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READING TO LEARN IN CHEMISTRY ESP COURSES

LEER PARA APRENDER EN CURSOS DE INGLÉS CON PROPÓSITOS ESPECÍFICOS, APLICACIÓN EXPERIMENTAL DEL CICLO DE ANDAMIAJE EN LA FACULTAD DE CIENCIAS QUÍMICAS DE LA UNC

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ABSTRACT

The development of reading comprehension in a foreign language has been of concern to many applied linguists, who have proposed different approaches to enhance students' comprehension. Scaffolding has been identified as one of the most effective teaching practices to enrich students' reading comprehension. This study aims to test an adapted model of the Scaffolding Interaction Cycle (Martin and Rose, 2005) in the context of a reading comprehension course at the School of Chemistry, National University of Córdoba, in an attempt to help solve some of the main problems detected in the mainstream classroom approach, such as lack of understanding of reading strategies and of grammatical structures, and poor comprehension of semantically dense texts. A quasi-experimental study with no random assignment (one-group, pre- and post-test design) based on quantitative and qualitative methods to collect and analyse the data was conducted. In general, the results indicate that the instruction based on the adapted version of the Scaffolding Interaction Cycle contributes to enhancing the teaching of EFL reading and helps poor-skilled readers improve their reading comprehension skills. These results have pedagogical implications for reading courses addressed to non-native students who are studying English for Specific Purposes.

To my parents, who have always showed me that learning is the road to growth.

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ABBREVIATIONS AND ACRONYMS

EAP	English for Academic Purposes
EFL	English as a Foreign Language
EGP	English for General Purposes
ELT	English language Teaching

EOP	English for Occupational Purposes
ESP	English for Specific Purposes
EST	English for Science and Technology
FonF	Focus on Form
L1	Native Language
L2	Foreign Language
LL	Lower Limit
LSP	Languages for Specific Purposes
SE	Standard Error
SFG	Systemic Functional Grammar
SFL	Systemic Functional Linguistics
SLA	Second Language Acquisition
TALO	Text As Linguistic Object
TAVI	Text As A Vehicle Of Information
TOEFL	Test Of English as a Foreign Language
UL	Upper Limit
UNC	Universidad Nacional de Córdoba

CHAPTER 1
Introduction

1.1. Statement of the problem

In academic contexts, reading is an essential tool for independent learning, among other things. Students' needs vary progressively from their first steps at primary school to secondary school to the more autonomous learning at university. In formal settings, such as this one, students are expected to read as part of learning; part of this learning requires that they read and interpret texts according to the tasks that they engage in and the goals that are set for them (Grabe, 2005). In fact, "reading to learn places more processing demands on the reader because the reader is expected to remember the main ideas and many supporting ideas and be able to recall this information as needed" (Grabe, 2005, p. 9).

An essential component, then, to learn a considerable amount of information from a text is time. Grabe and Stoller (2002, p. 29) state that "fast and efficient processing is the hallmark of fluent reading comprehension abilities". According to Goodman (1988) effectiveness and efficiency make a reader proficient: s/he is effective if s/he can reconstruct meaning from the original and accommodate such meaning into her/his schema: and s/he is efficient if s/he can read a text effortlessly (Carrell and Eisterhold, 1993, p. 76).

Although students usually acquire the reading skill at primary school, their reading ability is not enough to help them satisfy the requirements imposed by the different disciplines (Carlino, 2005; Cassany and Morales, 2008). Many learners are not able to go beyond the use of reading as a mere decoding skill. Therefore, a combination of the Scaffolding Interaction Cycle phases with the think-aloud modelling techniques can constitute a solution to the problems that poor-skilled students face when dealing with reading an academic text in L2.

In the context of the School of Chemistry at UNC, students receive training in ESP reading comprehension skills. The teaching approach includes explicit language instruction of the formal aspects of the target language. Students have also been made explicitly aware of the use of strategies as an important means to become efficient readers. The class material for this approach has been designed on the basis of research in this field that has highlighted the need for adults to learn from explicit teaching of

grammatical and textual structures and direct strategy awareness (Dudley- Evans and St John, 1998; Gil-García and Cañizales, 2004; Grabe and Stoller, 2002; Hutchinson and Waters, 1987; Jordan, 1997; Lynch, 2005; Swales, 1990) since the final goal of the course is to help learners become autonomous readers through raising awareness of reading strategies by means of direct instruction.

In the mainstream classroom practice, every lesson is approached as follows. The designed class consists of a worksheet where the grammatical content and the strategies to be used are anticipated in a chart. This chart is followed by an academic text which includes a guide with pre-reading, reading and post- reading activities. After the reading activities, the most frequent and relevant grammatical item is focused on and dealt with explicitly, accompanied by an explanation of its use with some extra examples. In both cases, in the worksheet anticipating the content and strategies, and in the charts with the grammatical explanations, metalanguage is used.[1].

However, the results obtained from the tests and surveys administered along the three-month courses for more than six years indicate that, when using the different metalanguage labels and reading strategies, some of the students have some difficulty in the transfer of declarative content (the target language) and procedural content (the proper reading strategies). Apparently, the metalanguage[2] used has led them to confusion and to consuming a lot of their time and effort on things other than the interpretation of the text.

Moreover, when students are instructed –in class– to skim the text, there is an attempt to try to understand the text word by word. This focus on words becomes a problem when they are faced with heavily packed sentences/texts. Strategies of global reading are hindered, and this leads learners to distorted interpretations. From the points discussed, it becomes clear that the English reading comprehension course does not match the poor skilled students' needs in their context.

In this context, the main aim of this study is to explore the adequacy of Martin and Rose's (2005) Scaffolding Interaction Cycle method to unpack the complexities of a text, and the instructor's modelling of the steps and reading strategies through think-aloud techniques in the context of the ESP reading course at the School of Chemistry.

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[1] Each reading activity is introduced with instructions about the kind of reading strategy to be implemented in that particular situation For example: "Lea el siguiente texto en forma global, para identificar definiciones."

[2] In the questionnaires administered at the end of course, some students expressed their difficulties in understanding the metalanguage labels.

1.2. Research Questions

Given the context of this project some questions arise:

1 Can the unpacking of linguistically and semantically dense texts through the Scaffolding Interaction Cycle impact positively on the learning process as compared to the mainstream classroom approach?

2 Can think-aloud (self-talk) techniques help the understanding of strategy use and the deconstruction of grammar structures (noun phrase)?

3 Can the simplified choices of metalanguage impact positively on the interpretation of the structures of L2 grammar?

1.3. Hypothesis

Teaching reading comprehension with a focus on the Scaffolding Interaction Cycle using the think-aloud technique favours the development of reading comprehension proficiency.

1.4. Objectives

1.4.1. General Objective

a. To investigate the effect of the Scaffolding Interaction Cycle, in combination with think-aloud techniques, on the teaching of reading comprehension to ESP students at university level.

1.4.2. Specific Objectives

a. To evaluate the effectiveness of unpacking the lexico-grammar and semantic complexities of a text in the process of interpretation by using an instruction approach that goes from implicit to explicit teaching as opposed to an approach that emphasizes explicit teaching.

b. To evaluate the effectiveness of unpacking the lexico-grammar and semantic complexities of a text in the process of interpretation by using the “think-aloud” technique.

c. To evaluate the effective and efficient interpretation during the detailed reading stage of intertextual portions (paragraphs and noun phrases) of highly packed texts.

1.5. Thesis Outline

This dissertation is divided in 7 chapters. In Chapter 1 the problem that led the researcher to carry out this study has been introduced and an overview of the situation at university level in Argentina, more specifically at the School of Chemistry of the UNC has been provided. The goal of chapter 2 is to introduce the theoretical framework that supports this study. It outlines some basic features of the pedagogical approaches in reading comprehension and then discusses the approaches used in this study. Chapter 3 overviews previous studies that implemented this approach. Chapter 4 introduces the reader to the context of the study by describing the participants and the instructor who carried out the experiment in both the control and the experimental group, and the treatment the two groups received. Chapter 5 presents a descriptive analysis and a statistical analysis of the samples obtained. Chapter 6 discusses the results obtained and the students' impressions about both approaches, contrasting the two groups. Chapter 7 reviews the research questions and hypotheses that motivated this study and develops the conclusions drawn after analysing the results obtained in this experiment. It also provides some suggestions for further research and explores some pedagogical implications.

