RESUMEN

El proceso de enseñar y aprender a leer ha evolucionado en las últimas décadas desde un acto centrado en la acción decodificadora a una tarea de interacción entre el lector y el texto en la que los conocimientos, objetivos e intereses del lector juegan un papel importante. En este sentido, la importancia de adquirir tanto vocabulario específico como habilidades de lectura permitirá el dominio de las convenciones comunicativas relevantes para un contexto específico. El logro de las habilidades y competencias necesarias para el éxito académico y profesional implica que los estudiantes asuman un papel activo en el texto para adquirir un significado coherente a partir de su lectura. En contraposición a este hecho, la realidad es que la diversidad de recursos que se utilizan en el aula con los estudiantes para ejercitar la comprensión lectora tiende a centrarse en dar respuesta a una serie de preguntas, preferentemente de carácter literal, a través de textos escolares. Sin embargo, se ha trabajado poco sobre cómo los estudiantes acceden a la información textual a través de propuestas didácticas que exigen un aprendizaje activo y estimulan la capacidad de pensar a través de textos expositivos en diferentes idiomas (español e inglés). El objetivo de este estudio fue comparar el nivel de comprensión escrita de dos grupos de alumnos de quinto año de Educación Primaria, uno que trabajaba en la elaboración de preguntas de diferente tipo utilizando textos presentes en la vida cotidiana de forma cooperativa y otro que ejerció la comprensión escrita, con los mismos textos, respondiendo a diferentes preguntas dadas por los docentes. Participaron en el estudio un total de 116 estudiantes entre 10 y

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11 años (M = 10,62; DT = 0,43), de los cuales el 48,7% eran niños y el 51,3% niñas. Los datos recabados dan especial relevancia a este tipo de metodologías para la mejora de la lectura, por lo que se recomienda este modelo de enseñanza para facilitar el aprendizaje de la comprensión lectora en los diferentes niveles educativos.

Palabras clave: comprensión lectora, aprender a leer con fines específicos, decodificación, formulación de preguntas, aprendizaje cooperativo.

1. Introduction

The act of reading is no longer conceived of as the simple action of decoding certain graphic symbols; rather it constitutes a dynamic and interactive process on the part of the reader, who interprets the written message from the information provided in the text (Gutiérrez, 2016; Gutiérrez-Fresneda et al., 2020). Reading is an interactive process that does not progress sequentially from the basic perceptual units to the global representation of the text, and instead involves the participation of several levels of cognitive complexity that intervene interactively to integrate graphic, semantic, syntactic, pragmatic and interpretative information (Brizuela et al., 2020; Gutiérrez, 2016; Onieva et al., 2021). In other words, reading comprehension is understood as a deductive process in which the reader uses the clues in the text to interpret the meaning that the author is trying to convey. Thus readers are not passive subjects, but use their own knowledge by interacting with the text, which allows them to construct new meanings (Gutiérrez-Braojos & Salmerón, 2012; Gutiérrez-Fresneda et al., 2021; Pascual-Gómez & Carril-Martínez, 2017).

To be effective, learning must be active and self-regulated, which implies that the learner is the one who constructs his or her own learning, he or she must be the protagonist, which means that he or she must be aware of why it is necessary to learn as well as what and how he or she learns. This denotes a creative, autonomous and responsible personal activity in which reflective thinking processes are put into practice, where different types of postulates are accepted as valid and argumentation, sharing and the promotion of personal autonomy are promoted. As a fundamental dimension, meaningful learning involves the integration of cognitive and affective factors, as well as the interaction between acquired and new knowledge in the process of learning acquisition and in the construction of a conceptually meaningful structure. Meaningfulness is achieved when the learner knows how to apply what has been learned.

In language learning, it is important to consider that the content to be taught must be related to what is known and what needs to be learned. In this sense, when working on reading comprehension, teaching should be based on the knowledge that the learner possesses and which is used during the process of interaction with the text to facilitate comprehension. Therefore, learning requires effective teaching based on the learner's knowledge.

In language teaching, this concept must be taken into account, in order to promote motivation towards learning new content, when establishing the appropriate teaching programme. This process must be well planned and guided by teachers. In this respect, one of the important aspects in the teaching-learning process is the consideration of the zone of proximal development (Vygotski, 1978), which states that it is necessary to to include content that is above the level of learning already reached in order to promote the ability to analyse, deduce and reason. In this sense, cognitive skills (knowledge, skills, competences and values) are part of the content, since when a skill is acquired, tasks can be performed more successfully because education is not only about learning knowledge, but also about using it effectively in different everyday situations, which is the basis of appropriate competence training that contributes to personal development (Ortiz-Revilla et al., 2021).

