



UNL

Universidad
Nacional
de Loja

Universidad Nacional de Loja

Facultad de la Educación, el Arte y la Comunicación

Carrera de Pedagogía de los Idiomas Nacionales y Extranjeros

Questioning and reading comprehension among tenth-grade students at a public institution in Loja, during the 2022-2023 school year

Cuestionamiento y comprensión lectora en estudiantes de décimo grado en una institución pública de Loja, durante el año académico 2022-2023

Trabajo de Integración Curricular previo a la obtención del título de Licenciado en Pedagogía del Idioma Inglés.

AUTOR:

Pablo Daniel Castillo Ochoa

DIRECTOR:

Lic. Marlon Richard Armijos Rodríguez Mgtr. Sc.

Loja – Ecuador

2023

Certificación

Loja, 9 de agosto de 2023

Lic. Marlon Richard Armijos Ramírez. Mgtr.Sc.

DIRECTOR DEL TRABAJO DE INTEGRACIÓN CURRICULAR

CERTIFICO:

Que he revisado y orientado todo el proceso de elaboración del Trabajo de Integración Curricular denominado: **Questioning and reading comprehension among tenth-grade students at a public institution in Loja, during the 2022-2023 school year**, previo a la obtención del título de **Licenciado en Pedagogía del idioma Inglés**, de la autoría del estudiante: **Pablo Daniel Castillo Ochoa**, con cédula de identidad Nro. **1105097339**, una vez que el trabajo cumple con todos los requisitos exigidos por la Universidad Nacional de Loja, para el efecto, autorizo la presentación del mismo para su respectiva sustentación y defensa.

Lic. Marlon Richard Armijos Ramírez. Mgtr.Sc.

DIRECTOR DEL TRABAJO DE INTEGRACIÓN CURRICULAR

Autoría

Yo **Pablo Daniel Castillo Ochoa**, declaro ser autor del presente Trabajo de Integración Curricular y eximo expresamente a la Universidad Nacional de Loja y a sus representantes jurídicos, de posibles reclamos y acciones legales por el contenido del mismo. Adicionalmente acepto y autorizo a la Universidad Nacional de Loja la publicación del Trabajo de Titulación en el Repositorio Digital Institucional – Biblioteca Virtual.

Firma:



Cédula de Identidad: 1105097339

Fecha: 4 de octubre de 2023

Correo electrónico: pablo.d.castillo@unl.edu.ec

Teléfono: 0983709466

Carta de autorización por parte del autor, para la consulta, reproducción parcial o total, y/o publicación electrónica del texto completo, del Trabajo de Integración Curricular.

Yo **Pablo Daniel Castillo Ochoa**, declaro ser autor del Trabajo de Integración Curricular denominado: **Questioning and Reading comprehension among tenth-grade students at a public institution in Loja, during the 2022-2023 school year**, como requisito para optar el título de **Licenciado en Pedagogía del Idioma Inglés**, autorizo al sistema Bibliotecario de la Universidad Nacional de Loja para que con fines académicos muestre la producción intelectual de la Universidad, a través de la visibilidad de su contenido de la siguiente manera en el Repositorio Institucional.

Los usuarios pueden consultar el contenido de este trabajo en el Repositorio Institucional, en las redes de información del país y del exterior con las cuales tenga convenio la Universidad.

La Universidad Nacional de Loja, no se responsabiliza por el plagio o copia del Trabajo de integración Curricular que realice un tercero.

Para constancia de esta autorización, en la ciudad de Loja, a los cuatro días del mes de octubre de dos mil veintitrés.

Firma:



Autor: Pablo Daniel Castillo Ochoa

Cédula de Ciudadanía: 1105097339

Dirección: Punzara chico debe ir la dirección de tu barrio o ciudadela

Correo electrónico: pablo.d.castillo@unl.edu.ec

Teléfono: 0983709466

DATOS COMPLEMENTARIOS:

Director del Trabajo de Integración Curricular:

Mg. Sc. Marlon Richard Armijos Ramirez

Dedication

I want to dedicate this work to my family, especially to my mother, Tatiana Ochoa, and my father, Manuel Castillo, for the immense gratitude and admiration I have for them. Their unwavering support has been the cornerstone in every step of my career and life. For believing in me and being my greatest source of inspiration. To my dear siblings, also for their constant encouragement. Their presence has been a driving force to keep striving towards my goals. Together, we have faced challenges that have strengthened us as a family. To all of you, my family, I dedicate my achievements and successes, knowing that without your support, none of this would have been possible.

Pablo Daniel Castillo Ochoa

Acknowledgments

I want to express my deepest gratitude to all the individuals who have been essential in my journey towards achieving my dreams. Firstly, I am thankful to God for the life and opportunities. He has bestowed upon me, opening many doors to reach my goals and objectives. To my beloved family, I wholeheartedly appreciate their unwavering moral and emotional support at every step of this journey. They have been my cornerstone, providing me with strength and encouragement to face any challenge. To the Universidad Nacional de Loja, particularly the Carrera de Pedagogía de los Idiomas Nacionales y Extranjeros for the excellent academic training and warm learning environment they have provided. Being a part of this institution has been a great honor that has left me with countless valuable memories. Thanks to my director, whose wise guide and support during the process allowed me to learn invaluable lessons to my professional life and inspired me to embrace a smarter work rather than sheer effort. Lastly, my thanks go to the 27 de Febrero School and its tenth-grade students, I am grateful for their reception and attention during the classes I taught. Their participation and enthusiasm have been an inspiration to me. Each of them has been an essential part of my journey and has contributed significantly to my personal and professional growth.

Pablo Daniel Castillo Ochoa

Index of contents

Cover page	i
Certificación	2
Authorship	3
Autorización letter	4
Dedication	v
Acknowledgements	vi
Index of contents	7
Index of tables	9
Index of figures	9
Index of annexes.....	9
1. Title	10
2. Resúmen	11
2.1 Abstract	12
3. Introduction	4
4. Theoretical Framework	16
4.1 Questioning	16
4.1.1 <i>General conceptualizations of questioning</i> -----	16
4.1.2 <i>Importance of questioning</i> -----	17
4.1.3 <i>Questioning in teaching</i> -----	18
4.1.4 <i>Stages of questioning</i> -----	20
4.1.4.1 Pre-questioning.....	11
4.1.4.2 During-questioning.....	12
4.1.4.3 Post-questioning.....	13
4.2 Reading comprehension	23
4.2.1 <i>General conceptualizations of reading comprehension</i> -----	23
4.2.2 <i>Importance of reading comprehension</i> -----	24
4.2.3 <i>Stages of reading comprehension</i> -----	25
4.2.3.1 Pre-reading.....	16
4.2.3.2 During-reading.....	16
4.2.3.3 Post-reading.....	17
4.2.4 <i>Levels of reading comprehension</i> -----	27

4.2.4.1 Literal comprehension level.....	18
4.2.4.2 Inferential comprehension level.....	19
4.2.4.3 Critical comprehension level.....	19
4.2.5 <i>Components of reading comprehension</i> -----	29
4.2.5.1 Decoding skills.....	20
4.2.5.2 Oral language skills.....	20
4.2.5.3 Fluency.....	20
4.2.5.4 Vocabulary Knowledge.....	20
4.2.5.5 Metacognitive Strategies.....	21
4.2.6 <i>Reading comprehension skills</i> -----	30
4.2.6.1 Predicting.....	21
4.2.6.2 Inferring.....	22
4.2.6.3 Problem Solving.....	23
4.2.7 <i>Reading in teaching and learning process</i> -----	33
4.2.8 <i>Previous studies</i> -----	35
5. Methodology	37
5.1 Setting and Research participants	37
5.2 Procedure.....	37
5.2.1 <i>Method</i> -----	37
5.2.2 <i>Research Design</i> -----	38
5.2.2.1 Identifying a problem.....	29
5.2.2.2 Gathering background information.....	29
5.2.2.3 Designing the study.....	30
5.2.2.4 Collecting data.....	30
5.2.2.5 Analyzing and interpreting data.....	32
5.2.2.6 Implementing and sharing the findings.....	32
5.2.3 <i>Data collection sources and techniques</i> -----	42
5.2.4 <i>Data analysis</i> -----	43
6. Results	45
6.1 Pretest and Posttest results	45
6.2 Comparison of the pretest and posttest results with the Ecuadorian National Grading Scale... ..	47
6.3 Questionnaire results	48
7. Discussion	54

8. Conclusions	56
9. Recommendations	57
10. Bibliography	58
11. Annexes	63

Index of tables:

Table 1. Mean score difference between pretest and posttest in the measurement of reading comprehension indicators.....	36
--	-----------

Index of figures:

Figure 1. Reading comprehension pretest and posttest scores compared to the Ecuadorian National Grading Scale.....	38
---	-----------

Figure 2. Representation of students' perception of questioning for their general comprehension level.....	39
---	-----------

Figure 3. Representation of students' perception of open-ended questions for their creativity and reasoning level.....	40
---	-----------

Figure 4. Representation of students' perception of inferential questions for their analysis and engagement level.....	41
---	-----------

Figure 5. Representation of students' perception of problem-solving questions for their critical thinking level.....	42
---	-----------

Figure 6. Representation of students' perception of the difficulty level of questioning stages.....	43
--	-----------

Index of annexes:

Annex 1. Pre-test and Post-test.....	54
---	-----------

Annex 2. Pre-test and Post-test scoring guide.....	57
---	-----------

Annex 3. Questionnaire.....	60
------------------------------------	-----------

Annex 4. Scoring guide.....	62
------------------------------------	-----------

Annex 5. Field notes.....	63
----------------------------------	-----------

Annex 6. Intervention plan.....	64
--	-----------

Annex 7. Grading Scale According to the Ecuadorian Ministry of Education.....	66
--	-----------

Annex 8. Rubric to evaluate reading comprehension according to its indicators.....	67
---	-----------

Annex 9. Solicitud a la institución para realizar el Proyecto de Integración Curricular.....	68
---	-----------

Annex 10. Declaración de consentimiento informado.....	69
---	-----------

1. Title

Questioning and reading comprehension among tenth-grade students at a public institution in Loja, during the 2022-2023 school year

2. Resumen

La comprensión lectora desempeña un papel clave en las aulas de inglés como lengua extranjera (EFL), junto con las habilidades de escritura, escucha y expresión oral. El objetivo de este proyecto de investigación fue mejorar la comprensión lectora de 24 estudiantes de décimo grado a través del uso de técnicas de cuestionamiento en una institución pública en Ecuador. El estudio también se centró en evaluar la eficacia del cuestionamiento y conocer las percepciones de los estudiantes sobre esta estrategia. Por lo tanto, para recopilar datos exhaustivos, se realizó una investigación-acción utilizando un enfoque de método mixto, que abarca datos cualitativos y cuantitativos. Los datos cuantitativos se obtuvieron a través de instrumentos de pretest y postest, y se utilizaron estadísticas descriptivas para analizar e interpretar los resultados. Por otro lado, mediante una revisión temática, se recopilaron datos cualitativos a través de un cuestionario y registros de notas de campo para obtener información valiosa sobre las percepciones de los estudiantes respecto al cuestionamiento. Los resultados arrojaron evidencia significativa de que el cuestionamiento, en sus diferentes etapas como pre-, durante- y pos-cuestionamiento, influyó positivamente en las habilidades de comprensión lectora de los estudiantes. Mejorando así sus habilidades de comprensión lectora en las etapas de pre-, durante- y pos-lectura, respectivamente. Esto llevó a la conclusión de que la interrogación es una estrategia muy flexible que promueve un mejor entorno de aprendizaje e interacciones en el aula. Como resultado, este estudio aboga firmemente porque los profesores de inglés adopten la interrogación como una herramienta poderosa que fomenta el crecimiento cognitivo de los estudiantes y mejora su rendimiento académico.

Palabras clave: Crecimiento cognitivo, entorno de aprendizaje, percepción de los estudiantes, rendimiento académico

2.1. Abstract

Reading comprehension plays a key role in English as a foreign language (EFL) classroom, alongside writing, listening, and speaking skills. The aim of this research project was to improve the reading comprehension of 24 tenth-grade students through the use of questioning techniques in a public institution in Ecuador. The study also focused on assessing the effectiveness of questioning and finding out students' perceptions on this approach. Thus, to gather comprehensive data, action research was conducted using a mixed method approach, encompassing both qualitative and quantitative data. Quantitative data was obtained through pretest and posttest instruments, and descriptive statistics were used to analyze and interpret the results. On the other hand, by means of thematic review, qualitative data were collected through a questionnaire and field notes recordings to obtain valuable information on students' perceptions regarding questioning. The results yielded significant evidence that questioning; in its different stages such as pre-, during-, and post-questioning; positively influenced students' reading comprehension skills. Improving their reading comprehension skills in the pre-, during-, and post-reading stages respectively. This led to the conclusion that questioning is a very flexible strategy that promotes a better learning environment and interactions in the classroom. As a result, this study strongly advocates that, English teachers adopt questioning as a powerful tool that promotes students' cognitive growth and increases their academic performance.

Key words: Academic performance, cognitive growth, learning environment, students' perceptions.

3. Introduction

With the rapid globalization of the English language, the ability to master listening, speaking, reading, and writing has become increasingly crucial for learners to effectively navigate the interconnected world. Amidst these essential language skills, reading comprehension stands as a cornerstone in the English as a Foreign Language (EFL) classrooms, shaping language proficiency, nurturing critical thinking abilities, and fostering cognitive growth (Sencibaugh & Sencibaugh, 2015). Therefore, the exposure to and comprehension of a diverse array of texts causes students' minds to undergo a transformative process, encompassing memory retention, unwavering concentration, and intricate information processing, ultimately empowering them to communicate confidently and effectively (Guthrie & Klauda, 2019).

However, based on the researcher's observation of tenth-grade students at a public institution in Loja during the 2022-2023 school year, it was evidenced that their proficiency in problem-solving, inference, prediction, and connecting prior knowledge in short literary texts was inadequate. This is supported by the study conducted by Escudero et al. (2019), which highlights that students' reading challenges originate from a lack of reading culture, which can be attributed to a disconnection between the reading materials used in instruction and the limited connection to students' experiences and interests. In light of the identified challenges, the utilization of questioning emerged as a promising approach to tackle the aforementioned issues. Consequently, the researcher was inspired to formulate a crucial research question: "how to improve students' reading comprehension through questioning among tenth-grade students at a public institution in Loja, during the 2022-2023 school year?" This central question led to the formulation of two sub-questions aimed at deepening the study: "What is the effectiveness of questioning on the development of reading comprehension among tenth-grade students at a public institution in Loja, during the 2022-2023 school year?" and "What are the learner's perceptions about questioning in reading comprehension among tenth-grade students at a public institution in Loja, during the 2022-2023 school year?"

The significance of incorporating questioning techniques in instructional practices is well-supported by previous research conducted by Choi and Moeyaert (2019), Harklau (2015), and Shao and Lee (2020). These studies have consistently demonstrated that utilizing various types of thought-provoking questions, such as open-ended, inferential, literal, and critical thinking questions, positively contributes to students' reading comprehension and provides more opportunities for reflection. Furthermore, Li and Gardner (2017), Mokhtari and Shorey (2014), and Ritchie and Hudson (2016) complement this by emphasizing that explicit

instruction in questioning techniques fosters active engagement with texts, and deepens understanding. The interactive nature of questioning between teachers and students has proven to be beneficial for EFL learners, boosting their confidence, motivation, independent thinking, and the cultivation of unique ideas. Moreover, the incorporation of questioning techniques encourages exploration of diverse perspectives, challenging assumptions, and enriching the overall learning experience for students (Chien & Chen, 2017; Gamboa & Alvarado, 2016).

Nevertheless, this research study fills a significant gap in the existing literature as it specifically focuses on tenth-grade students' reading comprehension, a population that has received limited attention in previous research (Choi & Moeyaert, 2019; Harklau, 2015; Shao & Lee, 2020; Li & Gardner, 2017; Mokhtari and Shorey, 2014; Ritchie & Hudson, 2016). Prior studies have predominantly focused on university students, creating a gap in our understanding of how questioning influences reading comprehension during the critical transition phase of thirteen to fifteen-year-old learners. The absence of research in this specific population suggested the need to explore the application of questioning techniques in a different context. Consequently, this study addressed this void by examining the effectiveness of questioning in enhancing reading comprehension among tenth-grade students, providing valuable insights into the strategies that can be applied to support their cognitive and language development during this critical educational stage.

The implementation of questioning as a strategy to improve reading comprehension offers a range of benefits to students, teachers, and schools alike. For students, it fosters critical thinking skills, deepens their understanding of the material, and hones their problem-solving abilities. By encouraging open sharing of thoughts and opinions, it increases motivation and interest in reading, while promoting independence and confidence as learners. Teachers also reap advantages as questioning enables them to provide timely feedback and interventions, assess students' understanding and their own instruction, and tailor teaching approaches to individual needs. Finally, at a broader level, schools are benefited from the implementation of questioning strategies as it contributes to overall academic excellence and student success, creating a positive and intellectually stimulating learning environment.

This study has made significant contributions to the research community in multiple aspects. Firstly, it provided a deeper understanding of the cognitive processes involved in reading and shed light on best practices for language educators. Secondly, it supported the identification of the most effective types of questions and instructional approaches for different learner populations. Lastly, the impact of questioning research extended beyond the academic sphere, influencing educational policy and curriculum development. As a result, evidence-

based instructional methods were developed, tailored to meet the diverse needs of learners and fostering innovative approaches to teaching and learning.