CHAPTER 2
Theoretical Framework

2.1. Introduction

The present study focuses on the training of ESP students in the Scaffolding Interaction Cycle; therefore one main theoretical framework gives support to this study: Systemic Functional Linguistics. As the study involves reading comprehension courses in a specific discipline, the concept of reading in ESP is examined. The chapter also includes the notions of implicit-explicit teaching, the Scaffolding Interaction Cycle and the Think-aloud Technique. To conclude this section, an adapted version of the Scaffolding Interaction Cycle is proposed.

2.2. Systemic Functional Linguistics

Systemic Functional Linguistics (SFL) postulates not only a theory of language but also a methodology for the analysis of texts and their contexts of use (Halliday, 1978). Because of this dual nature, SFL aims at explaining how individuals use language and how language is structured for its different uses (Eggins, 1994). Therefore, according to this functional view of language, language serves to accomplish certain social functions. As language renders different meanings which work simultaneously and in combination with the social context in which they happen, SFL divides these meanings into three types of metafunctions: ideational or experiential, interpersonal and textual, all of them occurring in a context of situation and a context of culture. For SFL speakers' cultures are manifested in each situation in which they interact, and each interactional situation is manifested verbally as unfolding text, i.e. 'as text in context' (Martin and Rose, 2008).

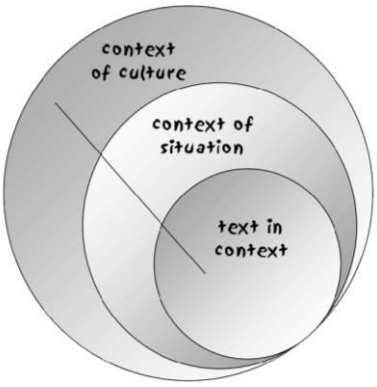

Figure 1: Strata of language in social context (Martin and Rose, 2008, p. 13)

Thompson (2004, p. 30) describes these metafunctions as the use of language 'to talk about our experience of the world, including the worlds in our own minds, to describe events and states and entities involved in them' (ideational or experiential meaning); 'to interact with other people, to establish and maintain relations with them, to influence their behaviour, to express our own viewpoint on things in the world, and to elicit or change theirs' (interpersonal meaning); and 'to organize our messages in ways that indicate how they fit in with the other messages around them and with the wider context in which we are talking or writing' (textual meaning). This means that the three structures serve to express three independent sets of semantic choice.

Since the reading comprehension approach used in the mainstream course as well as the new treatment proposed emphasize the meanings conveyed through language in a particular context of culture and situation, the functional approach is more suitable for the purpose of this study. Therefore, grammatical analysis in reading comprehension courses needs to be focused on meaning and context. The grammatical analysis that the functional approach takes differs from the formal grammatical analysis. Lock (1996) states the difference as follows

> Formal analysis tends to be primarily interested in abstract representations and relationships between structures and less interested in meaning and context. Functional analysis tends to view language as a communicative resource and to be primarily interested in how linguistic structures express meaning. (p. 17)

In his view, Lock (1996, p. 3) points out that SFL focuses on the appropriateness of the lexico-grammatical choices for a particular communicative situation in a particular context. He considers that in order for a description of the grammar to be really useful to language learners and teachers 'a description of the grammar of a language should be more than a simple lay out of the forms and structures of the language.' A functional grammatical analysis primarily aims at understanding 'how the grammar of a language serves as a resource for making and exchanging meanings.'

Halliday and Mathiessen (2014) suggest that structural operations, such as inserting elements or ordering them, are explained in SFL as realizing systemic choices. As a consequence, 'when we analyse a text, we show the functional organization of its structure; and we show what meaningful choices have been made' […] and the

realization of these choices 'derives from the fact that a language is a stratified system' (Halliday and Matthiessen, 2014, p. 24) (see Figure 2).

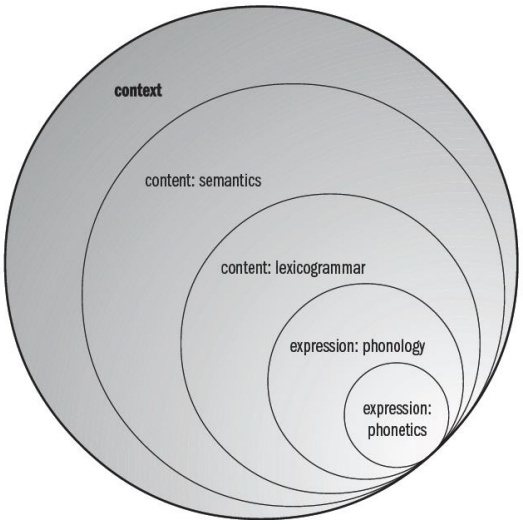

Figure 2: Stratification (Halliday and Mathiessen, 2014, p. 26)

2.3. The Systemic Functional Linguistics view of reading

As far as reading is concerned, Martin and Rose (2005, p. 5) suggest that the semantic stratum is what appears to make commonsense, since in the SFL model the answer to the question in reading theory 'whether it is primarily "decoding" sequences of letters, or "predicting" sequences of meanings, that enables us to read words' is that both are equally important.

> There are intermediate layers of structure in the discourse semantic stratum, between the sentence and the text, in particular the stages that different genres go through to achieve their goals, as well as shorter phases of meaning within each stage that are more variable, but are nevertheless predictable within particular genres and registers. And aside from such segments, there are other kinds of structure at the discourse stratum of written text, including chains of reference to people and things, strings of lexical elements that expect each other from sentence to sentence, and swelling and diminishing prosodies of appraisal, all packaged within smaller and larger waves of information. Fluent reading involves recognising and predicting meanings unfolding through all these structures, without which it would be impossible to make sense of written text. (Martin and Rose, 2005, p. 6)

These layers of structure are important in the reading comprehension process due to the different meanings that are conveyed in an academic text. In ESP courses, the context of culture and situation as suggested in SFL theories are already established in

the field of study. The focus, then, is on analysing the semantic choices used by the author of a technical or academic text to render meaning for the readers in that academic or technical context. To this end, there have been different theories that approached the instruction in technical or academic texts. One of them is ESP, which will be discussed below.

2.4. English for Specific Purposes

English for Specific Purposes (ESP) refers to "the teaching and learning of English as a second or foreign language where the goal of the learners is to use English in a particular domain." (Paltridge and Starfield, 2013, p. 2). In its early days (1962-1981), the central focus of ESP was English for science and technology (EST) in academic contexts and research tended to be driven by the description of written discourse (Johns, 2013). Since Swales' seminal work (1990), the limits of ESP have been expanded; researchers are now interested in genre as a tool for analysing and teaching spoken and written language.

A key feature of an ESP course is that the content and the aims of the course are oriented to the specific disciplinary needs of the learners (Paltridge and Starfield, 2013). Therefore, ESP courses tend to concentrate on the language and skills necessary to be able to understand and produce specific texts, and genres which are prototypical of the students' fields of study.

2.4.1. ESP: EAP and EOP

The field of ESP, which is part of English language teaching (ELT), can be classified into two main branches, English for General Purposes (EGP) and ESP (Dudley-Evans and St. John, 1998). Within ESP, there are again two principal divisions, English for Academic Purposes (EAP) and English for Occupational Purposes (EOP). Each of these major branches is then divided according to the disciplines or occupations with which it is concerned. Thus, EAP is subdivided into English for Biology and Engineering, for example, and EOP branches out into English for Nurses, Doctors, etc.