There is a majority view that language for specific purposes refers not only to technical or professional vocabulary, but is part of the framework of language for general purposes, although it requires a differentiated

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methodological approach in terms of learning materials, learner motivation and activities (Alcaraz, 2000; Gutiérrez-Fresneda & Del Olmo, 2019).

Specialised languages, understood as the set of natural language resources used to convey specialised subjects, is an area that is considered important in the development of communication and the construction of knowledge. The teaching of specialised languages has frequently been approached from the didactics of languages, and more specifically from the teaching-learning of foreign languages. It should not, however, be thought that research into specialised languages should focus solely on the field of foreign languages, but should also be aimed at the adoption of that specialised language in the mother tongue (Calderón & Córdova, 2020; Suárez & Naranjo, 2013).

The communicative purpose associated with intentionality helps to specify different types of text according to their discursive purpose: informing, evaluating, arguing, describing, etc. Categorising specialised texts from this discursive perspective requires great skill on the part of the teacher, since the learner may use the same text for different purposes, although, depending on the text superstructure (Kintsch & Kinstch, 2005), in most texts there are certain predominant marks. Typical textual marks of expository texts enable learners to understand their subject matter by identifying the features present in this text typology, such as definition (the starting point of this text type); exemplification (used to support what is being explained); or description (an aid to exposition, when it is necessary to explain the parts or functions of an object or phenomenon). In addition, expository texts are characterised by the use of enunciative sentences, the use of impersonal verbs, the use of verbs in the third person plural, which mark the presence of the authors; the presence of various specific types of connectors, etc., all of which must be taken into account in language teaching.

A text is far more than a simple set of information units; each text contains a structure that links cognitive, grammatical and social components (Cabré & Gómez de Enterría, 2006; Gutiérrez-Fresneda & Del Olmo, 2019). These aspects must be taken into account from a didactic point of view, as they are useful for the comprehension, analysis and processing of information, hence the importance of knowledge of the characteristics of expository texts in order to achieve better comprehension.

There is, therefore, a relationship between didactic language teaching and specific languages: since they linguistically express and represent specific fields of knowledge, it follows that a specific language is needed to transfer this knowledge (Barquero, 2021; Cabré, 1999). This didactic perspective is advocated by several authors: Fente (1988) argues that language teaching for specific purposes is not a separate area of knowledge from the rest of general language teaching, but is only one aspect within the sphere of language didactics; Beaugrande (1989) points out that it is a continuum rather than a division; Aguirre (2000) states that any planning of the teaching-learning process for specialised communication should focus on establishing the conditions necessary for learners to develop the skills, abilities and techniques of communication that need to be applied in a given context, noting that these skills require knowledge of the language, knowledge of the context of use and knowledge of the characteristics and processes of communication, among other aspects.

One of the objectives in the language teaching-learning process is the comprehension and delivery of coherent and well-structured messages, using linguistic and non-linguistic resources. In this sense, in relation to reading, the appropriate use of prosody is of vital importance because, as language is an communication system in which sounds are integrated to convey a message, mastering adequate fluency facilitates expressiveness, which is a fundamental means of understanding and achieving efficient communication (Gutiérrez-Fresneda et al., 2021).

In relation to fluency, two sub-processes of reading are involved: word recognition and comprehension. Reading requires the automation of lower processes, such as word recognition and decoding, which frees up attentional resources for the higher processes of comprehension.

As the reading process becomes more efficient and words become recognised more quickly, more attention can be devoted to information integration processes (Kintsch, 1998) and thus fluency is considered not only an indicator of word recognition skills but also of textual comprehension (Fuchs et al., 2001). It follows that the faster and more accurate word recognition and information processing skills are achieved, the more fluent and comprehensible reading aloud becomes. Factors affecting fluency include not only the speed at which words are read, but also the characteristics of the text being read (Gutiérrez-Fresneda & Díez-Mediavilla, 2017; Hirsch, 2003; Klauda & Guthrie, 2008).

Comprehension involves processes that integrate textual information with prior knowledge. In this sense, comprehension models (Kintsch, 1998) have focused on the complexity of the mental representation that is generated when reading a text and have studied the processes that are used. Kintsch & Kintsch (2005) differentiate three levels of comprehension: decoding, which refers to the perceptual and conceptual processes involved in reading words and constructing ideas; propositions, which are included in a network known as the microstructure of the text and which determine the macrostructure; and the mental representation that the reader constructs of the text. To understand texts, the reader must integrate the information with his or her prior knowledge, which requires him/her to construct a situational model in which the textual basis is included together with emotions, experiences, motivations, personal experiences, etc.

Reading requires the understanding of the ideas in the text, relating them to what readers know, drawing conclusions and using them in accordance with the established purpose of the text: learning, studying, obtaining information, enjoyment, etc. This involves a process that must be taught. The lack of this teaching may be one of the reasons why students obtain such low results in the different tests in which reading comprehension is assessed (Fonseca et al., 2019; Gutiérrez-Fresneda & Del Olmo, 2019). As Olivares et al. (2016) point out, it is possible that the comprehension process improves to the extent that students are helped to understand the different demands of the task and the cognitive and self-regulatory strategies that facilitated the cognitive processing involved in reading are promoted.