The research project was conducted at a public institution in Loja during the 2022-2023 school year with a duration of 18 hours, involving tenth-grade students aged between thirteen and fifteen years old. The study employed open-ended questions in the pre-questioning stage before reading, inference questions in the during-questioning stage during reading, and problem-solving questions in the post-questioning stage after reading. These carefully chosen questioning strategies aimed to enhance crucial reading comprehension skills, including predicting, inferring, and problem-solving, while fostering a meaningful connection with their prior knowledge. The research was effectively conducted and yielded positive results; however, it also encountered two limitations: a relatively short intervention period and a lack of technological resources. As a result, further research with a more extended timeframe and the integration of technological tools is recommended to explore the full potential of questioning strategies in improving reading comprehension outcomes.

The main objective of this research was to improve students' reading comprehension through the strategic implementation of questioning among tenth-grade students at a public institution in Loja, during the 2022-2023 school year. The study aimed to achieve two specific objectives. Firstly, to describe the effectiveness of questioning in the development of reading comprehension among tenth-grade students at a public institution in Loja. Secondly, to find out students' perceptions of the use of questioning to improve their reading comprehension among tenth-grade students at a public institution in Loja.

4. Theoretical Framework

A key component in classroom learning, is engaging students with a topic matter; however, this can be complicated for several English teachers. Student engagement serves as a catalyst for enhancing motivation, a critical component that significantly influences the level of attention and comprehension students develop towards the subject matter. Therefore, to maintain attention, active participation is essential to keep the students curious about a particular subject. To prompt in the form of eager learning, there are several ways, one of which is questioning. In the words of Albert Einstein: “the most important thing is not to stop asking questions.” Questioning allows individuals to go beyond of what has been already known. In the context of tenth-grade students’ reading comprehension, the role of questioning as a strategy to enhance their comprehension outcomes has garnered significant attention. Several studies have contributed valuable insights in this area. Hiebert and Pearson (2018) examined the impact of teacher-led questioning on students’ reading comprehension. They found that skillful and strategic questioning by teachers during reading instruction positively influenced students’ comprehension abilities. Effective questioning techniques helped students engage with the text, make connections, and develop critical thinking skills. This underscores the importance of encouraging students to generate thought-provoking questions, such as divergent, inferential, and problem-solving questions, which promote deeper analysis and synthesis of information. The current theoretical development of the impact of questioning on reading comprehension has introduced key concepts that are necessary for understanding the purpose of this research. Questioning, which is crucial for both pedagogical and cognitive processes, is broken down into three different types: pre-questioning, during-questioning, and post-questioning. The second variable relates to reading comprehension. And the development of students’ skills in predicting, inferring, and problem-solving. The objective of this research project is to explore the relationship between questioning and reading comprehension in EFL classrooms, providing insights that will help educators enhance their instruction and support students’ learning and development.

4.1 Questioning

4.1.1 General conceptualizations of questioning

Over the years, researchers have provided valuable insights through various definitions of questioning, uncovering its profound impact on students’ cognitive development. Castine and Shimizu (2017) conducted a study where they explored the impact of questioning strategies on reading comprehension among second language learners. In this study, they defined

questioning as a “technique” employed by teachers to stimulate students’ thinking and deepen their understanding of the text.

Likewise, in the Gamboa and Alvarado (2016) study, questioning was defined as a “cognitive monitoring process” in which students reflect on their reading comprehension and use questions to regulate and evaluate their understanding. The study highlights the importance of metacognitive questioning in improving comprehension outcomes and developing students’ awareness of their thinking processes.

Additionally, Kendeou et al. (2014) have the perspective on questioning as a “vital component” in the process of inference generation across different media formats. Chien and Chen's (2017) study provides valuable insights into the different question types and their effects on reading comprehension. By defining questioning strategy as a “deliberate instructional practice” they stress the motives of using questions to guide students’ thinking processes and promote deeper understanding. Moreover, questioning strategies were seen as tools as in Redfield and Rousseau (1981) study, where they emphasized that questioning is an “essential tool” for promoting students’ active participation and learning.

In summary, whether seen as a technique, a deliberate instructional practice, a cognitive monitoring process, or a vital component for inference generation, questioning serves as a catalyst for comprehension, critical thinking, and metacognitive awareness.

4.1.2 Importance of questioning

In a classroom setting, questioning functions as an integral part of the learning process, being often used as a method to enhance students’ cognitive development. Kendeou et al. (2014) emphasized that questioning facilitates the generation of inferences and deepens reading comprehension. In this way, students learn how to identify key information, establish connections, apply strategies to decipher complex texts and make well-informed judgments. This enhances their ability to tackle challenging reading tasks, effectively address comprehension obstacles, and develop effective problem-solving strategies that can be applied in various academic and real-life scenarios (Chien & Chen, 2017; Kendeou et al., 2014).

In addition, by engaging in an inquiry and self-reflection process, students can refine their thoughts, generate innovative ideas and connect with their prior knowledge. “Prior knowledge is the strongest predictor of reading comprehension even after controlling for strategy use, inferences, vocabulary, and word reading” (Cromley, Snyder-Hogan, & Luciw-Dubas, 2010, p. 694. as cited in Cano et al., 2014, p. 250). Thus, this predictor not only improves their understanding of the text but also fosters their intellectual growth, self-

expression, and ability to contribute to broader debates and knowledge exchange (Castine & Shimizu, 2017; Kendeou et al., 2014).

Sofyan (2016) highlights that questioning enriches students' ability to generate their own questions, leading to a better understanding of content and the development of confidence to express their thoughts and opinions. This empowers students to become autonomous learners who actively seek knowledge, critically evaluate information, and construct their understanding (Gamboa & Alvarado, 2016). Similarly, Bülent Döş et al. (2016) stated that questioning, when used effectively, encourages students to think independently and develop their own questions.

In light of this, Castine and Shimizu (2017) compared two different approaches to questioning in a classroom, including teacher-generated and student-generated questions. Questions crafted by the teacher are carefully designed to guide students' understanding. As well as, students are prompted to analyze, evaluate, and synthesize information, fostering higher-order thinking skills (Chien & Chen, 2017). Students are prompted to delve beyond surface-level understanding and instead explore connections, consider different perspectives, and develop a deeper grasp of the subject matter. Furthermore, teacher-generated questions contribute to a cohesive and well-structured learning experience. By crafting a series of progressive questions, students are guided through a logical progression of concepts, ensuring a comprehensive exploration of the topic. This sequencing of questions aids in building a solid foundation of knowledge and facilitating students' ability to connect ideas, leading to a more coherent and holistic understanding.

The interactive nature of questioning benefits learners to go beyond comprehension by encouraging active participation, independent thinking, and the development of unique ideas. Questioning empowers learners to explore diverse perspectives and challenge assumptions, thus becoming more confident and engaged, leading to a more enriched and personalized learning experience (Chien & Chen, 2017; Gamboa & Alvarado, 2016).

4.1.3 Questioning in teaching

It is essential to understand that learning is a social construct that arises from meaningful social interactions (Harvey & Light, 2015). Therefore, an effective approach to promote interaction in the classroom is through the skillful use of questioning techniques. Such techniques provide teachers with a powerful tool to engage students, stimulate their cognitive abilities, and be aware of what students know and do not know (Sujariati et al., 2016, p. 110). In this sense, to create a truly interactive classroom environment, various forms of interaction must be fostered, such as teacher-student interaction, student-student interaction, group

debates, and active class participation (Al-Zahrani & Al-Bargi, 2017). As individuals in the educational environment collaboratively construct knowledge, they engage in a process that promotes the democratization of knowledge and empowers them to take agency over their own learning. This approach places special emphasis on fostering equal participation among all participants (Kiss & Wang, 2017).

Kiss and Wang (2017) discovered that teachers tend to dominate the question formulation process, accounting for approximately 93% of the questions asked in the classroom, leaving only 7% for student-initiated inquiries. This imbalanced distribution of questions implies a lack of genuine student-centered interaction within the educational environment. By shifting the focus from teacher-dominated questions to a more balanced and student-centered approach, educators can create an inclusive and dynamic classroom environment that encourages active participation, critical thinking, and the development of clear ideas (Al-Zahrani & Al-Bargi, 2017). Hence, educators must recognize the significant impact these interactions have on the overall teaching and learning process. Increased interaction fosters better communication, which, in turn, enhances students' cognitive and social skills, enabling them to become active agents in their own education.

It is essential to highlight the important role of the teacher in question formulation and addressing students during the process. By effectively employing questioning techniques, teachers can create opportunities for meaningful dialogue and engagement among students. Strother (1989, as cited in Bülent Döş et al., 2016) emphasizes that purposeless questions can lead to confusion and chaos, hindering the learning process. Therefore, well-designed questions can motivate students to act and apply their knowledge in practical ways. By linking questions to real-life scenarios or problem-solving activities, teachers can encourage students to actively engage with the subject matter, fostering a sense of relevance and promoting the transfer of learning to real-world situations.

In view of this, Shanmugavelu et al. (2020) listed several key factors that teachers should consider to maximize the effectiveness of questioning techniques through the interaction:

- Attention: ensuring that questions are directed to the whole class before selecting a student to respond, teachers can create a focused and engaged learning environment. Avoiding immediate mention of a student's name promotes active listening and participation from all students, rather than just those who raise their hands.

- Voice: teachers should employ clear and audible voices when formulating questions. By projecting their voice and using a tone that conveys enthusiasm and anticipation, teachers can capture students' attention and create an atmosphere that fosters active participation and response.
- Pause: pausing after posing a question gives students time to process and reflect on it. This pause also allows teachers to observe verbal cues indicating that students are ready to respond. Balancing the duration of the pause is essential to maintain student' interest and engagement.
- Question content: the content of questions should be carefully planned to align with learning objectives and students' abilities. Teachers must consider the complexity and relevance of the questions, ensuring that they provide an appropriate challenge for students. Adapting questions to each student's strengths and weaknesses can contribute to differentiated instruction and foster a sense of success for all.

In addition to these factors, it is relevant to consider keeping students engaged in the activity and continuously fostering their curiosity for reading. Ukrainetz (2015) states that “the most important thing is that students get into the habit of asking themselves, ‘What did that part say?’ and responding with ‘I’m not sure what it said. I’d better re-read that part’.” The author also adds that teachers should relate the text to students' prior knowledge to help them formulate their own questions. Therefore, the role of the teacher is crucial in guiding students through the process of question formulation to achieve specific objectives and goals. The teacher should also guide students to focus on the most important aspects of a text and encourage them to strategically read challenging texts, seeking critical elements and key sections (Ukrainetz, 2015).

4.1.4 Stages of questioning

Developing a variety of questions at different levels and types is essential for maximizing the benefits of mental operations in reading comprehension (Amalia & Devanti, 2016). Questions can direct and focus students' reading comprehension serving as a source of ideas. The skillful preparation of questions empowers students to internalize each inquiry, igniting their curiosity and driving them to actively seek the required answers. Teachers can effectively guide and enhance students' reading comprehension processes by utilizing a comprehensive approach that encompasses pre-questioning, during-questioning, and post-questioning stages,

4.1.4.1 Pre-questioning. In order to assess student's preparation before reading, the teacher can propose procedures that will allow students to improve their reading comprehension (Thohidah et al., 2021). According to Brown (2001, as cited in Oliver, 2013), pre-questioning implies asking questions before students begin to read the text in order to pique their interest and motivation. In addition, learners' prior knowledge is activated to obtain a general understanding of the text. However, it may be vague or limited due to the fact they may have picked up misleading information from the television, the internet, conversations, or outdated lessons. Even if it is only one word, it may contribute to the construction of a meaning that increases the sensitivity to the knowledge that is to be acquired.

Divergent questions, also known as open-ended questions, are essential for developing true thinking and promoting detailed comprehension by activating prior knowledge. According to Alvesson and Sandberg (2011), these types of questions require students to fill in gaps, make reasonable assumptions, choose a path, and learn to deal with uncertainty, which enhances their ability to use pure reasoning and critical thinking. By encouraging students to make predictions about the text, they can explore multiple possible answers in different directions, filling in gaps and putting the pieces together to form a coherent sequence. It's important to note that predictions do not need to be exact. The point of divergence is to provide students with the freedom to explore all possibilities, enhancing their creativity and problem-solving skills.

4.1.4.2 During-questioning. Once the pre-questioning stage is completed, prior knowledge is reinforced through connections to the material being worked on. Anderson and Pearson (1984) proposed that comprehension goes hand in hand with prior knowledge. The connection between the two expands the possibilities for learners to make inferences while reading, identify the most important information presented in the text, and create a plan for learners to comprehend the information. Therefore, when students are clear about what they are looking for in a reading and what they will do next with the information, they will be able to assess their learning and thus their success in reading (Amalia & Devanti, 2016). Questions through a reading can help the teacher monitor students' comprehension on each set objective. It can also motivate students by helping them master all the material utilized in classes (Sujariati et al., 2016).

To develop the during-reading stage effectively, it is essential to formulate questions that help to clarify and understand what the text is conveying to the readers. Inference questions are those that involve reading between the lines. Students must make guesses because the answer is not explicitly stated. Students can pull out clues from the text and from their own experiences to draw to a logical conclusion (Donnchaidh, 2022). The questions delivered that

focus on the learner's attention are the most salient elements of the lesson which can lead to better comprehension.

The teachers' role in a good preparation of questions is essential before applying them in class. For example, bombarding students with several questions at the same time can be overwhelming during the reading as it can lead to great confusion and demotivation. On the other hand, asking one question at a time during a reading can clarify doubts that arise progressively. The fluid progression of asking questions allows students to search for the answer thoroughly and respond with more clarity and concreteness. Therefore, inference questions are necessary for the students to be able to analyze and infer or decode the information the author implies in the text.

4.1.4.3 Post-questioning. The way the teacher addresses the pre-questioning and during-questioning phase will affect the student's comprehension of texts. The final stage, post-questioning, focuses on the organization of the information and knowledge obtained. This information will evaluate the understanding and check the effectiveness of the teaching-learning process during the class. In the work of Ukrainetz (2015), she manifests that the post-questioning stage consists of recalling the primary ideas of the text, checking what has been learned and rereading to fill in gaps in comprehension.

In this stage, the teacher asks students questions as a diagnostic tool to review students' comprehension and the quality of learning. Asking students questions at the end of the class can help them arrange information and draw conclusions (Sujariati et al., 2016). "In formulating questions, teacher activates student's schema, thereby connecting the new information from the text with the pre-existing knowledge" (Carrell & Eisterhold, 1983, as cited in Han & Choi, 2018). In this view, prior knowledge is also presented as it is necessary to connect with the necessary information to find the solution to a problem or situation given in the text.

In the post-questioning phase, teachers must use questions that gradually deepen the learning and confirm the students' complete understanding of the text, as well as the effectiveness of the teacher's instruction. Problem-solving questions present a situation or problem to students and require them to develop a solution (Birt, 2022). These types of questions are valuable in testing how supportive teachers are in their questioning and how meaningful their instruction is for students in class. By using problem-solving questions, teachers can consolidate knowledge, promote thinking, and develop students' problem-solving skills (Hu, 2015). Drawing on their experiences, students can find possible solutions, which can increase their memory, critical thinking, and creativity. When students are able to think

critically, it allows them to expand their creativity by seeking diverse solutions to the same or several problems (Birt, 2022).

In addition to their value in job interviews, problem-solving questions are commonly used in educational environments as they help students develop better abilities to analyze, interpret, connect, and use information for a specific purpose. Hence, involving students in generating questions after reading serves a specific function, necessitating them to actively engage and take initiative in the process of comprehending the text (Collins et al., 1990; King, 1994; Palincsar & Brown, 1984; Singer, 1978, as cited in Han & Choi, 2018).

4.2 Reading comprehension

4.2.1 *General conceptualizations of reading comprehension*

Reading comprehension is a crucial language skill in the realm of language learning that holds immense significance. Various definitions have been proposed to elucidate the concept of “reading comprehension.” According to Oakhill et al. (2015), reading comprehension can be described as a “complex task” due to its multifaceted nature and the involvement of various cognitive abilities and skills. It goes beyond simple the recognition of words and involves higher-level cognitive processes such as inference-making, critical analysis, and the integration of prior knowledge with new information. Similarly, Sencibaugh and Sencibaugh (2015) describe reading comprehension as a “complex cognitive process” that intricately involves the dynamic interplay between the reader, the text, and the reading task. This complexity requires the utilization of cognitive abilities and motivation, as it encompasses a reciprocal interaction among the textual content, the contextual factors surrounding the reading experience, and the reader themselves. As well as, in the Cain and Oakhill (2015) study, reading comprehension development is viewed as a “process” that involves the integration of inference and working memory skills. These processes act as essential building blocks in the construction of meaning from text.

Additionally, Nasution et al. (2018) posit that reading comprehension is a “multifaceted and active process” in which readers endeavor not only to decode the words on the page but also to critically evaluate the information, make connections, and draw upon their prior knowledge and experiences. As well as, Veeravagu et al. (2010) define reading comprehension as a “thinking process” in which readers select relevant information from written materials, discern the intended meanings of the author, connect the information to prior knowledge, and assess its appropriateness and value in meeting their own objectives. These definitions highlight the active cognitive engagement required in reading comprehension, emphasizing the

dynamic nature of the process and the mental steps involved in understanding and interpreting written texts.

In summary, reading comprehension encompasses a range of cognitive processes orchestrated by the brain to grasp the essence of a text. It requires the integration of inference, working memory, background knowledge, and active engagement with the text. Understanding the multifaceted nature of reading comprehension is vital for educators and researchers to develop effective strategies and interventions that promote and enhance this essential language skill.

4.2.2 Importance of reading comprehension

Reading comprehension has emerged as a central focus in education, serving as the cornerstone for effective learning and cognitive development. The research conducted by Sencibaugh and Sencibaugh (2015) supports its significant contribution in the educational process, with implications for language proficiency, the cultivation of critical thinking skills, and the cognitive development of students. When students engage with complex texts and actively interpret the content, as highlighted by Smith and Wilhelm (2018), they cultivate the ability to analyze, evaluate, and synthesize information effectively.