Dudley-Evans and St John (1998) suggest that ESP is a multi-disciplinary activity and there is no dramatic difference between EAP and EOP as to the skills to be

developed. Therefore, they classify ESP skills into five macro-skills and students may be trained in one or more of these macro-skills: reading, listening (to monologue), listening and speaking, speaking (a monologue), and writing.

In this study, the distinction between EAP and EOP will not be made since the aim of the subject in which this study is contextualised is to train students to access both academic English bibliography for their studies at university and research papers in English for their research work after graduation, the reading skill becomes central.

2.4.2. The reading skill in ESP/EAP contexts

The emphasis on authentic texts from different disciplines and the analysis of their properties as forms of discourse positioned reading in ESP as a "situated activity" (Hirvela, 2013, p. 79). Dudley-Evans and St John (1998) observed an emphasis on reading being taught from the perspective of texts as providing information rather than concentrating on their linguistic properties. In a similar vein, Johns and Davies (1983) portrayed these two views of texts using the acronyms TALO (text as linguistic object) and TAVI (text as a vehicle of information), giving more importance to the extracting of information in an accurate and quick manner than to the study of language, i.e., understanding the macrostructure was first. 'The ESP reader, thus, had to learn how to identify and extract relevant information from the text as a vehicle because […] the placement and arrangement of such information differs from one discipline to the other' (Hirvela, 2013, p. 79)

Dudley-Evans and St John (1998, p. 96-98) conclude that a balance between skills and language development is required in an ESP reading course. Some of the skills that are to be learnt or transferred from L1 into L2 are the following:

- selecting what is relevant for the current purpose;
- using all the features of the text such as headings, layout, typeface;
- skimming for content and meaning;
- scanning for specifics;
- identifying organisational patterns;
- understanding relations within a sentence and between sentences;
- using cohesive and discourse markers;
- predicting, inferring and guessing;

- identifying main ideas, supporting ideas and examples;
- processing and evaluating the information during reading;
- transferring or using the information while or after reading.

Grabe and Stoller (2001), Goodman (1988), and Chamot and O'Malley (1994) talk about strategies when referring to most of the skills mentioned above, and explain that the use of these strategies in L1 is automatic. They add that with proper consciousness raising instruction, these strategies can also be retrieved and transferred automatically when approaching texts written in L2. (I will go back to these skills and strategies in Chapter 4.)

An essential component for the development of these skills and strategies is the design of material. The selection of material to be used in an ESP course should consider an analysis of the present situation of the learner; hence, 'an ESP teacher will balance needs and motivational factors' (Dudley-Evans and St John, 1998, p. 98). The learners' background knowledge of the subject matter and their repertoire of skills and strategies in L1 is of utmost importance. This will allow a gradual increase in the complexity and length of the texts which will favour skills' development. Also, motivation will be gained by using materials that are of great interest and use for the learners.

As regards the background knowledge of the subject matter the learners have in L1, Martin and Rose (2005, p. 7) point out that for a reader to be able to comprehend a text, s/he needs "to recognise its genre and field, and to have enough experience to interpret the field as it unfolds through the text". In the following section, genre in connection to second language literacy will be discussed.

2.5. The teaching-learning cycle

The Teaching Learning cycle is a systematic one in which the fundamental essence of successful language learning was presented as requiring "guidance through interaction in the context of shared experience" (Martin and Rose, 2005, p. 2). This approach aimed at the process of teaching students to engage with and create texts by means of enabling teachers to systematically and effectively build students meaning-making skills through the deconstruction of texts, so that they could later create joint texts together with the teacher, the final goal being the creation of a text independently.

The teaching learning cycle used by Martin and Rose (2005) was also influenced by Vygotsky's and Bernstein's theories. Vygotsky's influence on this cycle is seen in the importance of peer collaboration and scaffolding on the part of the teacher and other peers. Bernstein's influence is related to the knowledge distribution, transmission and acquisition. These notions are reflected in the teaching-learning interaction cycle of Martin and Rose's (2005) model, as shown in figure 3.

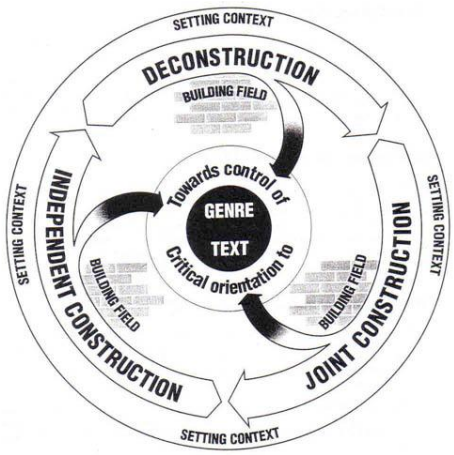

Figure 3: Teaching-learning cycle (Martin and Rose, 2005, p. 2)

In the *Deconstruction* phase, a model of genre is presented as the goal for the cycle as a whole. The *Joint Construction* phase consists of writing another example of the genre based on the analysis of the text in the previous phase plus the suggestions from the learners. The *Independent Construction* phase corresponds to the individual construction stage in which the responsibility is handed over the learners for writing a new text in the genre but on their own. As it can be observed in Figure 3, setting the field and the context 'is critical in each phase of the cycle, where these are interpreted as a range of activities through which students build up content for the genre and learn more about the contexts in which it is deployed' (Martin and Rose, 2005, p. 2), having as a final goal an orientation towards the way genre is constructed and a control over this genre (Macken-Horarik, 1998 as cited in Martin and Rose, 2005, p. 2)

In the context of this study, the above described stages of the teaching-learning cycle serve the purpose of guiding students to the reading of disciplinary specific texts. The approach to meet this end involves the concepts of implicit and explicit teaching which will be developed in the following section.

2.6. Implicit and explicit teaching

For Bernstein (1975 as cited in Martin and Rose, 2005, p. 3) there are two kinds of pedagogy: invisible and visible. The invisible pedagogy, characterized by weak classification and framing, is created by implicit factors such as implicit hierarchy, implicit sequencing rules and implicit criteria, with the underlying rule that everything must be put together. The visible pedagogy, characterized by strong classification and framing, is constituted by explicit factors, such as explicit hierarchy, explicit sequencing rules and explicit and specific criteria, with the underlying rule that everything must be kept separately.

The differences between explicit and implicit approaches to the teaching of grammar in Second Language Acquisition (SLA) are explained by Doughty and Williams (1998). In implicit learning, the teacher aims at focusing the learner's attention to a language form, for example, by avoiding any metalinguistic discussion. That is called implicit focus on form (FonF). Thus, interruption in the communication of meaning is minimized. In explicit teaching, the teacher aims at attracting the learner's attention to a language form directly (explicit FonF). They conclude that either implicit FonF or explicit FonF is not a panacea to improve students' L2 proficiency. They report on many classroom-based studies that show the move from the more implicit to the more explicit FonF interventions and provide examples of studies that successfully combined the (implicit and explicit) FonF techniques. For them, there must be implicit and explicit techniques combined in successful teaching.

In the model proposed by Bernstein (1975 as cited in Martin and Rose, 2005) and adopted by Martin and Rose (2005, p. 3), the deconstruction stage, for instance, starts with weak classification and framing (implicit teaching) when the 'teachers facilitate activities which start where students are at, in order to open up the field and context of the genre'. Framing and classification values become strong (explicit teaching) when the teacher introduces a model text and 'authoritatively makes visible the structure and purpose of the text'. Other examples of weak classification and framing is students' opening up of a new field, researching and brainstorming new ideas before the text is introduced by the teacher (implicit teaching in the Joint Construction) and students' exploration of another field, experimenting creatively with another genre (implicit teaching during the Independent Construction). Both in the Joint Construction

stage and in the Independent Construction stage, the classification and framing strengthen when the teacher has more control as a literacy guide although the aim is to gradually leave the control in the students' hands towards the end of the cycle.

In the context of this study, the concepts of implicit teaching and explicit teaching serve the purpose of guiding students without unnecessary metalinguistic discussion, minimizing interruption in the communication of meaning by focusing on form only when it is necessary. Thus, in the first stages of the scaffolding cycle discussed below, implicit teaching is encouraged with a gradual transition to a more explicit teaching that leads to the last stages of independent learning.