Along with fluency, research indicates that prosody is a fundamental facet of learning to read. It has been found that people are born with a predisposition to pick up the rhythmic features of the mother tongue (Cutler & Mehler, 1993), which helps to segment the speech continuum into words, facilitating access to lexical representations. The influence of prosodic processing on reading skills has also been demonstrated (Goswami et al., 2002; Gutiérrez-Fresneda et al., 2021).

Work with learners of different languages (Cai et al., 2017; Xie & Myers, 2017) has shown that prosodic skills are related to segmental phonology, which facilitates access to learning to read. Veenendaal et al. (2015) point out that prosody is related to the decoding process, as a melody is generated during reading that facilitates the perception of word boundaries. Hence the importance that suprasegmental phonology can have in the early stages of learning to read, given its links with word decoding.

In this same line, Calet et al. (2016) point out that there may be two levels of suprasegmental skills; those that contribute to identifying stress and manipulating the stressed syllables of words, which function at the lexical level, and those that focus on perceiving intonation, rhythm and pauses during reading, which work at the metrical level. Relationships have also been found between suprasegmental skills and reading expressivity, intonation and rhythm (Benjamin & Schwanenflugel, 2010; Gutiérrez-Fresneda et al., 2020), revealing that

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readers with greater competence in prosodic skills, such as stress and pausing, achieve better results in tests of comprehension ability (González-Alba & Calet, 2021; Gutiérrez, 2018; Miller & Schwanenflugel, 2008; Whalley & Hansen, 2006). In text comprehension, the differences in prosodic skills required have been found depending on the type of text. It has been shown that prosodic skills show stronger relationships with comprehension in the reading of complex texts involving longer sentences and more complex syntactic structures (Benjamin & Schwanenflugel, 2010). This fact implies that prosodic information could be a factor that aids sentence segmentation, and thus comprehension.

The explanatory models developed to address the study of reading comprehension coincide in considering it a multilevel process, the text needing to be analysed at various levels, from the individual graphemes to the text as a whole (Brizuela et al., 2020; Ripoll & Aguado, 2014). In this respect, three models can be distinguished: bottom-up processing models, top-down processing models and interactive models. Bottom-up models conceive the act of reading as a sequential and hierarchical process that starts with spelling and progresses to other larger units (syllable, word, sentence or text). In this approach, the focus is on the written message and comprehension is conceived as a reconstruction of textual meaning which is limited to the outcome, without attention being paid to the process. In top-down models, the reader's knowledge and experiences take precedence over the textual message.

According to these top-down models, the reader's contributions to the text are more important than what the text explicitly says. On the other hand, interactive models reconcile the contributions of the two previous models by considering that both aspects act in a coordinated and simultaneous way. In other words, they understand the act of reading as an interaction between the information offered by the text and the reader's own knowledge. It is from these interactive models that the concept of transaction emerges, which is characterised by highlighting the fact that the meaning that is understood does not reside solely in the reader or in the text, but comes from the transaction between them. This new concept of transaction implies that the greater the reader's knowledge of the content he/she is reading, the greater his/her ability to draw inferences, make predictions, establish relationships, etc. during reading and to elaborate the overall representation of the text. This new postulate implies that the meaning that different readers elaborate from the same text does not necessarily coincide exactly with that of others, since it will depend on the transactions that occur between reader and text, based on the experiences and knowledge that each of them has. From this perspective, comprehension as a process of constructing meaning requires teaching to focus on the reader's transaction with the text, which leads to the development of readers who interact with the information they are reading, formulating questions, making inferences, issuing personal assessments, evoking critical opinions, and so on (Roldán, 2019; Solé, 2018).

Communicative competence is thus fostered to the extent that the learner becomes an active communicator, understands what others express and can build their textual representation according to the demands of the texts and the different communicative situations, which requires an adequate participation in different situations and the promotion of responsible interpersonal relationships. As such, communicative competence is a fundamental factor in the development of interpersonal relationships in the learning process, where the learner has to be an efficient communicator and show respect for others and for what is being learned. It must be borne in mind that for an idea to be understood, adequate coherence and expressive clarity are required, which implies using the appropriate linguistic means to convey messages and ideas, paying attention to the functional components that support communication.

Reading comprehension is a complex process in which the reader actively participates by bringing into play a series of strategies and knowledge that allow him/her to interact with the meanings of the text, creating a mental model through a process of hypothesis building and proposition integration. If this is done jointly by several

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people talking and pooling their own reading strategies, it can contribute to the achievement of the necessary mechanisms for more effective reading learning.