An essential aspect of reading comprehension is the activation of prior knowledge (Schaefer, 2016). Which serves as a foundation for understanding new information and aids in comprehension, as emphasized by Pearson (2015). By connecting their existing knowledge and experiences to the text, students can make predictions, ask relevant questions, and engage in reflective thinking. This facilitates deeper comprehension and enables students to establish personal connections with the content, leading to a more meaningful and engaging learning experience.

Furthermore, reading comprehension greatly contributes to the students' cognitive development. Guthrie and Klauda (2019) suggest that purposeful reading activities stimulate cognitive processes such as memory retention, attention span, and information processing. As students encounter and comprehend various texts, they expand their vocabulary, improve their language skills, and enhance their cognitive abilities. Through exposure to different writing styles, genres, and perspectives, students develop higher-order thinking skills and become more proficient communicators.

Additionally, reading comprehension promotes the development of metacognitive strategies, enabling students to become self-regulated learners (Martínez, 2021). Pressley and Afflerbach (2020) describe metacognition as the awareness and regulation of one's own thinking processes. When students actively engage in reading comprehension activities, they

learn to monitor their understanding, identify areas of confusion, and employ strategies such as questioning, summarizing, and clarifying. These metacognitive skills enhance students' ability to independently comprehend texts, leading to greater autonomy in their learning journey and increased chances of academic success.

In summary, all these cognitive processes are fundamental for academic success and lifelong learning. According to Meniado (2016), it is emphasized that nurturing reading comprehension is a vital skill that holds significant importance for a child's growth and education both at home and in school. This proficiency is deemed essential for success not only within the educational realm but also in broader life contexts. Therefore, the development of reading comprehension skills supports success in higher education and future careers, where the ability to comprehend and analyze complex texts is essential.

4.2.3 Stages of reading comprehension

For students to better understand texts, teacher can address three strategies. These strategies include: pre-reading, during-reading and post-reading activities (Beers, 2003, as cited in Jafari & Aylar, 2016). By understanding these stages, educators can effectively support students in developing their reading skills and enhancing their comprehension abilities.

4.2.3.1 Pre-reading stage. In the pre-reading stage, readers not only engage in previewing the text but also employ various strategies to activate their prior knowledge, which serves as a foundation for successful comprehension. By activating relevant background knowledge, readers can make meaningful connections between what they already know and the new information presented in the text (Aziz et al., 2017). This process of activating prior knowledge helps readers establish a purpose for reading based on the class objective or personal interest. In this way, readers are more motivated and engaged, leading to enhanced comprehension and retention of information (Berninger et al., 2015).

During the pre-reading stage, readers may employ techniques such as brainstorming, discussing related topics, or conducting a quick review of previous material to activate their existing knowledge. By doing so, they are allowed to make predictions about the content and engage in a more focused and purposeful reading experience. Furthermore, this enables readers to approach the text with a clearer understanding of its relevance and significance. It helps them identify gaps in their understanding, anticipate key concepts, and formulate questions that guide their reading process (Aziz et al., 2017).

For instance, in the context of a reading objective centered around predicting the topic of a text, the purpose of the reading process shifts towards specific tasks. These tasks may involve identifying headings or subheadings, describing the cover image, or formulating and

answering pertinent questions to generate a prediction. The purpose of prediction, in this case, emphasizes obtaining a general idea that enables students to grasp the potential context in which the activity will unfold, rather than expecting students to predict with absolute precision what will happen next.

4.2.3.2 During-reading stage. The during-reading stage encompasses the active process of reading and comprehending the text. According to Ukrainetz (2015), activities conducted while reading involve sustaining the reading objective, recognizing essential details, rephrasing concepts, combining novel information with familiar concepts, and staying attentive to potential gaps in comprehension. It involves strategies and techniques employed while reading to monitor understanding, make inferences, and construct meaning (Ukrainetz, 2015).

According to Perfetti and Stafura (2014), readers engage in word-level processing, sentence-level processing, and text-level integration during this stage. At the word level, readers decode and understand individual words, while at the sentence level, they integrate meaning across multiple words to comprehend sentence structures. Finally, at the text-level, readers engage in the integration of information across sentences and paragraphs to form a coherent understanding of the text. In addition to word, sentence, and text-level processes, vocabulary holds significant importance in inference generation during reading. Yuill and Oakhill (2016) emphasize the significance of vocabulary knowledge in children's ability to generate accurate inferences. As readers encounter unfamiliar words, they employ strategies such as context clues, word analysis, and prior knowledge to infer the meaning of unknown words. Effective vocabulary instruction and development are thus crucial to support students in making meaningful connections and inferences while reading.

In the same vein, Pujiono (2012, as cited in Riswanto, 2022) argues that in the reading process, students experience a thought process to understand the author's ideas in a broad sense. Thus, when a reader is asked to draw inferences about a text, it should be understood that reading comprehension goes beyond the memorization of words or sentences. Furthermore, it can be argued that being able to discuss the development of the text, compare ideas, connect to knowledge already acquired, and make sense of the message (not just the message) is the meaning of "comprehension."

4.2.3.3 Post-reading stage. The post-reading stage involves activities and processes that occur after reading to solidify comprehension, reflect on the text, and extend learning (Ukrainetz, 2015). Kendeou and O'Brien (2014) highlight that this stage encompasses processes such as summarizing, evaluating, synthesizing information, and making connections to prior knowledge. Readers engage in reflecting on the main ideas, identifying key details, and

extracting relevant information from the text. They may also engage in discussions, writing responses, or completing activities that require them to apply and extend their understanding of the text. This stage promotes deeper understanding, critical thinking, and the integration of new knowledge with existing knowledge. Moreover, in a post-reading activity, students' reading comprehension as well as the effectiveness of the teacher's teaching process is tested (Han & Choi, 2018).

Therefore, understanding the stages of reading comprehension is vital for effective instruction and support in developing students' reading skills. By recognizing and addressing the specific demands of each stage, educators can guide students toward becoming proficient readers with strong comprehension skills.

4.2.4 Levels of reading comprehension

Having known some of the definitions of reading comprehension and a general context of the importance of its development in students. It is also relevant to consider that a reader can comprehend a text at different levels. Deep comprehension is developed when all levels are considered (Department of Education, 2021). Kent State University (n.d.) states that "leveled reading helps readers go beyond the surface of a text gradually;" Leveled reading involves the comprehension, interpretation, and application of challenging texts by engaging with their literal, interpretive, and practical dimensions.

As a complement of the stated, DaCosta and Gutierrez (2020) provide three reading comprehension levels that students acquire as they deepen their reading. The three levels include: literal comprehension, inferential comprehension and critical comprehension level.

4.2.4.1 Literal comprehension level. Literal comprehension is the simplest form of comprehension. "It is often referred to as 'on the page' or 'right there' comprehension." (Department of Education, 2021). The literal level is simply a matter of knowing what is written in the text and what is actually happening in the story. The focus is on reading the passages, listening to the words or observing the pictures (DaCosta & Gutierrez, 2020). Thoughtful guidance from the teachers will help students identify important and essential information which provides the foundation for advanced comprehension. At the literal level, readers extract explicit information directly stated in the text. It involves comprehension of the surface-level meaning, including facts, details, and events.

According to Pressley and Allington (2014), developing literal comprehension skills is crucial as it forms the foundation for higher-level comprehension. It enables readers to grasp the basic information presented in the text and facilitates subsequent inferential and critical thinking processes. It is important to consider that if the material is not understood at this level,

it will not be possible to advance to the next level. Thus, with the sequence traced, it can be understood that the literal level is the first where the students can start to understand the true meaning of comprehension.

4.2.4.2 Inferential comprehension level. The inferential level of reading comprehension involves drawing conclusions, making inferences, and connecting implicit information in the text. According to DaCosta and Gutierrez (2020), attention shifts to reading between the lines to examining what is implied by the material being studied. They also mention that students combine information to draw conclusions about the author’s intent and message. Thus, it requires readers to go beyond the literal meaning and use their background knowledge, context clues, and textual evidence to make sense of the text. Moss and Newton (2019) emphasize the importance of teaching inferential comprehension strategies, such as making predictions, drawing conclusions, and identifying cause-and-effect relationships. These strategies enable readers to delve deeper into the text, make connections, and develop a deeper understanding.

Inferential comprehension requires the reader to retrieve prior knowledge about a topic and identify the relevant textual indices (words, images, sounds) to draw inferences (Department of Education, 2021). The association of words, phrases or sentences with objects, facts or actors that are stored in the brain is the key to be able to draw inferences. The reflection process takes time to put all the ideas in sequence so that what is going to be mentioned has coherence. In this way students learn to form critical thinking that allows them to move to the next level.

4.2.4.3 Critical comprehension level. In this phase, understanding at the literal and inferential level is combined, reorganized and restructured. The study of Department of Education of Victoria (2021) described critical comprehension as going “beyond the text” and includes understanding the “big picture”. It involves the ability to analyze, evaluate, and synthesize information from the text and requires readers to engage in higher-order thinking skills. Duke and Pearson (2019) stress the importance of teaching students to think critically about the text by questioning the author’s purpose, evaluating the credibility of information, and forming well-reasoned opinions. This level of comprehension fosters independent thinking, promotes active engagement with the text, and enables readers to develop a more nuanced understanding of the content (DaCosta & Gutierrez, 2020).

In support of the critical level, Kent State University (n.d.) provides a list of skills that students acquire as they expand their understanding at this level:

- Formulate broad statements

- Draw parallels
- Evaluate
- Offer recommendations and advice
- Reach determinations
- Generate alternative conclusions.

The acquisition of problem-solving skills can also be added, as the critical thinking process allows students to deduce clues, put the pieces together and find the key to unlock the door to solutions.

4.2.5 Components of reading comprehension

Reading comprehension is a complex process influenced by several components: decoding and word recognition, oral language skills, fluency, vocabulary knowledge and metacognitive strategies are essential in effective comprehension (Cutting & Scarborough, 2016; Kendou et al., 2017; Pugh et al., 2019; Kim, 2017; Lervåg, et al., 2017).

4.2.5.1 Decoding skills. Decoding belongs to the skill of reading individual words with precision and fluency (Oakhill et al., 2015). Research by Cutting and Scarborough (2016) highlights the importance of decoding skills in predicting reading comprehension. Proficient decoding allows readers to quickly recognize and process words, enabling them to allocate more cognitive resources to higher-order comprehension processes. Effective decoding skills are crucial for developing automaticity and facilitating comprehension.

4.2.5.2 Oral language skills. Strong oral language skills have been consistently linked to reading comprehension (Kendou et al., 2017). Language proficiency, including vocabulary knowledge, syntax, and semantic understanding, provides a foundation for comprehension. Proficient oral language skills enable readers to make connections between words, understand sentence structures, and grasp the meaning of the text. Lervåg, et al., (2017) Highlight the bidirectional connection between verbal communication abilities and understanding written text, suggesting a mutual influence and support.

4.2.5.3 Fluency. Fluency pertains to the capacity to read written material with accuracy, swiftness, and suitable expression. Research by Kim (2017) highlights the relationship between fluency and comprehension. Fluent reading facilitates the allocation of cognitive resources to higher-level comprehension processes rather than word recognition. When reading becomes automatic and effortless, readers can focus on understanding the meaning conveyed by the text.

4.2.5.4 Vocabulary Knowledge. A robust vocabulary is essential for comprehending written text. A study by Lervåg, et al., (2017) emphasizes the importance of vocabulary

knowledge in supporting reading comprehension. A rich and diverse vocabulary enables readers to understand the meanings of words encountered in the text, make connections between words, and infer the meaning of unfamiliar words based on context. Vocabulary knowledge enhances both word-level and higher-level comprehension.

4.2.5.5 Metacognitive Strategies. Metacognitive strategies involve the awareness and regulation of one's own thinking processes during reading. Metacognition allows readers to monitor their comprehension, identify areas of confusion, and employ strategies such as questioning, summarizing, and clarifying (Pugh et al., 2019). Effective readers engage in self-regulation and actively monitor their understanding, making adjustments and employing strategies when comprehension breaks down (Martínez, 2021).

The interconnection of the components of reading comprehension provides valuable insights into the complexities of the reading process. Decoding skills, oral language proficiency, fluency, vocabulary knowledge, and metacognitive strategies all influence and support each other in a reciprocal manner, facilitating students' reading comprehension.

4.2.6 Reading comprehension skills

Nurturing reading comprehension in students is not a simple linear progression, but rather a multifaceted collection of abilities encompassing activities before, during, and after reading (Thohidah et al., 2021). The present study is focused on developing the student's potential in comprehension skills such as predicting, inferring and problem solving, which are related to the pre-reading, during-reading and post-reading activities respectively.

4.2.6.1 Predicting. Prediction is the ability to guess what may come without having performed the activity. When students engage in prediction, they use their prior knowledge to envision the events that will unfold in the text. Predictions encourage students to actively think about the future and critically ask themselves questions. Furthermore, it enables students to gain a deeper comprehension of the narrative, establish links to their prior reading, and engage in active interaction with the textual content (Reading Strategies & Misconceptions, n.d).

In a study conducted by Lowder et al. (2018), they elaborate the process of prediction that the brain uses contextual knowledge to activate features of a stimulus or upcoming event before perceiving it, leading to an easier processing if the perception coincides with the prediction or error-driven learning if the two do not match. This assertion finds backing in the research by Nasution et al. (2018), who provided a compilation of activities that readers undertake to grasp a text. Their findings include the following steps that students typically take before engaging in reading:

- Utilize their existing knowledge to contemplate the subject matter.

- Anticipate the potential significance of the text.
- Examine the text through techniques like skimming and scanning to gather an initial understanding of its overall meaning.

Students can conjecture what a text will be about only by making a preview of the author's name of the text, the cover page or the headings in the pages. Learners have the ability to employ details derived from the text, including titles, headings, images, and diagrams, to speculate on the potential developments within the narrative (Bailey, 2015). Gilakjani and Sabouri (2016) assert that the title of the text can unlock memories of similar texts that have been read before, allowing readers to guess the content of the new text. Hence, the title provides clues to predict the content of the reading, as Oakhill et al., (2015) assert:

[...] if you had seen the title before the text, it would have made the text substantially more comprehensible. The point is that a framework for the construction of an appropriate mental representation makes the text much easier to understand, to reflect about, and to remember.

When a reading has no context (a title, cover page or an image) other than what the printed words say, it can be difficult to understand the purpose or message of what has been read. That is why teachers should look for the best ways to conduct students in this process. For example, by showing students images or words related to the text, can get students to guess what the topic could be about. Also asking questions about related topics can give students the opportunity to predict what they will study in the class. In this way, students find that when they use prediction, they are more engaged with the text development, discovering that they relate their previous knowledge to the new information they are learning (Gilakjani & Sabouri, 2016).

4.2.6.2 Inferring. In reading comprehension, understanding a text goes beyond its literal meaning and involves making inferences and connections to uncover implicit messages (Kendeou et al., 2022). During the reading process, students engage in various activities such as identifying important information, anticipating what comes next, and checking comprehension through questioning and reflection (Nasution et al., 2018). Explicit information in a text is perceived alongside the implicit message that the author intends to convey, requiring inferential understanding (Perkins et al., 1983; Ulu, 2017). Recognizing text structure, integrating sentence meanings, considering author goals and motives, and drawing conclusions using prior knowledge are essential for comprehension (Kendeou et al., 2022). Proficient readers are adept at drawing inferences, making predictions, and revising them as they read

(Keene & Zimmerman, 1997). Reading comprehension is vital as it enables active engagement with the text and facilitates the understanding of its deeper meaning (MacDonald, 2022). Skilled readers utilize background knowledge and explicit text information to answer questions posed during reading, while also making connections and critically evaluating the content (MacDonald, 2022).

NWSGovernment (2022) lists several of the skills that students progressively acquire during the inference process:

- Integrate concepts
- Make inferences
- Make deductions
- Evaluate and analyze data
- Recognize nuances in tone and expression
- Exercise discernment
- Shape personal viewpoints
- Discern the author's perspectives and sentiments
- Recognize and assess the credibility of sources and their messages
- Discern characters' intentions and underlying themes

Vocabulary and prior knowledge contribute directly to reading comprehension. Also have effects mediated by inference. Authors do not always provide complete information about a topic, place, personality, or event. Instead, they provide information that readers can use to draw conclusions and combine information from the text with their prior knowledge (Gilakjani & Sabouri, 2016). This means that students can benefit from the meaning of familiar words, the difficulty or simplicity of the language used, or the structure of the text. In order to develop the process of connection and reasoning, the result in the production of elaborated inferences can be reflected on what has not been mentioned.

4.2.6.3 Problem solving. Once students attain a high level of reading comprehension, they will find it more effortless to assimilate information from the text and employ it to analyze various problems, scenarios, phenomena, or creative works. Furthermore, individuals will have the capacity to assess indications, origins, issues, or specific instances, and offer remedies, propose concepts, or incorporate additional pertinent materials to address these challenges (Education, n.d.). According to Fuentes (1998, as cited in Ulu, 2017), good solvers use operational networks that build in their minds during meaning formation which allows them to relate to events in the problem of the text and fully follow the course of events. The Department

of Education of Nova Scotia listed the process that a student follows to find the solution to a problem or situation:

- Use background knowledge and experience
- Make connections to personal perceptions or other books
- Make mental pictures (visualizing)
- Predict and confirm ideas and events
- Identify the most important information based on the purpose for reading

A teacher's feedback is necessary to guide students during the process of searching the solution as there may be unfamiliar terms in the text that confuse readers. Another important aspect that should be taken into account is motivation. A low vibe environment or poor material will not inspire students. If the reading material becomes dull, readers will face significant challenges in maintaining their focus on comprehension (Al-Ghazo & Al-Sobh, 2021, p. 8). The reader should use information inside and outside the text to achieve life experience and make sense of themselves (Education, n.d) so they can be merged in the content of the text to reach the purposes they set for reading.