2.7. Scaffolding Interaction Cycle. *Learning to read: reading to learn* methodology

The Scaffolding Interaction Cycle is a technique within the genre pedagogy as proposed by Martin and Rose (2005). In their *Learning to read: reading to learn* programme –initially designed to help aborigine students in Australia access tertiary education–, Martin and Rose (2005) developed a genre pedagogy which aimed to provide students with the necessary resources that enable them to write academic texts.

The sequence of activities outlined in the following diagram (see Figure 4) intensifies and extends the support provided by the genre pedagogy as follows:

> Support for text *Deconstruction* in the genre cycle is intensified in two steps in the Reading to Learn cycle, *Preparing before Reading* and *Detailed Reading*. Secondly, support for *Joint Construction* phase is intensified in two steps, first with *Sentence Making* or *Note Making* and then *Joint Rewriting*. And thirdly, *Independent Construction* is further supported with an initial step of *Individual Rewriting* before *Independent Writing*. (Martin and Rose, 2005, p. 9)

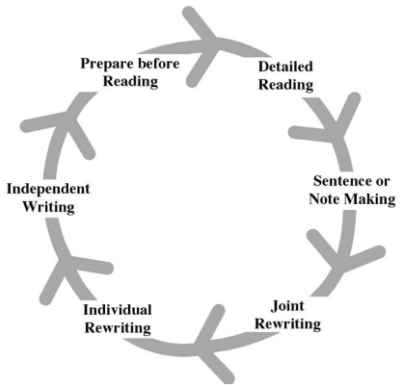

Figure 4: Genre pedagogy cycle (Martin and Rose, 2005, p. 2)

In the reading to learn process first phase, *Preparing before Reading*, the teacher, resembling the steps parents follow when reading to their children, orients learners, according to their level, to the genre and field of a text before actually reading it. This is done, for example, through a summary of the sequence of the field of a text or images or illustrations. Once the learners understood the overall meanings of a text, they count with enough context for the next phase: *Detailed Reading*. Students can begin to read but the task can be alleviated by doing it in small fractions, with the adequate support for recognition of wordings for meaning. This can be done by providing the students with three preparation cues: a paraphrase of the sentence meaning within its context or preceding text; a position cue, i.e., a cue that tells learners where to search for the wording; and the general meaning of the wording in simple terms. Then, 'students have to reason from the meaning cue to the actual wording on the page' (Martin and Rose, 2005, p. 7).

After having successfully identified a wording, students are prepared for an elaboration of its meaning by definition, explanation or discussion (*Joint Construction* phase). Thus, they are given access to the whole complexity of language patterns in manageable steps. The *Joint Rewriting* phase consists of a preparation for students to write through manipulation of familiar wordings. In the *Individual Rewriting* phase, additional support can be given for students' *Independent Writing*, where students finally use the same patterns of language but with their own events.

As the aim of this study is the application of a new reading comprehension approach, the focus will be on the *Prepare before Reading* phase and the *Detailed Reading* phase. In the first phase, as mentioned above, the teacher begins with a discussion of the background of the text (the overall field it is in). A summary of the topic follows by using paraphrases in simple terms, unpacking metaphors (including abstract nominalisations, labelled as grammatical metaphors in SFL).

The scaffolding in the *Detailed Reading* phase has three stages: Prepare, Identify and Elaborate as shown in Figure 5.

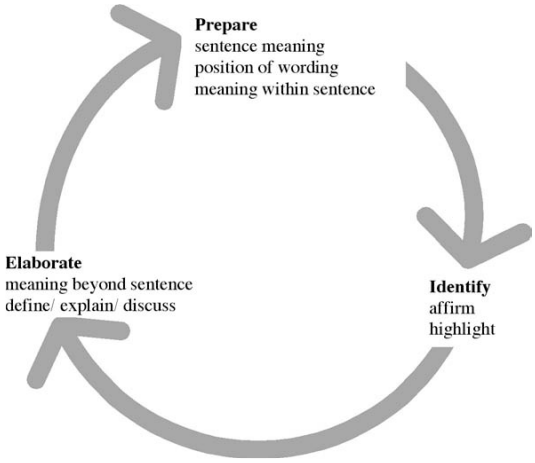

Figure 5: Reading to learn cycle (Martin and Rose, 2005, p. 10)

The authors point out that the preparation should be given as statements in first person, and questions should be used not to evaluate but rather as prompts to identify wordings. The detailed focus on particular wordings does not become mechanical since the teacher should continuously contextualise them in preparations and elaborations. Each preparation is directed to a different student, but the whole class is then asked to check and affirm. ‘With this support all students are able to read each wording with understanding’ (Martin and Rose, 2005, p.14). Thus, every student does not have to feel the impact of having their responses rejected, since ‘the Scaffolding Interaction Cycle is designed to enable all students to always respond successfully’ (Martin and Rose, 2005, p.8).

2.8. Modelling: Self-talk or Think-aloud techniques

A think-aloud (or “self-talk”) technique is a "metacognitive technique or strategy in which a teacher verbalizes thoughts aloud while reading a selection orally, thus modeling the process of comprehension" (Harris and Hodges, 1995 as cited in Sahebkheir and Aidinlou, 2014, p. 216). Think-aloud strategies consist of verbalization of thinking during reading, problem solving, or other cognitive tasks (Oster, 2001; Schunk, 2004 as cited in Sahebkheir and Aidinlou, 2014). Learners may verbalize their commentary or questions; or they may generate hypotheses or draw conclusions. Thus, this technique “may serve as both an instructional tool and method of assessment’

(Sahebkheir and Aidinlou, 2014, p. 217). Sahebkheir and Aidinlou (2014) explain the importance of think-alouds in the teaching-learning process as follows:

> Think-alouds enable teachers to demonstrate for their students how to select an appropriate comprehension process at a specific point in a particular text. Highly effective think-alouds also describe why a specific thought process would be effective in overcoming that confusion or reading difficulty. (p. 217)

The use of think-alouds with this aim includes teacher modelling, teacher-student interaction, and eventually, the independent use by students.

There are several studies that advocate the teaching of reading through teacher's modelling of strategy use, and through techniques that foster discussion in the class (Chamot and O'Malley, 1994; Gibbons, 2002; Manning and Payne, 1996; Walqui, 2006). According to these authors, comprehending a text is accomplished by two means: discussion and modelling. First, through discussion with the class about the different possible interpretation of the content of the text and how the students arrived at those conclusions, new patterns of the language are noticed and analysed. Second, by means of modelling the use of strategies, students are taught how to approach a text and overcome difficulties in interpretation. Thus, as Martin and Rose (2005) suggest, there is no need to resort to numerous explanations that require the use of excessive technical grammatical vocabulary, i.e., metalanguage (p. 4). Dialogue in the classroom is carried out by the teacher either in L1 or L2 (according to the proficiency level in L2 the students have), but explicit teaching of grammatical structures is left to the minimum, imparted only when comprehension of the text is hindered. Think-aloud techniques modelled by the teacher will be used in the adapted model proposed in this research work.

2.9. The adapted model

The model to be used in this project corresponds to Martin and Rose's "Scaffolding Interaction Cycle" (2005). In their model the authors propose some modelling of texts and also some oral discussion with the class in L2 (many of the students with academic reading problems are L2 English speakers) in order to achieve an effective interpretation of an academic text. The teacher asks questions that lead to discussion and foster social learning, i.e. the participation of most of the members of the class in the learning process. The techniques used are derived from the analysis of the

text from a SFL view. Texts are unpacked in such a way that students can grasp their meaning. Then, the semantic complexities of the language are noticed and meaning is derived from the heavily packed sentences. In this work, the process of unpacking corresponds to Widdowson's (1978 as cited in Martin and Rose, 2005) *simplified version* concept[3]. The approach consists of the following steps: *Preparing before Reading, Detailed Reading, Sentence Making or Note Making, Joint Rewriting, Individual Rewriting* and *Independent Writing*.