Most of the instructional programmes implemented in our classrooms are based on giving students a leading role at the individual level, neglecting the value that the exchange of thoughts offers for the development of the skills of reflection and the analysis of one's own learning.

Shared reading is an effective means of improving comprehension, as it allows for greater interaction in reading activities, enabling the process of constructing meaning to be shared.

As has been shown in previous studies (Gutiérrez, 2016), the learning of reading strategies is favored by exposure, prior knowledge, personal contributions and the student's reflection on each of the strategies implemented in the reading process. This facilitates the adoption of the best reading strategies, knowing them and reflecting on how to apply them effectively, when to apply each of them, etc. knowledge that will allow the use of the most appropriate strategies in each specific situation.

Reading with others makes it possible to make explicit the strategies that both teachers and students themselves use to construct the meaning of the text. Therefore, the presentation of comprehension strategies carried out in interactive groups through both individual and collective reflection can be considered an effective measure for the acquisition of strategies for learning to read.

Reading comprehension is known to be a highly complex activity as the reader must be able to develop a mental representation of the information. One strategy that has been shown to be effective in improving reading comprehension is to encourage readers to ask themselves questions about the information contained in texts (National Reading Panel, 2000).

The ability to formulate questions is a very important factor in learning to understand a text (Hoyos & Gallego, 2017) as this process involves not only superficial levels such as lexical and syntactic processing or the construction of the representation of explicit information, but also the deeper levels of comprehension. However, this didactic resource is not usually one of the most widely used classroom practices, learners usually being instructed to answer questions previously elaborated by others (teachers and textbook publishers).

Improving comprehension skills through questioning is a strategy that has been most frequently explored with students at higher levels of the educational system, such as high school (Dreher & Gambrell, 1985, Palincsar & Brown, 1984) and college (Miyake & Norman, 1979; Palincsar & Brown, 1984) and university (Miyake & Norman, 1979). However, there are not many studies that are found in transparent languages such as Spanish in which the learning of reading is promoted in previous school levels in which interaction and reflection with others about reading are favored.

Hence the relevance of this study, which aims to find out whether training in the skills involved in question generation can improve reading comprehension. To this end, we compare the degree of written comprehension in two samples of students aged between 10 and 11 years, one that receives intervention in the development of the ability to formulate questions from expository texts in different languages (Spanish and English) through various cooperative dynamics, and another that practises written comprehension through the traditional approach that focuses on answering pre-established questions about the same texts after reading them, also in cooperative groups.

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2. Method

2.1. Participants

The study involved 116 students aged 10-11 ($M = 10.62$, $SD = 0.43$), of whom 48.7% were boys and 51.3% girls. Contingency analysis (Pearson's chi-square) between experimental condition and sex showed no statistically significant differences ($\chi^2 = 0.53$, p > .05). All participants were from a medium-level socio-cultural context (data retrieved from the completed questionnaires of the diagnostic assessment test carried out in the Community of Valencia, which measures the socio-economic and cultural index [ISEC] of each educational centre). Prior to the study, informed consent was sought from the families and directors of the educational centres involved, together with the agreement of the pupils. The study respected the ethical values required in research, such as the right to information, protection of personal data, guarantees of confidentiality, non-discrimination and and no economic benefit for the participants.

2.2. Design and procedure

The study used a quasi-experimental pretest-posttest repeated measures design with a control group. Before and after implementing the intervention programme, a battery of three assessment instruments was administered to the experimental and control participants in order to measure the dependent variable on which it was hypothesised that the programme would have an effect: reading comprehension. The application of the battery of tests before and after the implementation of the programme was carried out by education professionals (language stimulation teachers).

2.3. Instruments

The following tests were used to collect information on the degree of mastery of the reading process:

- The ACL-5 test (Catalá, Catalá, Molina & Monclús, 2001). This consists of seven texts with 25 items of various textual typologies: narrative, expository and rhetorical. It assesses reading comprehension through the student answering literal, inferential, information reorganisation and critical evaluation questions. Literal comprehension considers the ideas and information that are explicit in the text; inferential comprehension capacity requires the student to simultaneously use the information explicit in the text together with their previous knowledge in order to develop conjectures and hypotheses; the capacity for reorganisation implies that the ideas expressed in the text are analysed, synthesised and organised; critical comprehension entails giving answers that indicate that the student has made an evaluative judgement. In each of the questions posed, the correct option must be chosen from five alternatives. One point is awarded for each correct answer. The reliability of this test measured with the Cronbach's reliability coefficient is 0.81.

- Assessment of reading processes. Two subtests of the PROLEC-R test (Cuetos, Rodríguez, Ruano, & Arribas, 2007) were used for the assessment of reading, namely the tests of grammatical structures and sentence comprehension, which aim to assess semantic processes through the comprehension of sentences of different types: active, passive, object-focused and relative subordinate. The total score in each of these tests is obtained by assigning one point to each correct answer. This test has a Cronbach's reliability coefficient of 0.79.