After having read a text, readers can make all the necessary connections among ideas and implied messages, identifying the character's attitudes and inferring the non-literal information of the text. In this way, problem-solving strategies help readers read accurately, fluently, and with comprehension. According to Thohidah et al. (2021), students engage in post-reading activities that involve reflecting on the concepts and information presented in the text, connecting the material to their personal experiences and existing knowledge, enhancing their comprehension of the text, and expanding their comprehension through critical and innovative thinking.

Improving reading comprehension skills has a profound impact on students' academic success and personal development. As students become more proficient readers, they are better equipped to navigate the complexities of the English language, improve their written and oral communication abilities, and acquire a love for reading that can last a lifetime (MacDonald, 2022). By implementing effective practices and strategies for teaching reading comprehension, educators can help students to achieve these important goals and unlock their full potential.

4.2.7 Reading in teaching and learning process

Reading is a fundamental aspect of the teaching and learning process, being indispensable in students' acquisition of knowledge and development of critical thinking skills. According to Duke and Pearson (2019), fostering and teaching reading comprehension is a key

element in promoting students' overall academic success. The role of educators in providing students with the necessary strategies and skills to meaningfully engage with a wide range of texts is of paramount importance. Thus, effective instruction requires a comprehensive approach that considers various factors, including the selection of appropriate materials, explicit teaching of comprehension strategies, and the cultivation of a supportive learning environment (Pressley & Allington, 2014).

Research suggests that providing students with explicit instruction in strategies such as activating prior knowledge, making predictions, visualizing, and summarizing can significantly enhance their comprehension skills (Duke & Pearson, 2019). By explicitly teaching these strategies and providing guided practice, teachers can empower students to become active and strategic readers. For instance, Moss and Newton (2019) emphasize the importance of teaching reading comprehension strategies in content-area classes, recognizing that students must possess the ability to navigate and comprehend subject-specific texts. This highlights the need for teachers to scaffold instruction and provide ongoing support as students encounter diverse text types and genres.

Differentiated instruction is another key aspect of effective reading instruction, as it recognizes and addresses the diverse needs and abilities of students. Swerling and Brucker (2019) conducted a meta-analysis that demonstrated the effectiveness of differentiated instruction in supporting students with reading difficulties. By tailoring instruction to meet individual students' needs, educators can provide targeted support, employ various instructional approaches, and offer additional practice and reinforcement. Differentiated instruction encompasses adapting materials, modifying tasks, and providing appropriate levels of challenge to ensure that all students can engage with the text at their own level and make progress in their reading abilities.

Additionally, reading fluency holds significant importance in reading education and necessitates careful consideration. Torgesen and Hudson (2016) emphasize the importance of addressing fluency issues, particularly for struggling readers. Fluency encompasses accurate and automatic word recognition, appropriate rate of reading, and prosody. By explicitly teaching and practicing fluency skills, teachers can help students develop a smooth and expressive reading style that enhances comprehension. Fluency instruction can involve modeling fluent reading, repeated readings, and providing feedback and support to improve students' reading rate and prosodic skills.

To summarize, effective reading instruction is a multifaceted process that involves the explicit teaching of reading comprehension strategies, differentiated instruction to meet

students' diverse needs, and the development of reading fluency. Teachers play a central role in guiding students through the reading process, providing explicit instruction, scaffolding support, and creating a supportive learning environment. By incorporating evidence-based practices and considering the insights from research, educators can empower students to become proficient readers who can engage with and comprehend a wide range of texts, fostering their academic success and lifelong love for reading.

4.2.8 Previous studies

Several studies have been conducted to explore the impact of questioning on reading comprehension and shed light on the strengths, weaknesses, and gaps in this area. One notable study by Mokhtari and Sheorey (2014) examined the use of the Question-Answer Relationships (QAR) approach in promoting reading comprehension and metacognitive awareness in second language learners. Their findings indicated that explicit instruction in QAR led to improved comprehension and enhanced metacognitive awareness among the participants.

Similarly, Harklau's (2015) study browsed the effects of teachers' questioning on second language learners' comprehension. The study focused on exploring the role of skilled questioning techniques employed by teachers in enhancing comprehension outcomes among second language learners. They found that effective questioning strategies, such as posing open-ended questions and providing opportunities for reflection, were found to enhance students' understanding and critical thinking skills. These findings emphasized the value of purposeful and thoughtful questioning in supporting learners' comprehension development.

Along the same lines, studies conducted by Li and Gardner (2017) and Shao and Lee (2020) focused on examining the effects of different questioning techniques on the reading comprehension performance of EFL learners. Both studies aimed to investigate the impact of purposeful questioning techniques, such as metacognitive, inferential, and critical-thinking questions, on students' higher-order thinking skills and overall comprehension abilities. The findings consistently demonstrated that the implementation of these questioning techniques resulted in improved students' reading comprehension and deeper engagement with the text.

Likewise, Choi and Moeyaert (2019) conducted a study to examine the effects of different question types on the reading comprehension of adolescent EFL learners. The study aimed to investigate the varying impacts of literal, inferential, and critical-thinking questions on comprehension outcomes. The findings revealed that literal questions were effective in enhancing surface-level understanding, whereas inferential and critical-thinking questions fostered deeper comprehension and reflective thinking skills. These results emphasize the significance of considering the cognitive demands and depth of thinking associated with

different question types to promote effective reading comprehension among adolescent EFL learners.

Ritchie and Hudson (2016) conducted a noteworthy study investigating the influence of various question-generation tasks on students' reading comprehension of expository texts. Their research revealed a significant connection between higher-level question-generation tasks and improved comprehension outcomes. The study underscored the value of promoting the generation of thought-provoking questions encompassing a wide range of question types. These types of questions necessitate a deeper level of analysis and synthesis, enabling students to extract meaning from the text and develop a more profound comprehension of its content. The findings highlight the importance of fostering students' question-generation skills as a means to enhance their comprehension abilities and encourage critical thinking.

However, despite the valuable insights provided by these studies, one of the limitations is the need for more longitudinal studies to explore the long-term effects of questioning on reading comprehension. The findings highlight the need for teachers to employ diverse questioning techniques that encourage higher-order thinking skills and metacognitive awareness (Ritchie & Hudson, 2016). By incorporating effective questioning strategies into their instructional practices, educators can create engaging learning environments that foster students' comprehension, critical thinking, and metacognitive skills.

Questioning is crucial in promoting reading comprehension skills, including predicting, inferring, and problem-solving. Pre-questioning, conducted before reading, helps activate prior knowledge and sets a purpose for reading. During-questioning, carried out while reading, encourages students to monitor their understanding, make connections, and delve deeper into the text, fostering critical thinking and analysis. Post-questioning, after reading, reinforces comprehension by prompting reflection, summarization, and synthesis of information. These three stages of questioning provide a comprehensive framework for developing reading comprehension abilities. By incorporating effective questioning practices, educators can create engaging learning environments that enhance students' comprehension skills. Encouraging students to ask thought-provoking questions and guiding them through the process of questioning supports their metacognitive development and deepens their understanding of texts. Therefore, the integration of questioning strategies into reading instruction empowers students to become active, reflective, and proficient readers.

5 Methodology

5.1 Setting and Research participants

The present research was conducted in a public institution located in the city of Loja which is situated in the southern part of Ecuador. Loja is a province in South America with an approximate population of 483,846 people. The geographical coordinates of the institution where the research took place are approximately -4.01038 latitude and -79.1991 longitude.

This study involved a pre-service teacher who assumed the role of active participant observer responsible for executing the intervention plan. The participants in the study were tenth-grade students attending a local high school in Loja during the 2022-2023 school year. Specifically, the participant group consisted of 24 students, 8 male and 16 female between thirteen and fifteen years old. In order to select participants, the convenience sampling method was chosen. Convenience sampling is a non-probability sampling technique that involves choosing individuals who are easily accessible and readily available for research purposes (Creswell, 2012). In this study, the participants were selected by their accessibility and availability. Also, the participants were specifically A2.1 level in English according to the language proficiency standards set by the Ministry of Education. To recruit the research participants and obtain permission to implement the intervention plan within the educational institution, a comprehensive process was followed. Initially, the researcher visited the institution and held discussions with the principal to obtain permission for the internship. Once the principal's approval was obtained, the next step was to engage in a constructive dialogue with the institution's English teacher to organize the intervention plan to be implemented during class hours according to her schedule. Subsequently, a formal request was submitted to the institution to obtain permission to carry out the research.

5.2 Procedure

5.2.1 Method

The present research project aims to investigate the impact of questioning on reading comprehension in tenth-grade students at a public institution in the city of Loja, Ecuador. In order to achieve this goal, the use of a mixed research method has been deemed appropriate. According to Creswell (2018), mixed method is a type of study that combines both qualitative and quantitative processes. Qualitative processes involve the examination and analysis of non-numeric data, such as textual data from field notes. On the other hand, quantitative processes involve the collection and analysis of numeric data, often obtained through structured surveys or tests. In line with the perspective of Teddlie and Tashakkori (2020), mixed approach allows for validating qualitative insights through the use of quantitative data and vice versa.

Therefore, to ensure the reliability and validity of this study, quantitative data provided numerical indicators of the participants' performance, as demonstrated in the pretest and posttest scores. On the other hand, the qualitative data helped to validate and provide a deeper understanding of the quantitative results through the students' answers to the open-ended questions of the questionnaire. This allowed for a comprehensive analysis, meaningful conclusions, and informed recommendations for teaching practices in English as a foreign language (EFL) classrooms.

5.2.2 Research Design

The present study employed a practical action research approach, where the pre-service teacher took on the role of both researcher and facilitator by implementing an action plan. The primary objective of the study was to enhance the reading comprehension skills of tenth-grade students through the strategic use of questioning techniques. Hence, the researcher followed the action research cycle proposed by Efron and Ravid (2019). This cycle is an effective problem-solving approach that enables teachers to improve their teaching practice by addressing the challenges faced by their students. By systematically gathering and analyzing data, the researcher was able to make informed decisions about how to proceed and address issues related to EFL students.

5.2.2.1 Identifying a problem. Based on extensive observations conducted in the EFL classroom, the researcher identified a prominent problem concerning the lack of reading comprehension development among students. This problem encompasses difficulty in predicting texts by connecting with prior knowledge, analyzing texts at the inferential level, and solving problems presented in texts. Based on these findings, the researcher proposed the implementation of questioning strategies as a viable solution to effectively address this problem. Consequently, to begin the study, the researcher formulated the following research problem: How does the use of questioning improve reading comprehension in tenth-grade students at a public institution in Loja, during the 2022-2023 school year?

5.2.2.2 Gathering background information. As a subsequent step, a comprehensive review of the existing literature and previous studies pertaining to the key variables of reading comprehension and questioning was conducted. In this study, reading comprehension was identified as the dependent variable, encompassing indicators such as predicting, inferring, and problem-solving skills. On the other hand, questioning was identified as the independent variable, with indicators classified as pre-, during-, and post-questioning techniques. By examining the relationship between these variables, this research aimed to provide valuable insights into the impact of questioning on enhancing reading comprehension skills. The

theoretical framework was then presented, which provided a general understanding of the research project by outlining the conceptualizations of the two variables and their respective indicators. In addition to their importance in the teaching and learning process in EFL classrooms. The information presented in the development was obtained from thesis works, papers, journals and articles found in databases such as Eric, Library Genesis and Google Scholar. This literature review was intended to contribute to the existing body of research on reading comprehension and questioning.

5.2.2.3 Designing the study. Upon completing the literature review, the researcher carefully designed an action plan that incorporated a variety of techniques such as testing, observation, and survey. A set of specific instruments was developed to effectively implement each technique in the study. Firstly, for the testing technique, a pretest and a posttest were designed to assess students' cognitive dimension before and after the intervention plan. Subsequently, as an observation technique, field notes were designed to closely monitor the progress and development of the students' performance. Additionally, a questionnaire was elaborated as a survey technique to measure the affective dimension and gather insights into students' perceptions regarding questioning on reading comprehension.

The research instruments were meticulously crafted with a specific emphasis on evaluating students' skills in predicting, inferring, and problem-solving skills. These instruments were designed to gather rich and meaningful data, forming a strong basis for analyzing the effects of questioning techniques on the development of reading comprehension among the participants. Prior to the main study, a rigorous piloting test was conducted to ensure the reliability and validity of these instruments. This meticulous process helps to establish the credibility and robustness of the data collected, enhancing the overall quality of the research findings.

5.2.2.4 Collecting data. In the data collection stage, the previously designed instruments were used to implement the action plan and improve students' reading comprehension skills. For the respective data collection, the intervention took place over a period of five weeks, spanning the academic year of 2022-2023, with sessions conducted from Thursday to Friday. The researcher dedicated three sessions per week, amounting to a total of 18 hours to deliver instruction and engage students in targeted questioning activities.

The pretest, as defined by Rutherford and Leigh (2020), refers to an assessment conducted prior to the implementation of an intervention. In this study, a pretest was administered to the students before the intervention plan to gauge their current level of reading comprehension. The purpose of this pretest was to serve as a diagnostic tool, providing

valuable information on how to approach the questioning strategy in the intervention plan effectively. During the administration of the pretest, a flexible and open-minded approach was adopted. The students were informed about the researcher's presence in their classes and the purpose of the assessment. After that, their collaboration was sought, emphasizing the importance of answering the test questions honestly and to the best of their ability. It was also emphasized that the results of the pretest would not affect their grades or disrupt the normal course of the subject.

Consequently, to ensure the successful implementation of the intervention plan, the researcher made deliberate adaptations to the different phases of questioning aligned with the various stages of the reading comprehension process: before, during, and after reading. The aim was to enhance students' prediction, inference, and problem-solving abilities through targeted questioning during the lessons using different stories as learning materials. The instructional design followed the 5E lesson plan model, which encompasses five distinct phases: engage, explore, explain, elaborate, and evaluate. During the engagement phase, the researcher employed dynamic activities, such as games and competitions, to capture the students' attention. This phase served to reinforce previous learning or introduce new topics for the class.

Moving into the explore phase, pre-questioning techniques utilizing divergent questions were applied to cultivate the students' capacity to predict outcomes in both fiction and nonfiction texts. Subsequently, in the explain phase, during the actual reading, the researcher implemented inferencing questions to facilitate the development of students' inferential thinking skills. In the elaborate phase, the focus shifted towards fostering problem-solving skills through the utilization of problem-solving questions. Lastly, in the evaluate phase, the students' reading comprehension level was assessed to gauge their progress and determine the effectiveness of the intervention. During the process, field notes were recorded immediately after each period to ensure continuous monitoring of students' performance progress.

According to Rutherford and Leigh (2020), the post-test is conducted after the intervention period to assess students' engagement levels and academic performance. Thus, following the full implementation of the intervention plan, a post-test was administered to assess the impact of questioning on students' reading comprehension. This critical step was intended to determine the extent to which questioning contributed to the development of students' reading comprehension skills. In addition to this, a questionnaire was also administered to gain insights into the students' perceptions of the use of questioning as a

strategy for reading comprehension. The questionnaire sought to uncover the students' perspectives on the effectiveness and relevance of questioning in improving their understanding of texts.

Furthermore, in strict adherence to the ethical principle of privacy, a comprehensive code system was implemented within the pretest, posttest, and questionnaire to anonymize the identities of individual students. This approach safeguarded confidentiality and ensured that the participants' personal information remained confidential throughout the study. By implementing these measures, the research maintained its integrity and uphold ethical standards in data collection and analysis. This structured approach ensured that students received consistent and comprehensive support to develop their reading comprehension abilities.

5.2.2.5 Analyzing and interpreting data. Once the data collection process was completed, the numerical and non-numerical data collected during the intervention were analyzed and interpreted. To fully explore and interpret the collected data, a thorough analysis was conducted, considering both the quantitative and qualitative information. First, the pretest and posttest results were collected and organized for analysis to determine the extent of improvement in the students' reading comprehension. These results were then compared to identify any noticeable changes and measure the progress made. Using the Microsoft Excel program, the quantitative data obtained from the pretest and posttest were incorporated into the analysis and represented in tables for a visualization of the general context of the level of improvement that the students acquired.

In addition to the test data, the current study also collected qualitative and quantitative data through a questionnaire. The closed-ended questions provided quantitative data, which were analyzed using descriptive statistics and visually presented through bar graphs. On the other hand, the open-ended questions yielded qualitative data, which were used to complement and provide a narrative description of the quantitative findings. This involved examining the students' responses to the questionnaire items, particularly their explanations and reasoning behind their answers. By analyzing and interpreting these insights, a deeper understanding of the students' experiences, perceptions, and attitudes towards the intervention and its impact on their reading comprehension skills was gained.

5.2.2.6 Implementing and sharing the findings. To ensure the successful dissemination of the research findings, thorough analysis and interpretation of the results were conducted, leading to the formulation of clear conclusions and actionable recommendations. The conclusions highlight that there were notable improvements in students' reading

comprehension abilities. This indicates the students' increased proficiency in anticipating outcomes, making predictions, and understanding implicit information in the text by connecting with their prior knowledge. Moreover, the recommendations suggest that additional interventions, such as targeted exercises and instructional strategies, should be implemented to help students analyze and solve text-related problems more effectively. In addition to devoting more time to further research to form a more solid foundation regarding the effectiveness of the questioning strategy for reading comprehension.