This model needs to be adapted to the context of the present research, since the students of the school of Chemistry are non-native speakers of English who are learning English for Specific Purposes. Besides, classes are not homogeneous, having students with different background knowledge of English and of subject matter (they belong to different levels in their studies - 2nd to 5th year) and with different automatized strategies in their repertoire. The texts they are faced with are specific of their field of study[4]. The topics of the texts are not unfamiliar to them; hence, skimming the texts for the general idea does not represent a problem that cannot be solved with the current approach. However, at the level of paragraphs, distorted interpretation is frequent when the sentences are heavily packed.

Hence, the *Preparing before reading* stage will involve matching the mainstream classroom approach and activation of the background knowledge of the subject matter related to the topic of a particular text. However, in this adapted approach, a modification will be introduced: the labelling of the strategies will be avoided. Instead, the instructor will model the strategy use through "self-talk" in a loud voice (think-aloud techniques), showing students how to put reading comprehension techniques into practice. (See the Instructor's pack, Appendix 1).

The *Detailed Reading* cycle will consist in simplifying the complexities of the language (unpacking) by means of instructor's guidance rendered through modelling – using think-aloud techniques. Thus, based on the concepts of the Systemic Functional Grammar (SFG) students are led from the text, to the paragraph to the sentence to the phrase (top-down approach). Metalanguage is simplified using modified labels of the SFL (theme, modifiers, actions, qualities, etc). (See Appendix 3).

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[3] By means of a process of lexical and syntactic substitution, a simplified version of a text is "a kind of translation from the usage available to the author of the extract to that which is available to the learner."(Widdowson, 1978, p.88)

[4] Textbooks and research papers about topics related to the students' field of study.

The steps of ***N**ote Making* and *Rewriting from notes* will be used but in a different way and with a different purpose. Instead of writing in the foreign language, which implies a *Joint Writing*, students will write in their mother tongue just for comprehension-evaluation purposes. *Independent Writing* will not be part of the teaching process, since the main objective of the course is to comprehend written texts.

2.10. Summary

This chapter has described the theoretical framework for this study which includes key notions from SFL, ESP, Genre Pedagogy as well as Scaffolding Interaction Cycle and think-aloud techniques. The following chapter provides the literature review on studies conducted on the use of Scaffolding Interaction Cycle and think-aloud techniques.

CHAPTER 3
Literature Review

3.1. Introduction

The framework presented in the previous chapter gave a theoretical panorama of the main issues investigated on reading comprehension: the use of Scaffolding Interaction Cycle and think-aloud techniques. Building on it, what follows is a review of research on these topics. The first section (3.1) provides an overview of the past research about the Scaffolding Interaction Cycle in the classroom. The second section (3.2) gives an account of the use of think-aloud techniques as a tool of instruction. Being Scaffolding Interaction Cycle and think-aloud technique the objects of the present work, findings from these studies are reviewed.

3.2. Scaffolding Interaction Cycle

A number of studies on reading comprehension pedagogy have shown that Scaffolding Interaction Cycle has had a positive impact on the EFL students' learning process (e.g. Widianingsih, 2012; Resdiana, 2013; Brooke, 2015; and Sunardi et al, 2016), which was evidenced in the cycle of independent writing.

Some studies on the use of Scaffolding Interaction Cycle have focused on children at elementary levels and others have focused on young adults at tertiary and university levels. All of these studies aimed at the teaching of writing as a final goal, but they all completed the reading stage to achieve their final objective.

Widianingsih (2012) studied the impact of the teaching of three steps (Prepare, Task and Elaborate) of the Scaffolding Interaction Cycle of the Reading to Learn programme in EFL Indonesian students at high school. It was found that, the Prepare moves (steps in the exchanges) required more preparation due to the students' passivity in the class but there was an increase in their participation after the instructor's moves in the *Prepare for reading* stage. It was also found that the Scaffolding Interaction Cycle was not adequately applied by instructors in some cases due to misunderstandings as regards the approach in the Reading to learn programme and the students' lack of will to engage in the programme. However, the results in the *Independent Writing* stage showed that the students were able to include all the obligatory elements. The author concluded that further investigation was needed but with more planned prepare moves,

more text and intensive support, and more participants in bigger classes for a longer period of study.

Also in a vocational high school, Resdiana's (2013) study aimed at describing the first stage of the Learning to Read: Reading to Learn programme in Indonesia. It also attempted at showing how scaffolding in the classroom impacted on the students' reading and writing skills as opposed to learning independently. Furthermore, a third objective pointed at describing the reading materials used. The results showed that learning with the support of the teacher was more successful than independent learning. The findings also indicated that scaffolding improved students' reading and writing skills as twice as expected, since scaffolding was found to play the most important roles in the preparation of students to comprehend reading as well as practising writing.

In a different context, Brooke (2015) evaluated the Scaffolding Interaction Cycle used as a method for the deconstruction of texts in class. The aim of the strategy used was to prepare EFL university students from different countries (Chinese, Indian, Indonesian, Malaysian and Singaporean) and faculties (Science, Engineering, Arts & Social Science, Medicine, Business, Design & Environment, Computing and Law) to write a summary-reflection. A pre-test, intervention and post-test were administered. The intervention consisted in a reading of a student's low scoring summary-reflection and after the post-test the results indicated that the strategy used was effective and beneficial as regards group work and collaborative tasking. It was also observed that the transfer to the final individual writing was substantial.

Also, Sunardi et al (2016) conducted a study, in a university of Indonesia, about the patterns of Scaffolding Interaction Cycle the lecturer used in order to build students' competence towards independent control. The scaffolding was realized through dialogic interaction in some English curriculum genres. The data was collected from the classes taught by non-native lecturers in some universities in Semarang and they contrasted the typical triadic exchange (Focus – Task – Evaluate) with scaffolded pedagogic exchanges. The results showed that six sequences of Scaffolding Interaction Cycle were identified, being the typical sequence of these Scaffolding Interaction Cycle Prepare – Focus – Task – Evaluate – Elaborate. They found that the typical triadic pedagogic exchange did not work with certain students with a low background knowledge of the topic being studied, whereas the scaffolded pedagogic exchanges enabled students to complete the task due to the sufficient guidance provided on how to do the task.

The studies reviewed in this section have given an account of different settings where the scaffolding interaction cycle was used. In the following section, there is an overview of the think-aloud technique used as a tool of instruction.

3.3. Think-aloud techniques

Some studies (Vásquez Cardona and Suárez Maya, 2011; and Jahandar et al., 2012) have shown that the use of think-aloud techniques helped students improve their reading skills. Others (Seng, 2007; Fan, 2010; and Abdul-Majeed, 2015) used think aloud techniques in combination with some scaffolding instruction and collaborative work showing significant results.

Vásquez Cardona and Suárez Maya (2011) studied the use of think-aloud techniques in a pre-intermediate course of adults in the Universidad Tecnológica de Pereira. In this study 5 EFL students participated and as the sessions developed, more people joint the classes. First, the teachers modelled the techniques and then, the students had to do the same. The results indicated a positive impact not only on reading comprehension skills but also on the acquisition of vocabulary, pronunciation, listening and writing skills in English.

In order to study the impact of using the think-aloud techniques, Jahandar et al. (2012) carried out an experiment that involved the participation of 32 upper-intermediate EFL male learners -aged between 18 and 23- from the Parsian English Institute in Tonekabon, Iran. They were selected after a TOEFL reading comprehension test out of 58 applicants – 16 for the control group and the other 16 for the treatment group. The conditions of both the control and the experimental groups were the same except for the treatment that the latter received. Prior to the think-aloud method, the students were introduced to a warm-up activity such as solving an arithmetic problem or an anagram puzzle and then the teacher worked with a text showing the students the strategies to be used. She modelled the strategies for reading comprehension using think-aloud techniques. The students had to take notes and make a list of the things the teacher did to comprehend the text. Then, the students were introduced to the task copying what the teacher did, and used the think aloud method. Poor readers were grouped in pairs which helped them to complete the task successfully. The findings indicated that there was a significant difference in impact in favour of the treatment group. It was observed that students could plan their reading, adjust strategies flexibly

as well as monitor their own comprehension, share and set their own goals. They learnt how to learn, and became independent readers after the study.