- Reading Awareness Scale (ESCOLA) (Puente, Jiménez & Alvarado, 2009). This is a questionnaire for the assessment of metacognitive skills related to reading. The items assess reading planning (resources for the search for information, attitude, selection of reading strategies), monitoring (level of adjustment between attention and the effort made; use of

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strategies for the selection of relevant information from the text; level of self-efficacy in the knowledge of reading tools) and evaluation (knowledge of reading performance; verification of the appropriateness of the strategies used; recognition of the results obtained). It consists of 56 items, each of which has three response options which have scores of 0, 1 or 2. The internal consistency of the scale, calculated by Cronbach's alpha, is 0.85.

2.4. Intervention programme

The reading comprehension programme used consisted of a variety of expository texts in different languages (Spanish and English) and was structured in 25 sessions of 50 minutes that aimed to practise the skills necessary to improve the comprehension process. For this purpose, the participants of the experimental condition were given lessons on the elaboration of questions of different typologies (literal, inferential and critical) through a series of guidelines that facilitated the process of analysis and reflection on reading.

The literal questions were worked through a series of guiding questions using what, where, how and when. The aim was to focus attention on certain important details in the text and the meaning of certain expressions. Inferential questions were developed through focusing on the following question words and ideas: why, what if, what title would you give to this paragraph, and what is the reason for, and they were aimed at making inferences and interpretations based on the information in the text.

The critical questions focused on encouraging the formulation of personal opinions on different textual topics. Among the questions used in this sense were: what do you think? how about? and what do they look like?

The teacher guided the work and then left the students in groups to formulate relevant questions based on the different texts. Once the groups had formulated ten questions, they exchanged them with another group, who then answered them, and the class ended with an exchange of questions from each group. The control group, on the other hand, worked with the same texts and in similar sized groups (4-5 students), to answer ten pre-prepared questions about each text that appeared at the end of the texts. Afterwards, a collective correction activity guided by the teacher was carried out.

3. Results

Tables 1, 2 and 3 show the data obtained from the control and experimental groups in the ACL-5, PROLEC-R and ESCOLA tests in the pre-test for each of the reading comprehension typologies and strategies. Similarly, Tables 4, 5 and 6 show the results obtained in these same tests in the post-test. Tables 7 and 8 show the data referring to the level of reading comprehension with respect to student gender.

	Literal	Inferential	Reorganisation	Critical
Control group	.247	.236	.165	.208
Experimental group	.244	.230	.158	.202

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

Table 1. Results for the ACL-5 test obtained by the control and experimental groups in the pretest.

As can be seen in Table 1, there are no significant differences between the groups before starting the intervention programme in terms of reading comprehension at the literal, inferential, information reorganisation and critical appraisal levels.

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	Grammatical structures	Comprehension of sentences
Control group	.348	.368
Experimental group	.350	.365

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

Table 2. Results for the PROLEC-R test obtained by the control and experimental groups in the pretest.

Table 2 shows that there are no significant differences between the groups before starting the intervention programme in reading comprehension at the syntactic level.

	Planning	Monitoring	Evaluation
Control group	.346	.423	.254
Experimental group	.334	.416	.248

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

Table 3. Results for ESCOLA test obtained by the control and experimental groups in the pretest.

As Table 3 shows, there are no significant differences between the groups at the start of the programme with respect to metacognitive abilities related to reading.

	C. Literal	Inferential	Reorganisation	Critical
Control group	.321	.273	.196	.235
Experimental group	.372**	.346***	.273***	.282**

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

Table 4. Post-test ACL-5 results for the control and experimental group.

Table 4 shows that there were differences at the end of the programme with respect to the variables of literal, inferential, reorganising and critical comprehension, with the experimental group performing better in all cases.

	Grammatical structures	Comprehension of sentences
Control group	.379	.389
Experimental group	.432**	.442**

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

Table 5. Post-test results obtained by the control and experimental groups in the PROLEC-R test.

Table 5 shows that there are significant differences between the groups at the sentence level following the intervention programme.

	Planning	Monitoring	Evaluation
Control group	.378	.442	.314
Experimental group	.473***	.512***	.393***

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

Table 6. Post-test results obtained by the control and experimental groups in the ESCOLA test.

As shown in Table 6, differences were observed after the end of the work plan in favour of the group that participated in the intervention programme in the comprehension strategies: planning, monitoring and evaluation.