These conclusions and recommendations were specifically formulated to address the research question and highlight areas that can be improved upon. The significance of the findings lies in their potential to make a positive impact on education. Therefore, the findings were shared with the broader education community to serve as inspiration for future research endeavors. Additionally, by sharing the findings, educators have valuable insights and practical strategies to enhance their students' reading comprehension abilities, ultimately contributing to improved learning outcomes.

5.2.3 Data collection sources and techniques

The current study utilized a variety of data collection methods and sources to obtain information about both dependent and independent variables. In order to gather quantitative data, the researcher administered the pretest and posttest (Annex 1) to assess students' cognitive dimension before and after implementing the intervention plan in EFL classrooms. The assessment instruments utilized for measuring the indicators of the dependent variable, namely predicting, inferring, and problem-solving skills, consisted of two sets of multiple-choice and matching questions for each indicator. Furthermore, to ensure consistency and accuracy in scoring, the researcher developed an answer key sheet (Annex 2) that facilitated the evaluation of each question in the pretest and posttest. Additionally, the scoring of the criterion-referenced test instruments adhered to the National Scale established by the Ministry of Education (Annex 6). This standardized scale provided a reliable framework for assessing the participants' performance and aligning the results with national educational standards.

Subsequently, qualitative data was obtained through observation, and detailed field notes were recorded (Annex 5). These field notes served as a valuable source of information about class participation and interactions. Additionally, a questionnaire was administered to gather both qualitative and quantitative data and to assess the students' affective dimension. The questionnaire utilized the Likert scale and consisted of ten closed-ended questions (Annex 3). These questions allowed students to indicate their agreement or disagreement, providing insights into their perspectives on the efficacy of the questioning approach. Open-

ended questions were also included, enabling students to provide detailed explanations and reasons behind their choices. This questionnaire aimed to provide a comprehensive understanding of students' opinions regarding the impact of the questioning strategy on their reading comprehension abilities.

5.2.4 Data analysis

The data collected from the intervention was subjected to a thorough analysis to explore and interpret the findings, utilizing both quantitative and qualitative information. Descriptive statistics were employed to effectively summarize and present the data, allowing for further analysis and interpretation. A comparison between the pretest and posttest results was conducted to assess the improvement in students' reading comprehension. The quantitative data was organized in tables using Microsoft Excel to visually represent the overall progress and the central tendency of the pre- and post-test results. On the other hand, the qualitative data was derived from the questionnaire administered during the study. The closed-ended questions provided quantitative insights, which were analyzed using descriptive statistics and visually presented through bar graphs. Meanwhile, the open-ended questions captured qualitative data that underwent analysis and categorization, enabling a deeper exploration of students' experiences, perceptions, and attitudes towards the intervention. By integrating the analysis of both quantitative and qualitative insights, a comprehensive understanding of the impact of the intervention on students' reading comprehension skills was achieved.

Despite the limitations faced during the intervention, such as the short period of time, the absence of internet connection, and the interruptions in between, the results consistently demonstrated the positive impact of the questioning strategy on students' reading comprehension. These limitations may have posed challenges to the implementation and continuity of the intervention; however, the observed improvements in the students' inferring skills during the questioning stage highlight the effectiveness of the strategy within the given constraints.

It is worth noting that the development of reading comprehension is progressive. In the first stages, literal comprehension is developed first, as there is an overview of what the text will be about according to the information presented by the teacher. Inferential comprehension occurs when attempts are made to understand the details that are not mentioned in the reading and students are able to decode non-literal information through inference and the necessary connections. Finally, critical understanding occurs when students can provide explanations for how a problem might be solved. This progression implies that

students need to develop a set of skills to move from literal to critical understanding, and it is the teacher's responsibility to create the appropriate learning environment to facilitate this development. In this sense, the 5E model can be an effective tool for the teacher to design and implement lesson plans that take into account the progressive nature of reading comprehension development and provide students with the necessary opportunities to develop their skill.

6 Results

The analysis of pretest, posttest and questionnaire data revealed a notable enhancement in students' reading comprehension skills as a result of the questioning strategy intervention. The results were supported by the open-ended questions in the questionnaire and researcher's field notes recordings. The visual representation of the data in bar graphs and tables below provides a clear view of the results.

1.1 Pretest and Posttest results

Objective 1: To describe the effectiveness of questioning on the development of reading comprehension among tenth-grade students at a public institution in Loja.

Sub-question 1: What is the effectiveness of questioning on the development of reading comprehension among tenth-grade students at a public institution in Loja, during the 2022-2023 school year?

Table 1

Mean score difference between pretest and posttest in the measurement of reading comprehension indicators.

	N° students	Predicting (4/4)	Inferring (4/4)	Problem solving (4/4)	Total mean (12/12)
Pretest	24	2.6	1.8	1.3	5.7
Posttest	24	3.3	2.8	1.3	7.4
Difference	na	0.7	1	0	1.7

Table 1 clearly illustrates the initial low level of students' reading comprehension before the implementation of the intervention plan. The pretest results revealed the participants' performance on various indicators of questioning in reading comprehension. In terms of "predicting," the participants displayed an average score of 2.6/4, indicating a moderate ability to make predictions based on the text. Regarding "inferring," the average score was 1.8/4, suggesting a weak ability to draw conclusions or make inferences beyond the explicit text. The participants faced challenges in inferring meaning from the given information. In terms of "problem-solving," the average score was 1.3/4, showing a limited ability to analyze and solve text-related problems. Overall, the pretest performance highlighted the need for improvement across all three indicators, with a total average score of 5.7/12, underscoring the necessity of the intervention to enhance their questioning skills in reading comprehension.

Following the intervention, the participants' performance showed notable improvements in the posttest. In the "predicting" indicator, there was a significant increase

from the pretest score of 2.6/4 to a posttest score of 3.3/4, representing a substantial improvement of 0.7 (17.5%) points. This indicates a higher proficiency in anticipating outcomes, making predictions based on the text, and connecting with prior knowledge. Similarly, in the “inferring” indicator, the average score increased by 1 (25%) point, resulting in a gradually improved posttest score of 2.8/4. This suggests a better skill in drawing inferences, understanding implicit information in the text, and grasping implied meanings. However, the participants’ performance in the “problem-solving” indicator remained consistent, with an average score of 1.3/4 in both the pretest and posttest. Overall, the posttest performance demonstrated significant improvements in predicting and inferring skills, leading to an overall increase in the total average score from 5.7/12 in the pretest to 7.4/12 in the posttest. This reflects a notable gain of 1.7 (14%) points, highlighting the positive impact of the intervention on the participants’ questioning abilities in reading comprehension.

Despite the limitations faced during the intervention, such as the short period of time, the absence of internet connection and technological resources, the results consistently demonstrated the positive impact of the questioning strategy on students’ reading comprehension. These limitations may have posed challenges to the implementation and continuity of the intervention; however, the observed improvements in the students’ inferring skills during the questioning stage highlight the effectiveness of the strategy within the given constraints. Although the improvements in predicting skills during the pre-questioning stage were relatively smaller, they still indicate a positive trend and suggest the potential for further growth with continued implementation and support. Additionally, the maintenance of problem-solving skills during the post-questioning stage implies that students were able to retain and apply their critical thinking abilities throughout the intervention. These findings provide relevant information about the benefits of incorporating the questioning strategy in educational settings, even in the face of practical limitations, and underscore the importance of continued exploration and refinement of instructional approaches to optimize student learning outcomes.

1.2 Comparison of the pretest and posttest results with the Ecuadorian National Grading Scale

The comparison made with the Ecuadorian National Grading Scale illustrates and underscores, through the bar chart, the significant contribution that the implementation of the questioning strategy has on students' learning outcomes.

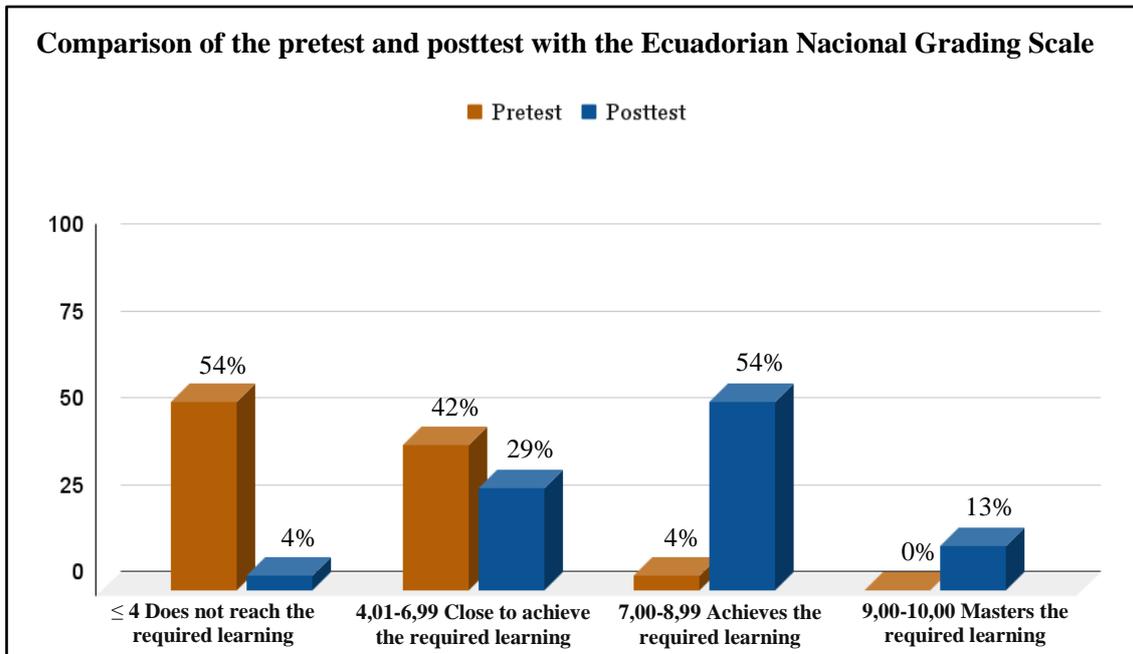


Figure 1

Reading comprehension pretest and posttest scores compared to the Ecuadorian National Grading Scale

After a five-week period of intervention, the participants' performance showed notable improvements in the posttest in relation to the Ecuadorian National grading scale. An important number of students (13%) were able to master the required learning. Showing a meaningful impact of questioning on reading comprehension. Subsequently, a significant percentage (54%) of participants achieved the required learning, demonstrating a substantial increase compared to the pretest (4%). Furthermore, a considerable proportion (29%) of participants were close to achieving the required learning, indicating positive progress in contrast with the 42% of the pretest. On the other hand, only 4% of the participants were unable to achieve the required learning. This makes evident the decrease in the low scores obtained by 54% of the students in the pretest. These findings indicate that the intervention had a positive impact on the majority of the participants aligning with the expectations set by the National grading scale.

1.3 Questionnaire results

Objective 2. To find out the student’s perceptions about questioning in reading comprehension among tenth-grade students at a public institution in Loja, during the 2022-2023 school year.

Sub-question 2. What are the students’ perceptions of questioning in reading comprehension among tenth-grade students at a public institution in Loja, during the 2022-2023 school year?

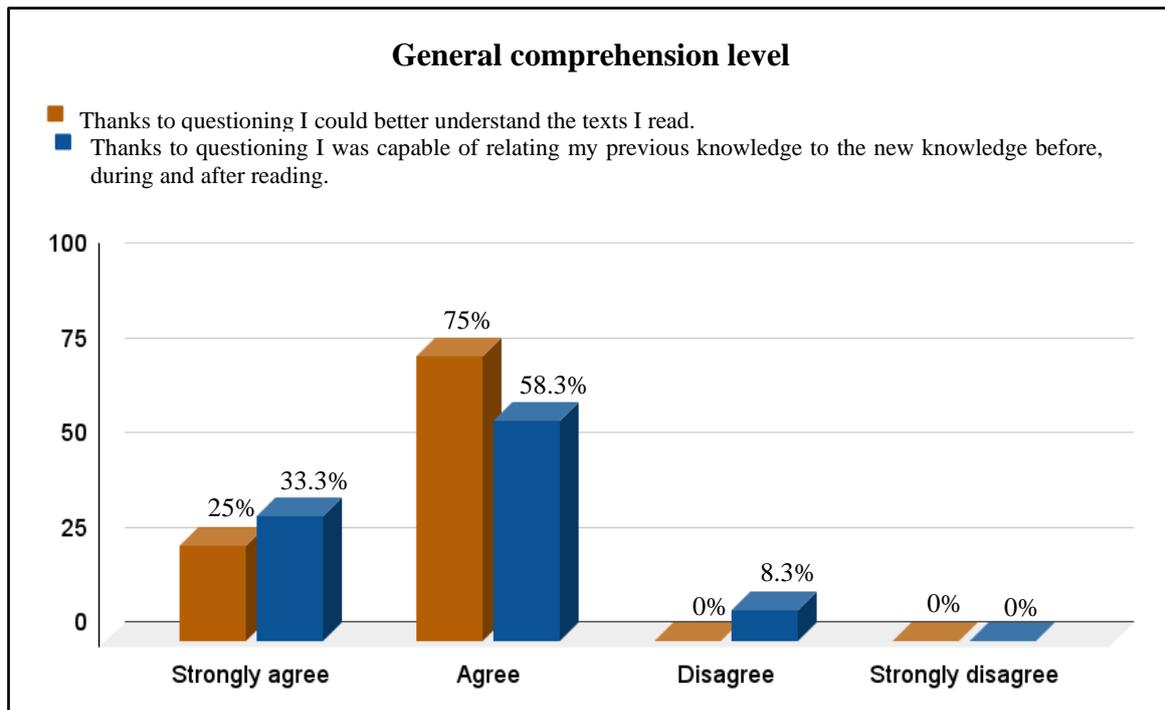


Figure 2

Representation of students’ perception of questioning for their general comprehension level

Regarding their understanding of texts, a considerable majority of students (75%) “agreed” along with exactly a quarter (25%) of students who “strongly agreed.” This shows that the 100% of the class have a positive impact of questioning on their comprehension abilities. The researcher’s field notes further supported this, as students themselves acknowledged the usefulness of questioning in facilitating their comprehension of the texts.

When it comes to the ability to connect prior knowledge with new information before, during, and after reading, the findings revealed that more than a half (58,3%) “agreed” and approximately one third (33,3%) of the class “strongly agreed.” This figures that 91.6% of the class were capable of making these connections. However, a small percentage (8,3%) “disagreed” with this statement, suggesting that some students may face challenges in relating their previous knowledge to the new content during the reading process. As the researcher field notes denote.

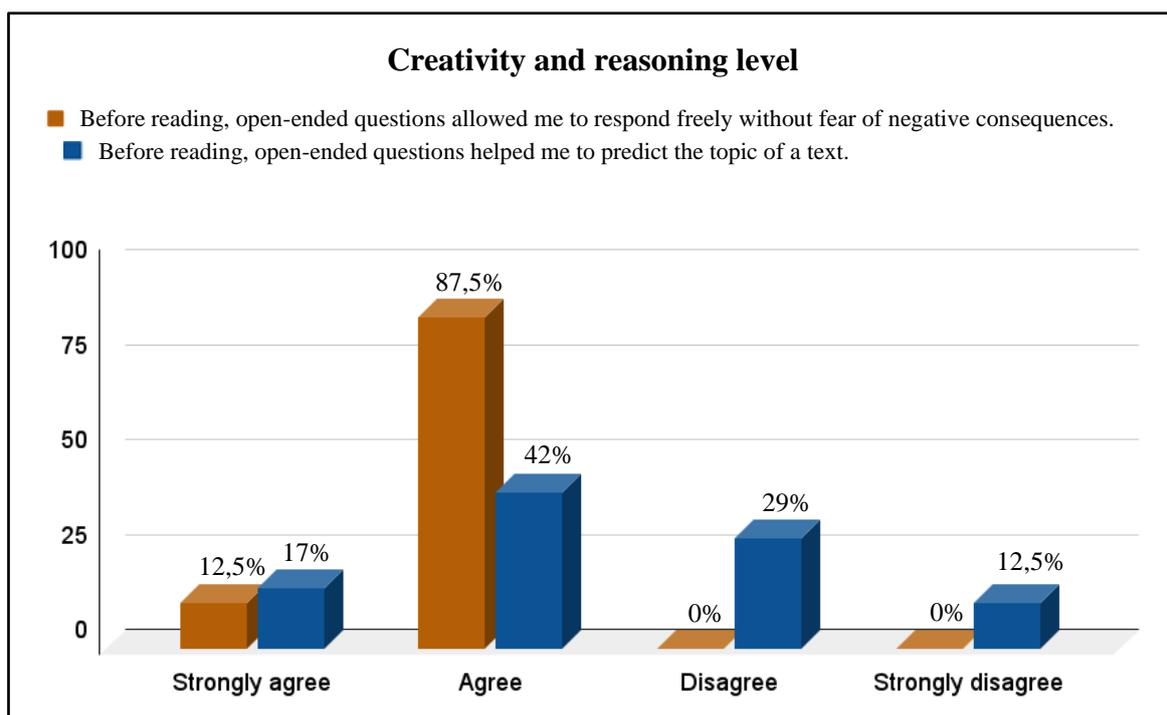


Figure 3

Representation of students' perception of open-ended questions for their creativity and reasoning level

Figure 3 reveals that a significant majority of students (87,5%) “agreed” and less than a fifth (12,5%) “strongly agreed.” Showing that 100% of students provided responses in a safe and non-threatening environment, without the fear of judgment or negative consequences. The reasons students provided in the open-ended questions from the questionnaire include the absence of pressure and the voluntary nature of participation. Manifesting that they could express their opinions and thoughts freely. Students also recognized that this approach enhanced their learning experience, as it allowed them to address their existing knowledge and uncertainties. From the researcher’s field notes, they expressed that, open-ended questions facilitated reasoning and the expression of opinions, boosting their confidence in answering. This freedom resulted in improved responses and a deeper understanding of the text, ultimately contributing to increased knowledge acquisition. Moreover, as it is observed, none of the students (0%) “disagreed” with this statement. Showing the positive impact of open-ended questions on students’ engagement before reading.