In a similar fashion, Seng (2007) carried out some research to examine the effects of think-aloud combined with collaborative discussion in the classroom among English as Second Language (ESL) students at tertiary level in Malaysia. This quasi-experimental study, which involved two classes of ESL students, aimed at evaluating the effects of this combined instructional method on reading comprehension skills. Although the number of students selected for the study was 66 in all, the final numbers of students involved were 20 in the experimental group and 23 in the control group. Since think-aloud played a role which was prominent in the sessions of small groups, it was important to provide students with the necessary skills for them to think aloud willingly and comfortably while reading so that they could become active and strategic readers as regards comprehending a text better. Again, the instructor as model of expert reading processes exhibited some strategies used by effective readers both during the training sessions and during the reading lessons. The results in the post-test showed a higher reading comprehension score of the experimental group than their counterparts.

Collaborative work was also an issue dealt with in Fan's (2010) study. This work aimed at investigating the effect of Collaborative Strategic Reading on mass-attended classes –groups of 50 to 60 students – on reading comprehension skills using specific reading comprehension questions. The study design consisted of a pre-test, intervention and post-test conducted on a control group and an experimental group. The instruction was scaffolded through teacher's modelling using think-aloud techniques, guided practice, and work in small groups on which the emphasis was placed. Statistical results were collected using One-Way ANOVA triangulated by multiple data sets such as questionnaire and transcripts of group discussions. Although the findings indicated a positive result as compared to the control group, the approach did not show significant results as regards EFL learners' strategic reading competence. The results of the study suggested an improvement in comprehension of main idea with its supporting details and the adoption of some degree of strategic reading behaviours, but they indicated that predicting, making inferences and vocabulary were not promoted significantly.

Abdul-Majeed´s (2015) study investigated the effect of using scaffolding strategies on EFL students' reading comprehension skills based on Vygotsky's social interaction concept and Berstein's concept of scaffolding learning. An experimental and a control

group of 22 students each were selected from the Department of English of College of Education for Women, University of Baghdad and both groups were exposed to pre- and post-tests. The scaffolding strategies used included modelling, bridging, contextualizing, schema building, re-presenting text and developing metacognition, combined with think-aloud techniques which were used to guide the students in the use of reading comprehension strategies with the help of graphic organizers. The objectives for the experimental group emphasized equal participation, monitoring their own learning and thinking, and collaborative work. The findings showed a statistically significant difference in favour of the experimental group.

This account on the use of think-aloud technique has provided us with a view of this technique as a tool or instrument, which in some cases was combined with other scaffolding methods.

In the current study, an adapted pedagogic approach that includes scaffolding, modelling and collaborative work is proposed to help poor skilled readers. To this end, Martin and Rose's (2005) Scaffolding Interaction Cycle was chosen, since it involves not only collaborative work but also a guided intervention that in combination favour mostly poor skilled readers who lack background knowledge of the language and the subject matter. To achieve this end, the think-aloud technique is used as an instrument for modelling which will make students understand how to tackle the difficulties of understanding an academic text. As Martin and Rose (2005) suggest, this pedagogical approach attempts a transition from implicit to explicit teaching towards independent learning. To my knowledge, this combination has not been proposed before.

3.4. Summary

In this chapter, I have examined a number of influential contributions to the aim of this study. The use of Scaffolding Interaction Cycle has been shown to have a positive impact on the development of reading comprehension skills, especially in poor-skilled students. Similarly, the application of the think-aloud technique was a useful instrument and its combination with a scaffolding approach was of great help for the students' skill development. In the following chapter, I will present the details about the context in which this study was carried out.

CHAPTER 4
Methodology

4.1. Introduction

The previous chapters provided the theoretical background for this study and a review of the literature focusing on the issues that this investigation is concerned with. This chapter describes the methodology followed in this research, which constitutes an experimental study with no random assignment (two-group, pre- and post-test design) based on a quantitative analysis of the data. First, I will describe the context of the study. Then, I will refer to the participants and the materials used and, finally, to the piloting, data collection and analysis procedures.

4.2. Context of the Study

The present study was carried out at the School of Chemistry in an Argentinian university during the second semester of the 2016 academic year. This institution offers three areas of specialization in a five-year programme: Licentiate, Biochemistry and Pharmacy programmes. These areas have common core subjects, including English. This language is required in order to complete the course of studies. The English course lasts one semester (either the first one or the second one). In this course, the reading skill is developed using texts taken from undergraduate academic chemistry books. The classes are focused on both the language and the reading strategies, which the teacher normally instructs by using a handbook prepared by the chair. The texts selected for the course were chosen according to three criteria: the field of the discipline, the textual sequence (descriptive, narrative and argumentative) and the genre (handbooks, books, research articles) (Cardini, Emma y Gottero and Soliz, 2015). These led them to structure the handbook in three units of four guides each. The texts chosen for each unit share a core topic. At the end of each unit there is an additional guide for consolidation. Each guide is structured considering the following aspects: objective and reading purpose at the beginning; then, pre-reading, reading and post-reading activities; language and vocabulary related activities; closing tasks; a text for complementary reading; and an appendix including the grammatical aspects introduced in the guide. The methodology consists mainly of reading a text applying different reading strategies and analysing macro and microtextual aspects.

In this educational context, a quasi-experimental study was designed which included a pre-test, a post-test, an experimental group and a control group. A true experimental design was not feasible, since the groups were not selected at random. Both the control group and the experimental group corresponded to students who had already been assigned to two different classes of the same professor. The professor was asked to participate with her students of one class in the experiment as the instructor of the control group in the first semester and with the other class to take the role of the instructor of the experimental group in the second semester, in collaboration with the students assigned to her in each class.

This kind of experiment was chosen on the basis that an objective study requires internal validation through the maximum control of the variables with at least two groups of subjects (a control one and an experimental one), the results of which are to be compared (Hernández Sampieri et al., 2010). As a quasi-experimental design, this experiment took place in an authentic learning environment using genuine class groups. On the first day of classes, all students from both the control and the experimental group were given a questionnaire and a pre-test, which enabled the researcher to match pairs (Hernández Sampieri et al., 2010) from both groups. At the end of the experiment both groups were given a questionnaire (in order to see the subject's perception of the degree of difficulty of the new methodology) and a post-test. Each subject's score in the pre-test was compared to his/her score in the post-test as suggested by Mackey and Gass (2005), and those scores were also compared between groups (matched pairs). Then, a statistical analysis was carried out using Wilcoxon Test.

The reseacher also controlled the effects of extraneous variables that might influence the results eliminating from the data pool the students who had already done the course and, therefore, had received instruction using the traditional methodology[5]. The design was also disrupted by student attrition between the pre- and post-test. Some subjects dropped out for reasons such as scheduling conflicts; hence, they were discarded. Besides, there were no-shows for the post-test, which also reduced the sample size.

This kind of investigation has been defined by van Oostendorp and Swaan (1994 as cited in Parodi Sweis, 1999) as naturalistic since it takes place in a traditional environment, which enhances the face validity of the research, as opposed to situations

[5] Four subjects (one from the control group and three from the experimental group) mentioned that they did the course some years ago but dropped out. However, when interviewed they mentioned to have attended only the first class.

in which subjects perform tasks under laboratory conditions that are different from their everyday situation. Given that the effect of a particular instructional approach was investigated, an existing classroom environment was thought to be the most ecologically sound (Hatch and Lazaraton, 1991, p. 143) setting for this research.

As regards external validity, that is to say, how generalizable the experiment is and how possible it is to be replicated (Hernández Sampieri et al., 2010, p.144), in order to eliminate a reactive effect, both groups the control group and the experimental group were given a test to understand and practise the format of evaluation.