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	C. Literal	Inferential	Reorganisation	Critical
Boys	.345	.321	.238	.265
Girls	.353	.318	.245	.258

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

Table 7. *Results disaggregated by gender for the post-test ACL-5 test.*

	Grammatical structures	Comprehension of sentences
Boys	.415	.432
Girls	.422	.427

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

Table 8. *Results disaggregated by gender for the post-test PROLEC-R test.*

	Planning	Monitoring	Evaluation
Boys	. 421	. 487	. 378
Girls	. 430	. 479	. 382

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

Table 9. *Results disaggregated by gender for the post-test ESCOLA test.*

In Tables 7, 8 and 9 we can see that in the case of both boys and girls the results are very similar for all the variables studied, which shows that there were no differential effects of the programme that were gender-dependent.

4. Discussion

The aim of this study was to test the effect that an intervention programme aimed at the development of reading comprehension strategies based on the cooperative formulation of questions of students in small groups has on reading comprehensión.

This work has shown that reading comprehension does not arise exclusively from decoding, but requires the development of comprehension strategies.

Taking into account the different levels in which reading comprehension occurs, it can be observed that the experimental group presents a higher level of reading competence than that reached by the control group based on syntactic structures, as happens when the demands of information are greater and more complex cognitive levels are required.

This progress in comprehension ability begins at the literal level and increases towards other types of reading demands, such as making inferences, reorganizing ideas, expressing opinions, making judgments, asking questions, etc.

As for the metacognitive skills of the reading process, the improvement of the students who form part of the experimental group indicate better mastery of the different strategies for learning to read and which contribute to a greater knowledge of the comprehension process. This is evident from the analysis of the different strategies involved in textual comprehension: planning, monitoring and evaluation.

Similarly, the data collected in the work indicate that together with the implemented methodological proposal aimed at generating questions about various types of everyday texts, the interactive reading practices carried out

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cooperatively among several students also constitute a very effective means for improving comprehension, as it allows for an increase in personal contributions around reading practrices, which is in line with the postulates of other authors (Gutiérrez-Fresneda, 2019; Gutiérrez-Fresneda & Verdú-Llorca, 2018). One explanation for this fact may be that the mastery of reading strategies is favoured through the development of communicative skills based on students' prior knowledge, personal contributions and joint reflection on each of the strategies implemented in the reading process, all of which favours decision-making with respect to which reading strategies to apply, how to apply them and when to apply each of them. This in turn impacts on the recognition, selection and use of the most appropriate strategies according to the different reading situations. In terms of gender, no differences were found in the process of reading comprehension, which questions the need to develop didactics that difer according to gender.

5. Conclusion

The results obtained show that instruction in the generation of questions about textual content through interactive groups significantly improves reading competence.

This work coincides with the contribution of Gutiérrez-Braojos & Salmerón (2012), who state that schoolchildren can improve their use of strategies if appropriate learning experiences are implemented. Similarly, the data collected in this paper are in line with the indications of other authors who defend the question generation strategy as a useful resource to improve comprehension skills (De Mier et al., 2015; Solé, 2018).

One explanation for this fact may be because when the reader analyses textual information for the purpose of formulating questions, he/she needs to integrate the content being read by relating information and propositions from various sections of the text, so it is likely that the performance of both processes, the generation of questions, together with the search for answers to the questions generated by peers, is a factor that contributes to a greater depth of comprehension of the text.

In short, the progress made by participants in the intervention programme confirms its effectiveness. Therefore, at a practical level, we suggest the design of training programmes similar to the one presented in this paper which are aimed at the development of reading strategies based on instruction in question-asking skills where both individual and collaborative work are combined.

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References

Alcaraz, E. (2000). *Inglés profesional y académico*. Alianza Editorial.

Aguirre, B. (2000). *Spanish for professional communication. Approach and didactic orientations*. Actas del I Congreso Internacional de español para fines específicos, Amsterdam. 34-43.

Barquero, A. (2021). La pragmática y la enseñanza del ELE en el contexto escolar alemán. *MarcoELE. Revista de Didáctica Español Lengua Extranjera*, 21, 5-18.

Beaugrande, R. (1982). Procesos lingüísticos y cognitivos en la escritura del desarrollo. *Revista Internacional de Lingüística Aplicada, 21*(1), 124-144.

Benjamin, R., & Schwanenflugel, P. (2010). Complejidad del texto y prosodia de lectura oral en lectores jóvenes. *Reading Research Quarterly*, 45, 388-404.

Brizuela, A., Pérez, N., & Rojas, G. (2020). Validación de una prueba de comprensión lectora para estudiantes universitarios. *Revista Educación, 44*(1), 1-14.

Cabré, T. & Gómez de Enterría, J. (2006). *La enseñanza de los lenguajes de especialidad: la simulación global*. Gredos.

Cai, Z., Gilbert, R., Davis, M., Gaskell, L., Adler, S. & Rodd J. (2017). El acento modula el acceso a los significados de las palabras: evidencia de una descripción del modelo del hablante en el reconocimiento de palabras habladas. *Psicología Cognitiva*, 98, 73-101.