In relation to open-ended questions helping them predict the topic of a text, more than two fifths (42%) “agreed” and nearly a fifth (17%) “strongly agreed” with this statement. This indicates that 59% of the respondents recognized the benefits of open-ended questions in aiding their ability to make predictions about the topic of a text. While 41% of the students

“disagreed”, as it can be observed that around 29% “disagreed” and 12% “strongly disagreed” with the statement. The researcher’s field notes show that the students, despite having the freedom to give their answers without the pressure of having to be correct, presented difficulty in predicting a text. This is because they required more context to process their ideas, since a title or an image was not enough for them.

Regarding the effectiveness of inferential questions in deciphering the implicit meaning of a text, 54% of students “agreed” and 42% “strongly agreed” with this statement. These

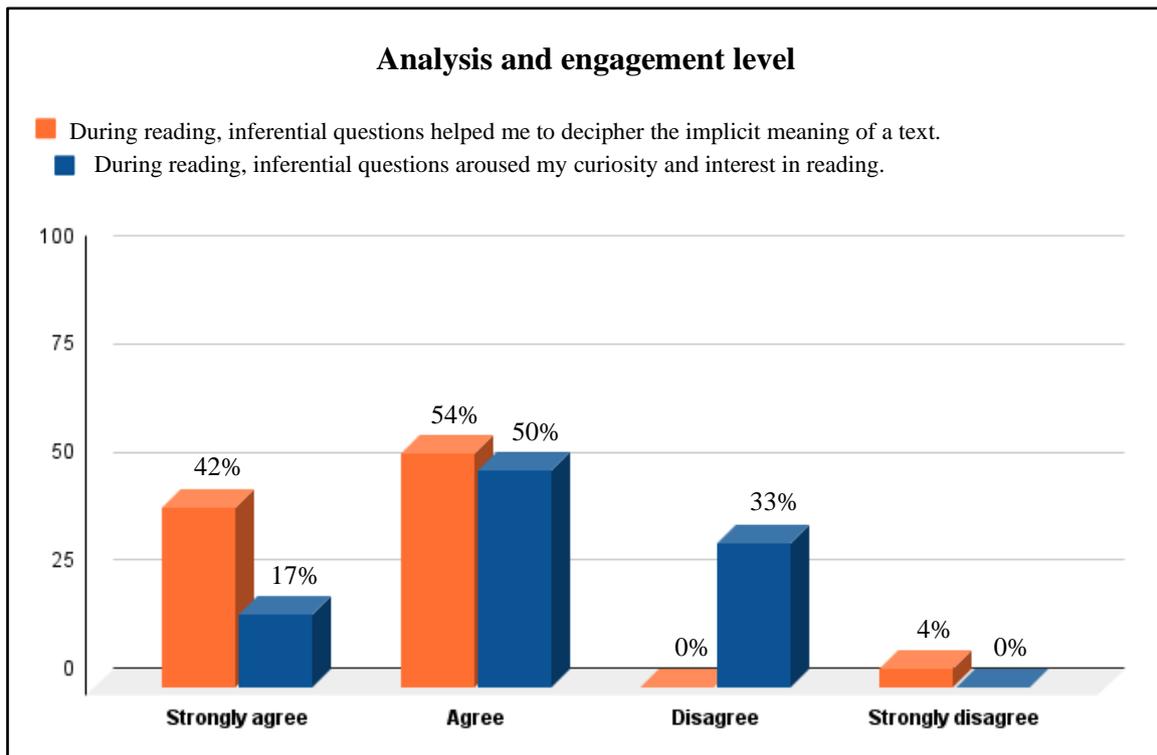


Figure 4

Representation of students’ perception of inferential questions for their analysis and engagement level

findings highlight a very large proportion of students (96%) who recognized the value of inferential questions in aiding their understanding of a text beyond its explicit content. The majority’s agreement suggests that inferential questions serve as a valuable tool for uncovering deeper meanings and implications within the text. As denoted in the field notes records, students showed a better level of participation in the responses during reading. This indicates that once given the complete information of a text, it is easier to generate inferences and decipher implicit information. On the other hand, a tiny fraction (4%) “strongly disagreed,” expressing the difficulty that the language presented for some students.

Furthermore, exactly a half (50%) of students “agreed” along with another small portion (17%) who “strongly agreed” with the second statement. Resulting in a large proportion of students (67%) who considered that inferential questions aroused their curiosity and interest in reading. In the open-ended questions, students stated that they developed an eagerness in learning new vocabulary, and gained a heightened sense of curiosity. To complement this, the researcher’s field notes recorded that the students felt more interest in reading, as the inferential questions allowed them to have a broader view of the ideas presented in the texts. However, nearly one-third (33%) of students “disagreed” with this notion. In the open-ended questions, students expressed reasons such as a lack of interest and finding the texts distracting. Likewise, the field notes support these reasons by reporting that some students felt that the level of difficulty of the text made it difficult for them to participate, as they were not clear on the idea.

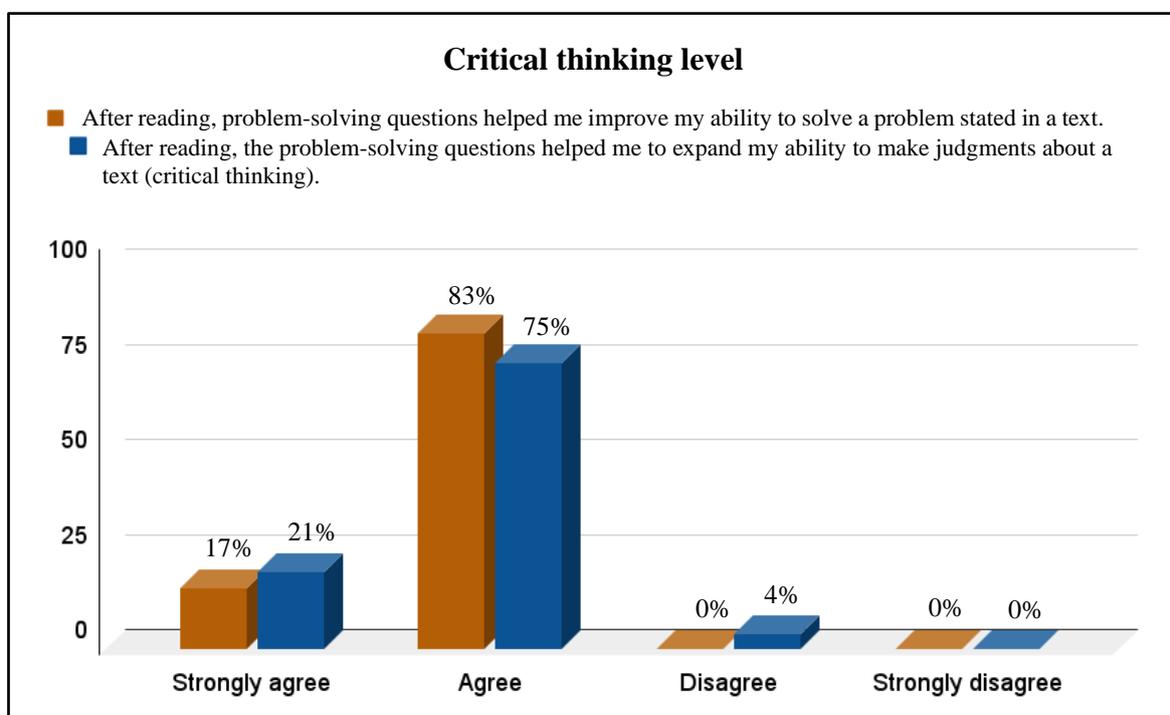


Figure 5

Representation of students’ perception of problem-solving questions for their critical thinking level

When considering the impact of problem-solving questions after reading, a very large proportion (83%) “agreed” with this statement, as well as more than a quarter (17%) of students who “strongly agreed.” Giving a total of 100% of students who considered that problem-solving questions helped them solve a problem stated in the text. The reasons provided in the open-ended questions include that it was easier for them to know the context and that they experienced less difficulty in answering the questions. According to the field notes, students

stated that they had the opportunity to contribute with more alternatives to solve a problem, recognizing the benefits of analyzing texts in depth through questioning. These results indicate that problem-solving questions contribute to improving students' problem-solving skills and deepening their understanding of the text.

Moreover, around 96% of students “agreed” with the second statement. As three quarter (75%) of students “agreed” and slightly less than a quarter (21%) “strongly agreed” that problem-solving questions after reading helped them expand their ability to make judgments about a text. From the open-ended questions, students highlight benefits such as better text comprehension, the assurance of having no doubts about the text and the absence of judgment on their answers. In addition to this, in the field notes students mentioned the improvement of their understanding and speaking abilities, especially their ability to solve problems with less difficulty. However, a very small fraction (4%) of students “disagreed” with this notion indicating that problem-solving questions promote critical thinking skills and foster students’ confidence in expressing their opinions and insights gained from the text.

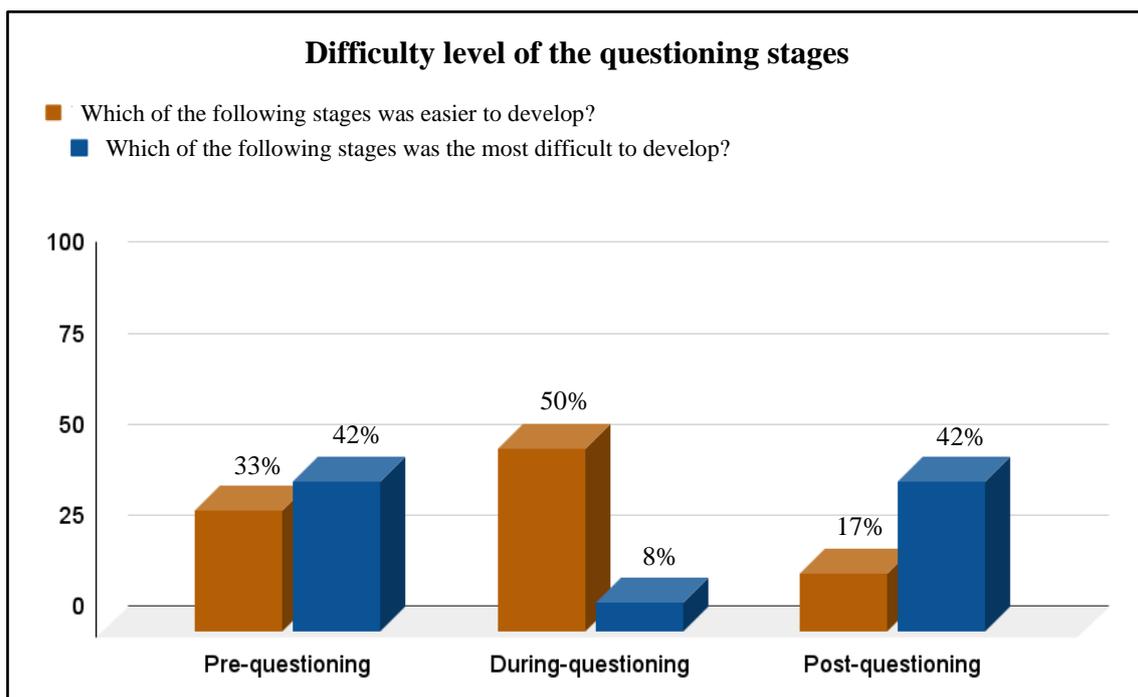


Figure 6

Representation of students' perception of the difficulty level of questioning stages

Despite variations in students' perceptions of the different stages of questioning, for the pre-questioning stage, more than two fifths (42%) of students considered it the most difficult. Reasons such as the lack of available information about the text and their limited prior knowledge were expressed in the open-ended questions. Likewise, around 42% of students

found the post-questioning stage to be the most difficult, manifesting struggle with comprehending the text and uncertainty about what might happen next. As for the during-questioning stage, a small minority (8%) of students found it difficult. Although no answers or specific reasons for this difficulty were provided, from the researcher's field notes the students stated that they felt more comfortable with the questions during the reading, as they interacted with the teacher and it facilitated participation.

Overall, while some students encountered challenges at different stages of questioning, a significant number of students (50%) found the during-questioning stage easier. Their answers to the open-ended questions manifested that they felt it was more understandable and easier to answer questions while reading the text. Additionally, under a third (33%) of students found the pre-questioning stage easier, as they could gather some knowledge about the text in advance and generate ideas based on that information. Similarly, just under a fifth (17%) of students found the post-questioning stage easier, stating that it became simpler to answer questions once they had a clear understanding of the text.

These findings highlight the varying levels of ease and difficulty experienced by students across different questioning stages. While some stages were perceived as more manageable, others posed challenges, particularly in terms of comprehension and generating meaningful questions. Educators can consider these perceptions to guide their instruction and support students in effectively engaging with each questioning stage. Providing additional support and resources during the more challenging stages can help students navigate and overcome difficulties, ultimately enhancing their overall reading comprehension skills.

7 Discussion

The present research project revealed a clear relationship between questioning and the significant advancement of reading comprehension through an intervention plan. The primary objective was “How to improve students’ reading comprehension through questioning among tenth-grade students at a public institution in Loja, during the 2022-2023 school year?” To address this objective, the researcher implemented pre-questioning, during-questioning, and post-questioning techniques, aiming to improve students’ abilities in predicting, inferring, and problem-solving. Through the collection of qualitative and quantitative data, the research findings provided valuable insights and consistently demonstrated, with solid evidence, the significance of questioning in improving students’ reading comprehension skills. These findings, supported by previous research (Choi & Moeyaert, 2019; Harklau, 2015; Shao & Lee, 2020; Li & Gardner, 2017; Zeeland & Schmitt, 2018; Ritchie & Hudson, 2016), contributed to addressing the sub-questions that were formulated at the outset of the research.

The first sub-question formulated to guide this research was “What is the effectiveness of questioning on the development of reading comprehension among tenth-grade students at a public institution in Loja, during the 2022-2023 school year?” The results of the posttest revealed a significant improvement in students’ reading comprehension abilities, with a notable increase of 1.7 (14%) compared to their pretest performance. Additionally, a substantial proportion of participants (54%) achieved the required learning level based on the Ecuadorian National Grading Scale, indicating a significant enhancement compared to the pretest (4%). These outcomes are consistent with the research conducted by Choi and Moeyaert (2019), Harklau (2015), and Shao and Lee (2020), which demonstrated that the effective use of questioning strategies, including open-ended, literal, inferential, and critical-thinking questions, encouraged reflection and contributed to improved understanding and critical thinking abilities among students. These results affirm the notion that well-designed and purposefully implemented questioning approaches can significantly enhance reading comprehension among English as a foreign language (EFL) learners.

The second sub-question of the research was “What are the learner’s perceptions about questioning in reading comprehension among tenth-grade students at a public institution in Loja, during the 2022-2023 school year?” The findings were obtained through the analysis of questionnaire responses and field notes recordings. The students expressed that they felt a sense of freedom and were able to share their opinions and thoughts without pressure. This environment fostered a heightened curiosity for learning new vocabulary, increased interest in reading, and a voluntary inclination to participate. The researcher’s field notes further

highlighted that questioning facilitated students' reasoning abilities, encouraged the expression of opinions, and boosted their confidence in answering questions. These outcomes align with the findings of previous studies by Li and Gardner (2017), Mokhtari and Shorey (2014), and Ritchie and Hudson (2016), which emphasized the value of explicit questioning instruction in guiding higher-order thinking, promoting active engagement, and cultivating deeper comprehension and critical thinking skills in reading.

However, it is important to acknowledge that the majority of previous studies in the field of questioning and reading comprehension have been conducted in countries such as Canada, Taiwan, the United States, Germany, and Korea, indicating a scarcity of research conducted in the specific context of Ecuador. This highlights the need for further investigation in local educational settings to explore the potential impact of questioning strategies on reading comprehension outcomes among Ecuadorian students. Additionally, it is crucial to recognize a significant limitation regarding the limited time available for the intervention, which constrained the depth and duration of the study. Therefore, conducting a more extensive research project would be beneficial in expanding our understanding of the implementation and effectiveness of questioning strategies in the Ecuadorian context.

8 Conclusions

The present research work highlights the undeniable utility of questioning as a valuable tool for improving students' reading comprehension skills. Through the strategic use of questioning, students were able to strengthen their skills in prediction, inference, and problem-solving. This approach encouraged students' critical thinking and facilitated a stronger connection with their prior knowledge. Proving that questioning is instrumental in fostering a deeper understanding of texts.

The effectiveness of questioning is further substantiated by the significant enhancement in students' academic performance, as evidenced by their enhanced scores on the data collection instruments. This positive outcome demonstrated that the integration of pre-questioning, during-questioning, and post-questioning strategies effectively cultivates students' analytical abilities, reflective thinking, and overall comprehension skills. Additionally, the influence of questioning on both teacher-student and student-student interactions fostered improved communication and collaborative engagement within the classroom setting.

Students' perceptions of the impact of questioning corroborated its effectiveness in promoting a stimulating learning environment. Thus, questioning encouraged students' greater curiosity in learning new vocabulary, greater interest in reading and greater sense of freedom to express themselves without fear of being judged. As well as, questioning facilitated students' cognitive abilities, and fostered a voluntary participation and confidence in answering questions. These positive experiences translated into more active and engaged participation during class sessions, fostering improved reasoning skills and greater confidence in answering questions.