4.3. Participants

The participants in this study do not conform a homogeneous group. Students are allowed to register for the English course at any step of the five-year programme. Consequently, the groups are conformed by students who are in their first, second, third, fourth or fifth year of the course of studies. Students who have acquired a high level of English prior to their registration to the course are exempted from doing the subject by presenting the pertinent certification. However, some of the students with private instruction in English decide to take the course, since they consider that their knowledge of general English is not enough to understand texts in their field of study because of the technicality of the language used.

As English is an obligatory subject in the syllabus of Argentinean secondary schools, students already come with certain background knowledge of English. This is very important since it constitutes the basis for the methodology used in the course. Their background knowledge of the field of study, Chemistry, is not considered in the methodology of the course as a requirement because a considerable number of the students registered in the English course are generally in their first year of the Chemistry programme. In all, twenty- 31 students participated in the study.

4.3.1. Subjects

After the post-test the number of subjects included in the experimental group was 15 and the number of students in the control group were 17. The control group was conformed by students (males and females almost in equal proportions) with a mean age of 20.12, age that could range from 19.16 to 21.08 with a 95% confidence interval. In the case of the experimental group, the mean age was 22.87 with a possible range from

20.29 to 25.45 with a 95% confidence interval. They were in their first or second year of study, which corresponds to the common basic stage of the three specialities (Chemistry, Pharmacy and Biochemistry). They all had had English classes at secondary school.

4.3.2. Instructor

In agreement with the criterion for the selection of the instructor suggested by Hernández Sampieri et al. (2010), both instructors (the control group's and the experimental group's) were the same professor. This instructor was selected according to three criteria: capability, availability and flexibility.

An EFL teacher was chosen out of the two teachers who were teaching the ESP course in which the study was carried out. This teacher was selected on the basis of her broad experience in teaching ESP at university. She graduated from the School of Languages at the National University of Río Cuarto as an English Language Teacher and holds a postgraduate degree from the National University of Córdoba.

This instructor received a training session on teaching according to the proposed methodology based on Martin and Rose's (2005) Scaffolding Interaction Cycle and was in charge of piloting the material in one semester at the same institution. In the following semester, the instructor taught the class of students using the adapted material piloted in the previous semester, according to the protocol given to her. (See Appendix 1).

4.4. Materials and Method

The materials used in this research study were the following: a set of classroom materials based on the adapted Scaffolding Interaction Cycle, an instructor's pack aimed at providing guidelines to follow the adapted Scaffolding Interaction Cycle. This material was piloted by the instructor with one of the groups in the first semester.

It is important to note that the material used in the experimental group followed the same sequence established in the structure of the original material in agreement with the criterion that states that what affects one group should also affect the other group to the same extent for equivalence purposes (Hernández Sampieri et al., 2010). However, some modifications were made to fulfil the objectives of the method to be tested: the instructions were given in first person (copying the think-aloud technique modelled by

the instructor), the order of some activities were modified to be congruent with the new methodology and the grammar appendix was modified to be congruent with the suggested simplification of the metalanguage. (See Appendices 2 and 3).

The material used in the experimental group was adapted in a way that allowed the instructor to follow the guidelines based on Martin and Rose's (2005) Scaffolding Interaction Cycle and gradually lead students to an independent approach to the text:

a. Modelling the steps the subjects have to follow to approach a text by using the think-aloud technique[6].
b. Simplification of metalanguage based on SFL theories. Metalanguage is simplified using modified labels of the SFL (theme, modifiers, actions, qualities, etc). (see Appendix 3).
c. Unpacking the complexities of the language in the text into less dense sentences in English or Spanish to render the student a way to access a dense structure. For example, the instructor unpacks the complexities of the language to render the student a way to access a dense chunk of the text (the instructions that accompany the texts include the unpacking of complex structures through questions –in the handout– and also the instructor models the steps of unpacking in front of the class in a loud voice, which students have to follow). Therefore, the unpacking is part of the methodology, the instructor unpacks the complex chunks of the text for the subjects to understand and through modelling this unpacking gradually leads the subjects to copy this process of reasoning independently. (See Appendix 4).

[6] For example, the teaching of the noun phrase 'a secondary cell wall' is presented as follows: The teacher thinks in a loud voice, 'en esta frase me fijo en el tema en sí, es decir, de qué se habla; se habla de una pared. Pero, no es solo una pared, es una pared de la celular, es decir, es una pared celular y además es secundaria. Por lo tanto puedo determinar que es una pared celular y que esta pared celular es secundaria.'

4.5. Data Collection Instruments

4.5.1. Piloting

The methodology applied in the class material was piloted in a previous study on a controlled-experimental group basis. The materials used in this experiment were piloted by the instructor in one semester. The investigator accompanied the instructor to see the effect the new methodology had on the subjects of the piloting experiment. Once the materials had been piloted, the pertinent modifications were made, which included clarifying instructions and ambiguities, to obtain a more reliable instrument.

4.5.2. Materials

The classroom materials used consisted of the same texts included in the set of the course as administered in its traditional method. This was due to the fact that the formalities of the course had to be kept as they were originally designed, since one of the groups that use this material constitutes the control group of this research. A small-scale trial carried out during the piloting stage enabled the researcher to address problems and flaws in the design before the research was conducted.

4.5.3. Instructor's Pack

The instructor's pack was supervised by the members of the Chair of ESP and trusted colleagues. After this, minor changes were made. (See Appendix 1).

4.5.4. Data Collection Instruments

All the data collection instruments were pilot-tested. The metalanguage and the procedures used to access the text were measured with questionnaires after the post-test (See Appendix 5)

4.6. Data Collection Procedures

4.6.1. Instructor's Training

The instructor was trained during the piloting of the material. The investigator was present in almost every class in order to supervise the correct implementation of the methodology. After each class piloted, the instructor and the investigator had a discussion as regards the different aspects of the material and the methods used.

4.6.2. Administration of Pre-Study Questionnaire

The questionnaire was administered by the instructor on the first day of the instruction period on both groups (the control group and the experimental group). (See Appendix 6).

4.6.3. Pre-Test

The pre-test (see Appendix 7) was administered on the second day, once the subjects had been instructed as regards the format of the test (see Appendix 8), which was explained the previous class. The subjects were allowed to use the dictionary but they could not ask any questions during the test.

4.6.4. Treatment

The treatment (see Appendix 1) was carried out during the second semester after the piloting of the material and the training of the instructor. It took two months and a half and it included only the content corresponding to the first evaluation of the course. This was in agreement with the regulations of the Chair.

4.6.5. Post-Test

The post-test was administered on both groups on the last day of classes. This was administered as one of the compulsory tests the subjects had to pass to continue in their condition of regular students in compliance with the system of the School of Chemistry. The procedure used to administer this test was identical to the administration of the pre-test except for one difference. Prior to the administration of the post-test there was a mock test prepared by the Chair (very similar to the test for practice administered before the pre-test) in compliance with the mainstream classroom approach.

4.6.6. Administration of Post-Study Questionnaire

The questionnaire was administered by the instructor on the last day of the instruction period on both groups (the control group and the experimental group). Unlike the questionnaire administered at the beginning of the course, this questionnaire was adapted to each group, i.e., the control group received a questionnaire related to the methodology used in their group and the experimental group received a questionnaire related to the methodology implemented in their group. (See Appendix 5).

4.7. Data Analysis Procedures

The pre- and post-tests were the same test; these were corrected according to the criteria of the Chair. (See Appendix 9).

4.8. Summary

This chapter contextualised the study by describing the subjects involved in the experiment both the control group and the experimental group subjects. It also provided the details about the materials used, the instructors that participated in the experiment and the procedures to be followed. The next chapter contains the results obtained from the analysis of the data.

CHAPTER 5
Results

5.1. Introduction

Chapter 4 described the design of this research study and explained the choices made for its implementation; it included the necessary information for its replication in terms of the materials used, the methodology applied, the data collection procedure and the analysis procedure for the data. This chapter will present the results obtained from the data collection and the analysis of the data gathered. First, I will present the results obtained from the descriptive analysis of the data, namely, the results of the scores of students' task performance. Finally, I will put forward the results obtained from inferential analysis, where I will compare the findings between the pre and post scores from the control and the experimental groups.