Calderón, B. M., & Córdova, D. M. (2020). B-learning en la enseñanza del idioma inglés como segunda lengua: una revisión sistemática de la literatura. Edutec. *Revista Electrónica De Tecnología Educativa*, (73), 105-121.

Calet, N., Flores M., Jiménez-Fernández G. & Defior S. (2016). Habilidades fonológicas suprasegmentales y desarrollo lector en niños de Educación Primaria. *Anales de Psicología, 32*(1), 72-79.

Catalá, G., Catalá, M., Molina, E., & Monclús, R. (2001). *Reading comprehension assessment*. Graó.

Cuetos, F., Rodríguez, B., Ruano, E. & Arribas, D. (2007). *Prolec-R, Batería de evaluación de los procesos lectores, Revisada*. TEA.

Cutler, A., & Mehler J. (1993). El sesgo de la periodicidad. *Revista de Fonética, 21*(1), 103-108.

De Mier, M., Amado, B., & Benítez, M. E. (2015). Dificultades en la comprensión de textos expositivos en niños de primer grado de primaria. *Psykhe: Revista de la Escuela de Psicología, 24*(2), 1-13.

Dreher, M. J. & Gambrell, L. (1985). Enseñar a los niños a utilizar una estrategia de autocuestionamiento para estudiar la prosa expositiva. *Mejora de la lectura*, 22, 2-7.

Fente, R. (1988). Las *fortunas y desgracias de la enseñanza de idiomas para fines específicos*. Actas del V Congreso Nacional de Lingüística Aplicada (AESLA).

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Fonseca, L., Migliardo, G., Simian, M., Olmos, R. & León, J. A. (2019). Estrategias para mejorar la comprensión lectora: impacto de un programa de intervención en español. *Psicología Educativa, 25*, 91-99.

Fuchs, D., Fuchs, L., Thompson, A., Al Otaiba, S., Yen, L., Yang, N., Braun, M. & O'Connor R. (2001) ¿Es importante la lectura en los programas de preparación para la lectura? Un ensayo de campo aleatorio con maestros como implementadores del programa. *Revista de Psicología de la Educación, 93*, 251-267.

González-Alba, B., & Calet, N. (2021). El papel de las habilidades prosódicas en el trastorno del desarrollo del lenguaje. Un estudio de caso. *Revista de Investigación en Logopedia*, *11*(Especial), 63-76

Goswami, U., Thomson, J., Richardson, U., Stainthorp, R, Hughes, D., Rosen, S. & Scott, S. (2002). Amplitude envelope onsets and developmental dyslexia: Una nueva hipótesis. *Actas de la Academia Nacional de Ciencias, 99*(16), 10911-10916.

Gutiérrez, R. (2016). Efectos de la lectura dialógica en la mejora de la comprensión lectora en alumnos de Educación Primaria. *Revista de Psicodidáctica, 21*(2), 303-320.

Gutiérrez, R. (2018). Habilidades favorecedoras del aprendizaje de la lectura en alumnos de 5 y 6 años. *Revista Signos, 51*(96), 45-60.

Gutiérrez-Braojos, C., & Salmerón, H. (2012). Estrategias de comprensión lectora: enseñanza y evaluación en educación primaria. *Revista profesorado, 16*(1), 183- 202.

Gutiérrez-Fresneda, R. (2017). Efectos de la comunicación dialógica y la conciencia fonológica en el aprendizaje inicial de la escritura de palabras en español. *Onomázein*, 37, 170-187.

Gutiérrez-Fresneda, R. (2019). Efecto de los grupos interactivos en el aprendizaje de la lectura a través de la colaboración familiar. *Revista de Psicodidáctica, 24*(2), 138-144.

Gutiérrez-Fresneda, R., De Vicente-Yagüe, M. I., & Alarcón, R. (2020). Desarrollo de la conciencia fonológica en el inicio del proceso de aprendizaje de la lectura. *Revista Signos, 53*(104) 664-681.

Gutiérrez-Fresneda, R. & Del Olmo, M. T. (2019). Mejora de la comprensión lectora mediante la formulación de preguntas tipo test. *Revista Investigaciones sobre Lectura*, *11*, 93-104. doi: 10.37132/isl.v0i11.286

Gutiérrez-Fresneda, R., & Díez-Mediavilla, A. (2017). Efectos de la comunicación dialógica en la mejora de la composición escrita en estudiantes de Primaria. *Teoría de la educación*. *Revista interuniversitaria, 29*(2), 41-59. doi: 10.14201/teoredu2924159

Gutiérrez-Fresneda, R., & Verdú-Llorca, V. (2018). Aprendizaje individual, colaborativo y cooperativo, ¿cómo valoran los alumnos estas metodologías? En R. Roig-Vila (Ed.), *Compromiso académico y social a través de la investigación educativa y la innovación en la educación superior (*pp. 951-957). Octaedro.