9 Recommendations

Given that the majority of studies regarding questioning and reading comprehension have been carried out in countries such as Canada, Taiwan, the United States, Germany, and Korea, there is a need to explore its impact within the unique cultural and linguistic context of Ecuador. This would provide significant prospects into the potential impact of questioning strategies on reading comprehension outcomes among Ecuadorian students. By conducting studies in the local context, researchers can consider the cultural and educational factors that may influence the effectiveness of questioning techniques. This would contribute to the development of evidence-based practices tailored to the specific needs of Ecuadorian students.

The limited time available for the intervention in the present study suggests the need for more extensive research projects. Conducting studies with a longer duration and a larger sample size would allow for a more in-depth exploration of the implementation and effectiveness of questioning strategies in the Ecuadorian context. By expanding the scope of research, researchers can investigate the long-term effects of questioning on reading comprehension, explore the impact on different student populations, and examine the influence of various instructional factors. This would provide a more comprehensive understanding of the benefits and challenges associated with implementing questioning strategies in Ecuadorian classrooms, enabling educators to make informed decisions about instructional practices.

In light of the limitation regarding the use of technological resources in the present study, it is highly recommended to explore the integration of technology as a means to enhance the implementation of questioning in instructional practices. The interactive and dynamic nature of questioning can be greatly amplified through the utilization of technology, which provides access to a wide range of texts and resources. In this way, educators can create a more engaging and stimulating learning environment that contributes to the teaching-learning process in EFL classrooms.

10 Bibliography

- Abbas Pourhosein Gilakjani, N., & Sabouri, N. (2016). *How can students improve their reading comprehension skill?* Journal of Studies in Education, 6(2), 230. <https://doi.org/10.5296/jse.v6i2.9201>
- Al-Ghazo, A., & Al-Sobh, M. (2021). *Reading comprehension problems encountered by EFL students at Ajloun National University*. International Journal of Language and Linguistics, 8(1), 8. <https://doi.org/10.30845/ijll.v8n1p2>
- Amalia, A. R., & Devanti, Y. M. (2016). *The use of questioning strategy to improve students' reading comprehension*. ELLITE: Journal of English Language, Literature, and Teaching, 82.
- Alvesson, M., & Sandberg, J. (2011). Generating research questions through problematization. *Academy of Management Review*, 36(2), 247-271. <https://lup.lub.lu.se/record/1965150>
- Al-Zahrani, M. Y., & Al-Bargi, A. (2017). *The impact of teacher questioning on creating interaction in EFL: A discourse analysis*. English Language Teaching, 10(6), 135-142. <https://doi.org/10.5539/elt.v10n6p135>
- Aziz, Z. A., Mustafa, F., & Amalia, D. (2017). *Improving students' reading comprehension through the implementation of pre-questioning technique*. Proceedings of the 1st National Conference on Teachers' Professional. Banda Aceh.
- Bailey, E. (2015). *Predictions to support reading comprehension*. Retrieved from <https://www.thoughtco.com/predictions-to-support-reading-comprehension-3111192>
- Birt, J. (2022). 15 types of questions (with definitions and examples). Indeed. <https://shre.ink/2KOJ>
- Bülent Döş et al., (2016). An analysis of teachers' questioning strategies. AcademicJournals.
- Cano, Francisco; García, Ángela; Justicia, Fernando; & Berbén, Ana B. G. (2014). *Learning Approaches and Reading Comprehension: The Role of Student Questioning and Prior Knowledge*. Journal of Psychodidactics 19: 247-265. doi: <https://doi.org/10.1387/RevPsicodidact.10186>
- Chien, Y. L., & Chen, H. C. (2017). The effects of different question types on reading comprehension. *Journal of Education and Learning*, 6(2), 86-97.
- Choi, J., & Moeyaert, M. (2019). The effects of different question types on the reading comprehension of adolescent EFL learners. *Journal of Language and Linguistic Studies*, 15(2), 1-16.

- Creswell, J.W., & Buchholtz, M. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Pearson.
- Creswell, J.W., & Creswell, J.D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage.
- Cueva, K.L. (2020). *Metacognition strategy in reading comprehension* [Master's thesis]. Universidad Técnica de Ambato
- Department of Education. (2021). *Victoria*. Retrieved from Teaching Comprehension: <https://shre.ink/2KF0>
- Department of education of Nova Scotia. (n.d). *Readers use information inside and outside the text (life experience) to make sense of themselves*. Nova Scotia.
- Donnchaidh, S. M. (2022). *Literacy Ideas*. Retrieved from What is an inference? And how to teach it.: <https://literacyideas.com/teaching-inference/>
- Escudero, I., Huertas-Abril, C. A., & García-Sánchez, S. (2019). Reading comprehension in higher education: Challenges and strategies. *Journal of New Approaches in Educational Research*, 8(1), 31-38.
- Guthrie, J. T., & Klauda, S. L. (2019). The Importance of Reading for the Development of Cognitive Skills: An Overview of Research Evidence. In T. L. Jetton, J. A. Dole, & T. W. Bean (Eds.), *Adolescent Literacy Research and Practice* (pp. 28-47). The Guilford Press.
- Gamboa, P. A., & Alvarado, J. M. (2016). The effects of metacognitive questioning strategies on reading comprehension and metacognitive awareness. *Profile Issues in Teachers' Professional Development*, 18(2), 91-107.
- Hanifah Thohidah, Mustakim Sagita, Jamaliah. (2021). *Improving students reading comprehension by applying pre-questioning technique*. *Education Enthusiast: Jurnal Pendidikan dan Keguruan*, 4.
- Harklau, L. (2015). *The effects of teachers' questioning on second language learners' comprehension*. *TESOL Quarterly*, 49(1), 111-132.
- Hiebert, E. H., & Pearson, P. D. (2018). The impact of teacher-led questioning on students' reading comprehension. *Journal of Educational Psychology*, 110(1), 1-14.
- Hu, G. (2015, January n.d). *ATLANTIS PRESS*. doi: <https://dx.doi.org/10.2991/emcs-15.2015.17>
- Jane Oakhill, Kate Cain and Carsten Elbro. (2015). *Understanding and teaching reading comprehension*. New York: Routledge.

- Kent State University. (n.d.). *Three Level Comprehension Guide for Active Reading*. Writing Commons.
- Khadijeh Jafari, Ghazyani Aylar. (2016). *Iranian EFL learners' attitudes towards using pre- vs. post-questioning techniques in the comprehension of nonfiction texts*. Islamic Azad University. Gorgan: International Journal of Research Studies in Language Learning.
- Li, Y., & Gardner, D. (2017). *Effects of different questioning techniques on the reading comprehension performance of EFL learners*. *TESOL Quarterly*, 51(2), 330-357.
- MacDonald, B. (2022). *LillyPad*. Retrieved from 15 Reading Comprehension Skills & Strategies for English Language Learners: <https://blog.lillypad.ai/comprehension-skills/>
- Martínez, L. T. (2021). *Metacognitive strategies in relation to the development of reading comprehension skills in EFL senior high school students in ibarra- ecuador*. Ibarra.
- Meniado, J. C. (2016). *Metacognitive Reading Strategies, Motivation, and Reading Comprehension Performance of Saudi EFL Students*. Yanbu: Canadian Center of Science and Education .
- Mokhtari, K., & Sheorey, R. (2014). *Promoting reading comprehension and metacognitive awareness in second language learners: An exploratory study using the Question-Answer Relationships (QARs) framework*. *Reading Psychology*, 35(4), 321-353.
- Nasution, R. F., Harida, E. S., & Rambe, S. (2018). Reading strategies used by successful readers of English department students of state institute for Islamic studies Padangsidempuan. *Tazkir: Jurnal Penelitian Ilmu-ilmu Sosial dan Keislaman*, 4(2), 267. doi: <https://doi.org/10.24952/tazkir.v4i2.1116>
- NWSGovernment. (2022). *NWSGovernment*. Retrieved from Teaching strategies. Inferential comprehension: <https://n9.cl/1slx7>
- Panayiota Kendeou, Kristen L. McMaster, & Theodore J. Christ. (2022). Reading Comprehension: Core Components and Processes. *SAGE Journals*, 3(1), n.d. doi: <https://doi.org/10.1177/2372732215624707>
- Pedro Tavaréz DaCosta & Yerni Herrera Gutierrez. (2020). *Level of Reading Comprehension of Dominican EFL College Students*. Santo Domingo, D.R.: n.d.
- Reading Strategies & Misconceptions. (n.d). *Prediction*. Retrieved from <https://readingstrategiesmsu.weebly.com/predicting.html>
- Ritchie, D., & Hudson, P. (2016). The influence of various question-generation tasks on students' reading comprehension of expository texts. *Journal of Educational Psychology*, 108(3), 363-377.

- Riswanto, R. (2022). *The Impact of a Pre-Questioning Technique on Students' Reading Comprehension at a Bengkulu State Junior High School*. *Al-Ishlah: Jurnal Pendidikan*, 14, 20381-2386.
- Schaefer, A. M. (2016). *Reading Comprehension Instruction for Middle School Students with Reading Disabilities*. Saint Cloud State University, Department of Special Education. Culminating Projects in Special Education. Retrieved from https://repository.stcloudstate.edu/sped_etds/23
- Sencibaugh, J. M., & Sencibaugh, A. M. (2015). *The effects of questioning the author on the reading comprehension of middle school students*. The Free Library. Retrieved from <https://www.thefreelibrary.com/The+effects+of+questioning+the+author+on+the+reading+comprehension...-a0425801912>
- Shanmugavelu, G., Ariffin, K., Vadivelu, M., Mahayudin, Z., & R K Sundaram, M. A. (2020). *Questioning Techniques and Teachers' Role in the Classroom*. *Shanlax International Journal of Education*, 8(4), 45-49. <https://doi.org/10.34293/education.v8i4.3260>
- Shao, Y., & Lee, C. (2020). Effects of different questioning techniques on EFL learners' reading comprehension and critical thinking skills. *Journal of Educational Research and Practice*, 10(1), 1-14.
- So Young Han, Yeon Hee Choi . (2018). *Post-Reading Question-Generation Activities and Cooperative Learning in EFL Reading*. *English Teaching*.
- Stephen Harvey & Richard L. Light. (2015, August 01). Questioning for learning in game-based approaches to teaching and coaching. *Asia-Pacific Journal of Health, Sport and Physical Education*, 5-6. doi: <https://doi.org/10.1080/18377122.2015.1051268>
- Sujariati, Qashas Rahman, Murni Mahmud. (2016). *English Teacher's Questioning Strategies in EFL Classroom at SMAN 1 Bontomarannu*. Makassar: ELT Worldwide.
- Tamas Kiss & Alex Wang. (2017). Investigating Teacher Questions Within the Framework of Knowledge Building Pedagogy. *Journal of International Social Studies*, 7(1), 55-69. Retrieved from <http://www.iajiss.org/>
- Teddlie, C., & Tashakkori, A. (2015). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*. Los Angeles, CA: Sage.
- Ukrainetz, T. A. (2015). Improving Text Comprehension: Scaffolding Adolescents into Strategic Reading. *Seminars in speech and language*, 36(1), 19-20. doi: <http://doi.org/10.1055/s-0034-1396443>.

Ulu, M. (2017). The Effect of Reading Comprehension and Problem Solving Strategies on Classifying Elementary 4th Grade Students with High and Low Problem Solving Success. *Journal of Education and Training Studies*, 5(6), 45. doi: <https://doi.org/10.11114/jets.v5i6.2391>

11 Annexes

Annex 1. Pre-test and Post-test



Universidad Nacional de Loja

Facultad de la Educación, el Arte y la Comunicación

Carrera de Pedagogía de los Idiomas Nacionales y Extranjeros

Data Collection Source: Pre-test and Post-test

Student's code: Date:

Dear student, the objective of this test is to collect information about your reading comprehension skills. Please, read carefully and answer the following questions. Your answers will be confidential and anonymous.

1. **Predicting:** Look at the picture and the title. Circle the correct option that says what the story will be about. (2 points)



- a. It will be a novel
- b. It will be a fantasy movie
- c. It will be a business magazine
- d. It will be a horror story

2. **Predicting:** Read the following passage and choose what might happen next. Circle the answer option (a, b, c or d). (2 points)

“One day, Maria’s mother asked her to go to the store to buy sausages and viscera for the next day. As Maria Angula had a bad behavior, she decided to ignore her mother’s request.”

- a. She will buy a car
- b. She is going to buy beef to grill
- c. She is going to buy the sausages and viscera
- d. She will go out with her friends instead of going to the store

3. **Inferring:** According to the bolded line of the following passage, paint the correct option that describes the reason “why”. (2 points)

*“When the night arrived, she went inside the cemetery and took some viscera from recently dead bodies. **She was very scared but she had to be strong.** When the plan was done, she decided to go home.”*

- a. She was afraid of her angry mom when arriving home
 - b. Her fear was to be arrested by the police
 - c. She was scared of the bodies in the cemetery
 - d. She hates the darkness
 - e. The dead bodies in the cemetery were alive
4. **Inferring:** Based on the following passage, match the correct option to discover the character’s feeling and write the complete answer in the line. (2 points)

“Again and again, someone was knocking loudly on her door! But everyone was asleep, so who could it be? Maria Angula did not know who was causing the noise.”

● frozen ● ● she didn't know who was it

She was feeling ● ● confused ● ● because ● ● everyone was asleep

● scared ● ● she was in bed

5. **Problem solving:** Match the option in column A (a-g) to complete the sentences with column B (1-7) and choose a sentence to answer the question for the following situation: (2 points)

“Then, she heard footsteps. Maria could feel someone coming up the stairs and crawling to her room.”

What could she do? _____

A

- a. Go downstairs •
- b. Stay in bed •
- c. Take a shower •
- d. Hide in the closet •
- e. Call the police •
- f. Scream loudly •

B

- 1. to relax a bit
- 2. to leave the house
- 3. until the person leaves
- 4. so her mom helps her
- 5. and sleep, ignoring the noise
- 6. for them to arrest the man

6. **Problem solving:** Cross out the option that cannot be a solution to the following dialogue. (2 points)

“Maria Angula: give me back my viscera... the organs you stole from me in the cemetery, give them back to me...”

- Praise for his/her soul
- Ask for forgiveness
- Sell the viscera
- Scream to be heard and assisted
- Accept her fault
- Escape from her house

Annex 2. Pre-test and Post-test answer sheet



Universidad Nacional de Loja

Facultad de la Educación, el Arte y la Comunicación

Carrera de Pedagogía de los Idiomas Nacionales y Extranjeros

Data Collection Source: Pre-test and Post-test

Student's code: **Date:**

Dear student, the objective of this test is to collect information about your reading comprehension skills. Please, read carefully and answer the following questions. Your answers will be confidential and anonymous.

1. **Predicting:** Look at the picture and the title. Circle the correct option that says what the story will be about. (2 points)



- b. It will be a fantasy movie
- a. It will be a novel
- d. It will be a horror story
- c. It will be a business magazine

2. **Predicting:** Read the following passage and choose what might happen next. Circle the correct letter (a, b, c or d). (2 points)

“One day, Maria’s mother asked her to go to the store to buy sausages and viscera for the next day. As Maria Angula had a bad behavior, she decided to ignore her mother’s request.”

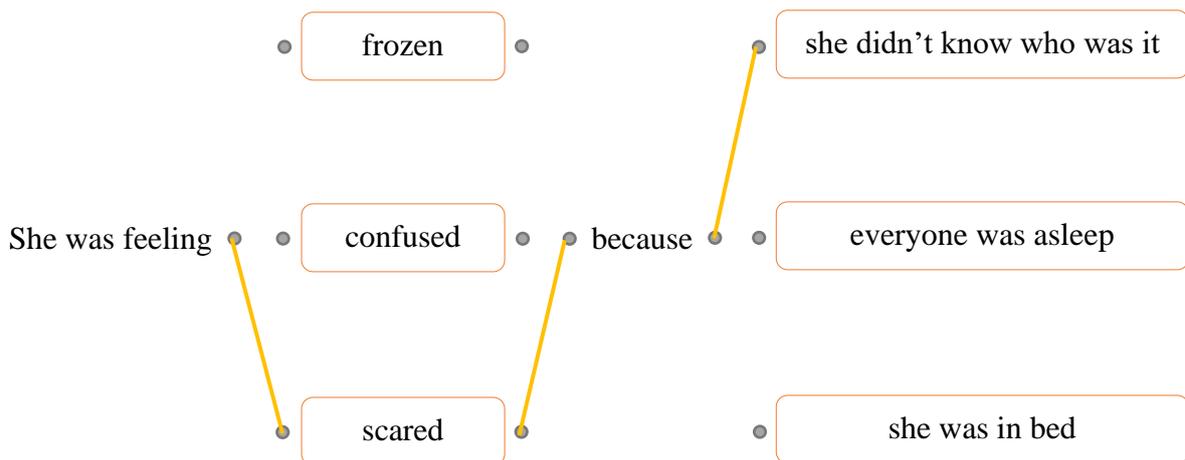
- a. She will buy a car
- b. She is going to buy beef to grill
- c. She is going to buy the sausages and viscera
- d. She will go out with her friends instead of going to the store

3. **Inferring:** According to the bolded line of the following passage, paint the correct letter that describes the reason “why”. (2 points)

*“When the night arrived, she went inside the cemetery and took some viscera from recently dead bodies. **She was very scared but she had to be strong.** When the plan was done, she decided to go home.”*

- a. She was afraid of her angry mom when arriving home
 - b. Her fear was to be arrested by the police
 - c. She was scared of the bodies in the cemetery**
 - d. She hates the darkness
 - e. The dead bodies in the cemetery were alive
4. **Inferring:** Based on the following passage, match the correct option to discover the character’s feeling and write the complete answer in the line. (2 points)

“Again and again, someone was knocking loudly on her door! But everyone was asleep, so who could it be? Maria Angula did not know who was causing the noise.”



She was feeling scared because she didn't know who was it

5. **Problem solving:** Match the option in column A (a-g) to complete the sentences with column B (1-7) and choose a sentence to answer the question for the following situation: (2 points)

“Then, she heard footsteps. Maria could feel someone coming up the stairs and crawling to her room.”

What could she do? **Scream loudly so her mom helps her**

A

- g. Go downstairs
- h. Stay in bed
- i. Take a shower
- j. Hide in the closet
- k. Call the police
- l. Scream loudly

B

- 7. to relax a bit
- 8. to leave the house
- 9. until the person leaves
- 10. so her mom helps her
- 11. and sleep, ignoring the noise
- 12. for them to arrest the man

6. **Problem solving:** Cross out the option that cannot be a solution to the following dialogue. (2 points)

“Maria Angula: give me back my viscera... the organs you stole from me in the cemetery, give them back to me...”

- Praise for his/her soul
- Ask for forgiveness
- **Sell the viscera**
- Scream to be heard and assisted
- Accept her fault
- Escape from her house

Annex 3. Questionnaire



Universidad Nacional de Loja

Facultad de la Educación, el Arte y la Comunicación

Carrera de Pedagogía de los Idiomas Nacionales y Extranjeros

Data Collection Source: Questionnaire

Student's code: Date:

Dear student, the objective of this questionnaire is to collect information about the perceptions that you have toward the implementation of questioning to improve reading comprehension. Read carefully the questions and answer them according to your learning experience in class. Mark with an x one option for each answer.

1. Thanks to questioning I could better understand the texts I read.

Strongly agree	Agree	Disagree	Strongly disagree
----------------	-------	----------	-------------------

2. Thanks to questioning I was capable of relating my previous knowledge to the new knowledge before, during and after reading.

Strongly agree	Agree	Disagree	Strongly disagree
----------------	-------	----------	-------------------

3. Before reading, open-ended questions allowed me to respond freely without fear of negative consequences.

Strongly agree	Agree	Disagree	Strongly disagree
----------------	-------	----------	-------------------

Why?

4. Before reading, open-ended questions helped me to predict the topic of a text.

Strongly agree	Agree	Disagree	Strongly disagree
----------------	-------	----------	-------------------

5. During reading, inferential questions helped me to decipher the implicit meaning of a text.

Strongly agree	Agree	Disagree	Strongly disagree
----------------	-------	----------	-------------------

6. During reading, inferential questions aroused my curiosity and interest in reading.

Strongly agree Agree Disagree Strongly disagree

Why?

7. After reading, problem-solving questions helped me improve my ability to solve a problem stated in a text.

Strongly agree Agree Disagree Strongly disagree

Why?

8. After reading, the problem-solving questions helped me to expand my ability to make judgments about a text (critical thinking).

Strongly agree Agree Disagree Strongly disagree

Why?

9. Which of the following stages was easier to develop?

Pre-questioning During-questioning Post-questioning

Why?

10. Which of the following stages was the most difficult to develop?

Pre-questioning During-questioning Post-questioning

Why?

THANKS FOR YOUR COLLABORATION

Annex 4. Scoring guide

N°	Question	Indicator	Score
1	Look at the picture and the title. Circle the correct option that says what the story will be about.	Predicting	2p
2	Read the following passage and choose what might happen next. Circle the answer option (a, b, c or d).	Predicting	2p
3	According to the bolded line of the following passage, paint the correct option that describes the reason “why”.	Inferring	2p
4	Based on the following passage, match the correct option to discover the character’s feeling and write the complete answer in the line	Inferring	2p
5	Match the option in column A (a-g) to complete the sentences with column B (1-7) and choose a sentence to answer the question for the following situation	Problem-solving	2p
6	Cross out the option that cannot be a solution to the following dialogue	Problem-solving	2p
Total			12 points

Annex 5. Field notes

FIELD NOTES	
Setting:	Colegio de Bachillerato "27 de Febrero"
Grade:	10mo EGB paralelo "B"
Student teacher:	Pablo Castillo
Date:	18/05/2023 - 19/05/2023
Duration:	3 hours

Descriptive notes	Reflective notes
-------------------	------------------

Day 1

In this class, I started with the "Simon says" game, which I implemented consistently throughout the class as well, that proved to be an effective strategy in maintaining students' engagement and attentiveness that generated excitement and set a lively tone for the rest of the session. Additionally, the reading activity provided a platform for students to enhance their predicting and inferring skills, while the subsequent class discussion delved deeper into character motivations and understanding. The highlight of the class was the problem-solving activity, which encouraged students' critical thinking and prompted them to apply their knowledge actively to solve a given problem. Overall, this class reinforced the significance of interactive and student-centered approaches in fostering comprehension, engagement, and problem-solving abilities.

This class was a valuable learning experience for me as an educator. It highlighted the importance of incorporating engaging activities throughout the lesson to create a positive and dynamic learning environment. The consistent use of the "Simon says" game proved to be highly effective in capturing and making the class more enjoyable. The reading activity allowed students to practice and enhance their predicting and problem-solving skills that stimulated students' critical thinking and encouraged them to apply their knowledge in a practical context. This class reinforced my belief in the power of questioning as an interactive and student-centered approach. It emphasized the importance of creating a positive and engaging learning environment, where students can actively participate, think critically, and develop problem-solving skills.

Day 2

In this class, I started with an engaging activity where students had to stand up whenever I mentioned something they could relate to. This not only grabbed their attention but also created a lively atmosphere. If any student made a mistake, they had to answer a question related to the previous class, reinforcing their understanding of the material. Moving forward, the class was focused on group work with the readings provided. Students were given the opportunity to generate their ideas and insights based on the activities assigned. This collaborative approach fostered critical thinking and encouraged active participation. It was rewarding to witness the students' enthusiasm as they shared their thoughts and supported their ideas with evidence from the text.

The initial activity successfully captured their attention and created a vibrant classroom environment. The added element of answering questions for mistakes served as a valuable reinforcement tool, ensuring students remained focused and retained knowledge from the previous class. The subsequent focus on group work and readings allowed students to actively participate in the learning process. By providing them with opportunities to generate their ideas and insights, the class encouraged critical thinking and collaboration. It demonstrated their engagement and understanding of the material, as well as their ability to apply knowledge to real-world contexts. It emphasized the value of creating a supportive and interactive classroom environment where students feel empowered to contribute their ideas and perspectives.

Annex 6. Intervention plan

Intervention plan	
Class: 10mo “B” EGB Number of Students: 25 (8 boys, 17 girls) Language Level: A2.1	Date: May 19, 2023 Schedule: <ul style="list-style-type: none"> • Wednesday 7h10-8h30 • Friday 10h20-11h00 Time per lesson: 40 minutes Total hours: 3
School year: Type of institution:	2022-2023 Public institution
Preservice teacher:	Pablo Castillo

Research Problem	How does questioning improve reading comprehension among tenth-grade students at a public institution in Loja, during the 2022-2023 school year?
Lesson Topic	Preparing recipes: sequence adverbs (first, then, next, after that, finally)
Lesson Objectives	By the end of the class, students will be able to describe the process of the recipes in chronological order using the sequence adverb (first, then, next, after that, finally).
Engage	Simon says (game): The game consists of the teacher saying "Simon says..." and the students have to do what he says. For example: <ul style="list-style-type: none"> • <i>Simon says stand up / sit down</i> • <i>Simon says to raise your left / right hand</i> Whoever gets it wrong must say the process to prepare a short recipe. E.g. <ul style="list-style-type: none"> • <i>How do you prepare a toast?</i> • <i>How do you prepare a milkshake?</i> According to the students' answers, the teacher introduces the topic by complementing what the student says with sequence adverbs.
	The class starts with a little game where the students have to stand up once they hear: <ul style="list-style-type: none"> • <i>I have brown hair</i> • <i>I have blue eyes</i> • <i>I have a pet</i> After that, the teacher asks students about the previous class: <ul style="list-style-type: none"> • <i>What are the sequence adverbs?</i> • <i>What are they used for?</i> And asks them to give an example while the teacher writes what the students say to remember and reinforce the grammar.
Explore	First, the teacher starts explaining about the sequence of events with a short recipe to prepare a scrambled egg. e.g. <ul style="list-style-type: none"> • <i>First, whisk the egg in a bowl</i> • <i>Then, add some salt or cumin</i> • <i>Next, preheat the pan and pour oil</i> • <i>After that, put the egg in the pan for 5 minutes</i> • <i>Finally, take it out and enjoy</i> After that, the teacher and students work on page 55 of the guide book to reinforce the grammar.
	The teacher asks students to get into 6 groups of 4 (1 group of 5) and gives each group a piece of flipchart with a sentence using a sequence adverb for students to guess what is the recipe. (prediction) The teacher writes the title of the recipe for students to know how to write the sequence of their sentences once they know what the recipe is about.

Explain	<p>The teacher writes on the board the title of a recipe that the students must order with the sequence adverbs.</p> <p>The teacher pastes the first part of the recipe (which does not contain the sequence adverb) and asks “<i>what may come next</i>” for students to guess the sequence by making their predictions.</p> <p>After the students guess, the teacher pastes another part and so on until the recipe is completed.</p> <p>After ordering, the students will read again the whole recipe and will answer an inference question:</p> <ul style="list-style-type: none"> • <i>Why do we heat the chocolate again?</i> <p>And a problem solving question:</p> <ul style="list-style-type: none"> • <i>What would you do if the ingredients did not mix?</i> <p>Students must write the questions on their anchor chart.</p>
	<p>After the students complete their sequence, the teacher asks a representative of each group to read their recipes.</p> <p>Once they read, the teacher asks students to paste their piece of flipchart on the board to complete the sequence.</p>
Elaborate	<p>Students must describe the process to make an omelet using the sequence adverbs</p>
	<p>Each group is given a flashcard with a picture of a food to write down the preparation process using the sequence adverbs and kitchen vocabulary.</p>
Evaluate	<p>Students complete a worksheet:</p> <ul style="list-style-type: none"> • <i>Use the sequence adverbs to put the instructions in order.</i>
	<p>Students must complete a worksheet</p> <ul style="list-style-type: none"> • <i>Complete the Layla’s recipe using the sequence adverbs</i>
Materials /Bibliography/ Research Instruments	<ul style="list-style-type: none"> • Flipchart • Worksheets: <ul style="list-style-type: none"> https://docs.google.com/document/d/1h_E_Hstx6BbVpZPLHuqV3sKBFSuUSLMCJEupCFUsazM/edit?usp=drivesdk https://docs.google.com/document/d/1gM-Cf4WL6WdX-KgsNyF7BxXP9Y5jzIQm9J1AuK73zCA/edit?usp=drivesdk • Anchor chart • Board • Markers

Institutional Teacher:

Mg. Silvia Quezada

Academic Tutor:

Mg. Miriam Eucevia Troya Sánchez

Preservice Teacher

Pablo Castillo

Annex 7. Grading Scale According to the Ecuadorian Ministry of Education

Qualitative score range	Quantitative score range
Masters the required learning	9.00 – 10.00
Achieves the required learning	7.00 - 8.49
Close to achieve the required learning	4.01 - 6.99
Does not reach the required learning	<4

Annex 8. Rubric to evaluate reading comprehension according to its indicators.

SUB-INDICATORS	PERFORMANCE LEVEL			
	ACHIEVED (2)	NOT FULLY ACHIEVED (1,5)	ACHIEVED WITH DIFFICULTY (1)	NOT ACHIEVED (0,5)
PREDICTING				
Identification of the type and purpose of the text	Is always able to identify the type of text (news, web page, recipe, poster, rules of a game, etc.) and the purpose for which it is used (to inform, to give instructions, to advise, etc.).	Can almost always identify the type of text (news, web page, recipe, poster, rules of a game, etc.) and the purpose for which it is used (informing, giving instructions, advising, etc.).	Still has difficulty identifying the type of text (news, web page, recipe, poster, rules of a game, etc.) and the purpose for which it is used (informing, giving instructions, advising, etc.).	The type of text (news, web page, recipe, poster, rules of a game, etc.) and its purpose (to inform, to give instructions, to advise, etc.) are not always known.
Determination of the subject of the text	Always recognizes what the text will be about and always identifies some of its main ideas.	Can almost always recognize what the text will be about and almost always identifies some of its main ideas.	Recognizes with difficulty what the text will be about and some of its main ideas.	Still does not recognize what the text will be about or identify its main ideas
INFERRING				
Inference between data and ideas in the text	Is always able to perceive how ideas or data are related in the text: identify the order of actions, match ideas with illustrations, substitute connectors, etc.	Able most of the time to perceive how ideas or data are related in the text: identify the order of actions, match ideas with illustrations, substitute connectors, etc.	Still has difficulty perceiving how ideas or data are related in the text: identifying the order of actions, matching ideas with illustrations, substituting connectors, etc.	Still presents difficulties in perceiving how ideas or data are related in the text: identifying the order of actions, matching ideas with illustrations, substituting connectors, etc.
Inference of word meaning from context	Is always able to deduce what a word or expression means from the information given in the text.	Is almost always able to deduce what a word or expression means from the information given in the text.	Still has difficulty deducing what a word or expression means from the information given in the text.	Does not yet deduce what a word or expression means from the information given in the text.
PROBLEM SOLVING				
Localization of explicit information	Easily locates explicit information in the text (what, who, when, where, how, how much, how, etc.).	Almost always locates explicit information in the text (what, who, when, where, how much, how, etc.).	Sometimes has difficulty locating explicit information in the text (what, who, when, where, how much, how, etc.).	Does not yet locate explicit information in the text (what, who, when, where, how much, how, etc.).
Reflection on the content and form of the text	Is able to go beyond the literal comprehension of the text, is able to identify a problem and its solution, and use the text as a model to write a similar text, etc.	Is almost always able to go beyond the literal comprehension of the text, to identify a problem and its solution, and use the text as a model to write a similar text, etc.	Has difficulties in going beyond literal comprehension of the text, being able to identify a problem and its solution, and using the text as a model to write a similar text, etc.	Usually not yet able to go beyond literal comprehension of the text, is not able to identify a problem and its solution, and does not use the text as a model to write a similar text, etc.

Annex 9. Solicitud a la institución para realizar el Proyecto de Integración Curricular



UNL

Universidad
Nacional
de Loja

FACULTAD DE LA EDUCACIÓN, EL ARTE Y LA COMUNICACIÓN
CARRERA DE IDIOMA INGLÉS
CARRERA DE PEDAGOGÍA DE LOS IDIOMAS NACIONALES
Y EXTRANJEROS

O fc.005-DC-III/PINE-NG-FEAC-UNL
Loja, Febrero 8 del 2023

Magíster

Galo Sidney Guaicha Guaicha.,

RECTOR DEL COLEGIO DE BACHILLERATO "27 DE FEBRERO"

Ciudad

De mis consideraciones:

Me dirijo a usted, muy comedidamente, para comunicarle que, conforme consta en la Malla Curricular de la Carrera de Idioma Inglés de la Facultad de la Educación, el Arte y la Comunicación de la Universidad Nacional de Loja, las/los estudiantes del CICLO 7 y 8 deben aprobar la asignatura de DESIGN OF TEFL PROJECTS, en la que inician con el desarrollo del **TRABAJO DE INTEGRACIÓN CURRICULAR**. Debo manifestar que el cumplimiento del mismo, es uno de los requisitos para aprobar el presente ciclo, para egresar y posteriormente para la graduación.

Conocedora de su alto espíritu de colaboración, con todo lo que significa adelanto y progreso de la juventud lojana, me permito solicitarle, se digne autorizar a quien corresponde, se brinde la apertura necesaria a **PABLO DANIEL CASTILLO OCHOA**, para que realice las observaciones necesarias en la prestigiosa institución de su acertada regencia, con la finalidad de que pueda desarrollar eficientemente el Proyecto de Investigación; y, posteriormente, culminar con el Trabajo de Titulación.

Por la atención favorable que se digne dar al presente, le anticipo mis agradecimientos, a la vez que aprovecho la oportunidad para expresarle los sentimientos de mi especial consideración y estima.

Atentamente,

EN LOS TESOROS DE LA SABIDURÍA
ESTÁ LA GLORIFICACIÓN DE LA VIDA



ROSA PAOLA MORENO
ORDÓÑEZ

Lcda.M.Sc. Rosa Paola Moreno Ordóñez,
DIRECTORA ACADÉMICA

Elaborado por:
Dra.M.Sc. Nela Aguilera Asanza,
ANALISTA DE APOYO A LA GESTIÓN ACADÉMICA

Autorizado
2023/02/16

Annex 10. Declaración de consentimiento informado



Universidad Nacional de Loja
Facultad de la Educación, el Arte y la Comunicación
Carrera de Pedagogía de los Idiomas Nacionales y Extranjeros

Declaración de consentimiento informado

Yo,, con cédula de identidad número, como representante del estudiante, he leído y comprendido este documento de consentimiento informado. Entiendo que mi representado (a) participará en el presente proyecto de investigación de un estudiante de la Universidad Nacional de Loja con fines investigativos y de aprendizaje.

También estoy informado de que mi representado (a) puede rechazar participar en el proyecto en cualquier momento. Garantizo que se me ha informado que mis datos personales y los de mi representado (a) serán protegidos con anonimato y confidencialidad. Además, estoy al tanto de que, en caso de que el proyecto afecte la salud mental de mi representado (a), se interrumpirá de manera inmediata.

Consiento y autorizo plenamente el proyecto llevado a cabo por el investigador Pablo Daniel Castillo Ochoa en la ciudad de Loja, a las horas del día de 2023.

Nombres y apellidos
CI
REPRESANTE