Gutiérrez-Fresneda, R., Jiménez-Pérez, E., & De Vicente-Yagüe, I. (2021). Importancia de la conciencia prosódica en el aprendizaje de la lectura en estudiantes de Educación Primaria. *Revista Cultura y Educación, 33*(3), 505-528.

Hirsch, E. D. (2003). La comprensión lectora requiere el conocimiento de las palabras y del mundo. *Estudios Públicos, 27*, 10-29.

Hoyos, A. & Gallego, T. (2017). Desarrollo de habilidades de comprensión lectora en niños de primaria. *Revista Virtual Universidad Católica del Norte*, 51, 23- 45.

Kintsch, W. (1998). *La comprensión: Un paradigma para la cognición*. Cambridge University Press.

Kintsch, W. & Kinstch, E. (2005). Comprensión. En S. G. Paris, & S. A. Stahl (Eds.), *Children's Reading Comprehension and Assessment* (pp. 71-92). Mahwah.

Klauda, S. & Guthrie, J. (2008). Relaciones de tres componentes de la fluidez lectora con la comprensión lectora. *Revista de Psicología Educativa, Asociación Americana de Psicología, 100*(2), 310-321.

Miller, J. & Schwanenflugel, P. (2006). Prosodia de oraciones sintácticas complejas en la lectura oral de niños pequeños. *Journal of Educational Psychology, 98*(4), 839-853

Miyake, N., & Norman, D. (1979). Para hacer una pregunta, uno debe saber lo suficiente como para saber lo que no se sabe. *Revista de Aprendizaje Verbal y Comportamiento Verbal, 18*(3), 357-364.

Panel Nacional de Lectura. (2000). *Enseñar a los niños a leer: Una evaluación basada en la evidencia de la literatura de investigación científica sobre la lectura y sus implicaciones para la instrucción de lectura*. Publicación de los NIH.

Olivares, F., Fidalgo, R. & Torrance, M. (2016). Diferencias en la autoeficacia lectora entre cursos en la escolaridad y en función del género. *Revista de Psicodidáctica, 21*(1), 45-63.

Onieva, J. L., Maqueda, E., Felipe, A., & García, M. A. (2021). Estudio neurocientífico sobre el proceso de lectura en estudiantes de educación primaria con libros de texto en papel y digital. *Investigaciones Sobre Lectura*, (16), 1-31. https://doi.org/10.24310/isl.vi16.13683

Ortiz-Revilla, J., Greca, I. M., & Adúriz-Bravo, A. (2021). Conceptualización de las competencias: Revisión sistemática de su investigación en Educación Primaria. *Profesorado, Revista de Currículum y Formación del Profesorado*, *25*(1), 223-250. https://doi.org/10.30827/profesorado.v25i1.8304

Palincsar, A., & Brown, A. (1984). Enseñanza recíproca de estrategias de comprensión-fomento y seguimiento de la comprensión. *Cognición e Instrucción, 1*(2), 117-175.

Pascual-Gómez, I., & Carril-Martínez, I. (2017). Relación entre comprensión lectora, ortografía y rendimiento: un estudio en Educación Primaria. *Ocnos, 16*(1), 7-17.

Puente, A., Jiménez, V., & Alvarado, J. (2009). *Escala de Conciencia de Lectura (ESCOLA). Evaluación e intervención psicoeducativa de procesos metacognitivos y variables durante la lectura*. Madrid: EOS.

Ripoll, J. C., & Aguado, G. (2014). Mejorar la comprensión lectora en español: un meta-análisis. *Revista de Psicodidáctica, 19*(1), 27-44.

Roldán, L. Un. (2019). Lectura, comprensión y aprendizaje en la escuela secundaria: enfoques y perspectivas. *Psicología USP*, 30, 1-9.

Solé, I. (2018). Learning from texts: questions to foster learning. *Revista Ámbitos de Psicopedagogía y Orientación, 49*, 3-15.

Suárez, M. & Naranjo M. (2013). Enseñanza de lenguajes de especialidad: perspectiva didáctica para el análisis y comprensión de textos especializados. *Terminalia, 8*, 26-36.

Veenendaal, N., Groen M. & Verhoeven L. (2015). Lo que la fluidez de lectura del texto hablado puede revelar sobre la comprensión lectora. *Journal of Research in Reading, 38*(3), 213-225.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

Whalley, K. & Hansen, J. (2006). El papel de la sensibilidad prosódica en el desarrollo de la lectura de los niños. *Revista de Investigación en Lectura, 29*(3), 288-303.

Xie, X. & Myers E. (2017). Aprender un hablante o aprender un acento: La similitud acústica limita la generalización de la adaptación del acento extranjero a nuevos hablantes. *Journal of Memory and Language, 97*, 30-46.