5.2. Descriptive analysis

5.2.1. Results of the Pre-test and Post-test

In terms of validity, both the Pre-test and the Post-test administered to both the experimental and the control groups were the same. It consisted of two sections: Comprehension section and Structure of the language section (see Appendix 7). The former included a True/False activity of three items and a question activity of one item based on an academic text that the subject had to read previously. The latter consisted of ten noun phases for students to interpret into Spanish. The score of each activity item was added for the control group and the experimental group in separate tables to determine the total scores for each activity per subject (see Appendix 10). Then, the total scores of each section were added to another table to determine the percentages corresponding to each section of each test – pre- and post-test – (see Appendix 11) in comparison. Finally, the results were analysed statistically as follows:

Table 1. Results of the pre-test and post-test: Control group

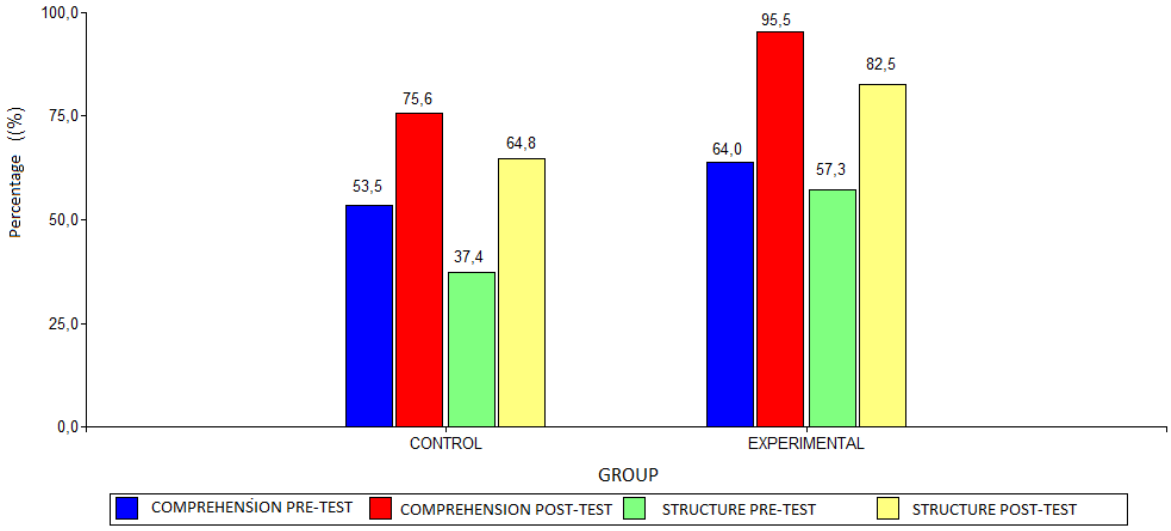
Answer	PRE-TEST				POST-TEST			
	Mean	S.E.	LL (95%)	UL (95%))	Mean	S.E.	LL (95%)	UL (95%))
Comprehension Section								
Tot T/F	5,71	0,86	3,89	7,52	9,47	0,49	8,42	10,52
Question	5,00	0,32	4,32	5,68	5,65	0,39	4,82	6,46
Total	10,71	1,01	8,56	12,85	15,12	0,58	13,88	16,35
Percentage	53,53	5,05	42,82	64,24	75,59	2,91	69,41	81,76
Structure Section								
Total	11,21	1,56	7,90	14,51	19,44	1,10	17,11	21,78
Percentage	37,35	5,20	26,32	48,38	64,80	3,67	57,02	72,58

Table 2. Results of the pre-test and post-test: Experimental Group

Answer	PRE-TEST				POST-TEST			
	Mean	S.E.	LL (95%)	UL (95%))	Mean	S.E.	LL (95%)	UL (95%))
Comprehension Section								
Tot T/F	7,67	0,54	6,51	8,83	11,40	0,32	10,71	12,09
Question	5,13	0,47	4,13	6,13	7,70	0,16	7,36	8,04
Total	12,80	0,79	11,11	14,49	19,10	0,32	18,41	19,79
Percentage	64,00	3,94	55,55	72,45	95,47	1,61	92,02	98,92
Structure Section								
Total	17,20	1,60	13,77	20,63	24,77	1,02	22,57	26,96
Percentage	57,33	5,34	45,89	68,77	82,55	3,42	75,23	89,88

In the analysis of the information related to the response to the different activities within the sections Comprehension and Structure of the language, the following was determined: the average (mean) of the scores obtained or the corresponding relative percentage, the Standard Error (measure of variability of the mean) and the confidence interval of 95% for the estimate of the parameter. LL indicates the Lower Limit of the confidence interval and UL indicates the Upper Limit of the confidence interval.

Graph 1: Comparison of mean of control and experimental groups



5.3. Inferential Analysis

5.3.1 Comparison of mean

5.3.1.1. Test of Wilcoxon

For the inferential analysis, the results obtained by the students in the pre-test and post-test were considered, both from the control group and the experimental group. Based on the results obtained, a statistical analysis was carried out in order to determine if the difference in the scores of the pre- and post-test were statistically significant in each group.

As the data from the students' performance scores do not have a normal distribution, a non-parametric test was used: the Wilcoxon (matched pairs) Test. This test compares the scores obtained from each student before and after the treatment.

The results indicated that the difference of mean between the scores of the pre and post-test for the control group were statistically significant except for the question activity in the Comprehension Section. In the case of the experimental group, all the differences were statistically significant ($p < 0,0001$).

Tables 3 and 4 show the means of the pre-test and the post-test, the difference between them and the statistical significance. A negative difference indicates that the score of the post-test was higher than that of the pre-test.

5.3.2. Difference in mean between the scores of the pre and post-test

Table 3. Control Group

Answer	Mean Pre-test	Mean Post-test	Difference of mean	p-value
Comprehension Section				
Tot T/F	5,71	9,47	-3,76	0,0034*
Question	5,00	5,65	-0,65	0,1346
Total	10,71	15,12	-4,41	0,0001*
Percentage	53,53	75,59	-22,06	0,0001*
Structure Section				
Total	11,21	19,44	-8,24	0,0001*
Percentage	37,35	64,80	-27,45	0,0001*

* Significant level: 0.05

Table 4. Experimental Group

Answer	Mean Pre-test	Mean Post-test	Difference of mean	p-value
Comprehension Section				
Tot T/F	7,67	11,40	-3,73	0,0014*
Question	5,13	7,70	-2,57	0,0006*
Total	12,80	19,10	-6,30	0,0001*
Percentage	64,00	95,47	-31,47	0,0001*
Structure Section				
Total	17,20	24,77	-7,57	0,0001*
Percentage	57,33	82,55	-25,22	0,0001*

* Significant level: 0.05

5.4. Summary

This chapter presented the main results obtained from the analysis of the data collected in the pre- and post-test. A descriptive and an inferential analysis were carried out which indicated a positive result of the treatment. Also, it was observed that the difference of means between the scores of the pre- and post-test between the control and experimental groups favours the latter. The following chapter discusses the significance of these outcomes.

CHAPTER 6
Discussion

6.1. Introduction

The previous chapter presented the results obtained from the data collected from the pre- and post-test. In this chapter I will review these data and discuss the significance of the differences obtained. Also, I will put forward the impressions the subjects of the experimental group had of the new treatment and will compare them with the opinions the control group subjects provided as regards the mainstream classroom approach.

6.2. Discussion of the results and student's attitude

The results show that there is a significant difference between the pre- and the post test in all areas in the treatment group. Similarly, the difference between the pre- and the post-test in the control group are significant except in the Comprehension section. Thus, it can be inferred that the new treatment had a positive effect in comprehension of the text. This is in agreement with the research conducted both on *scaffolding interaction cycle* (Resdiana, 2013; Brook, 2015; and Sunardi et al, 2016) and think-aloud techniques (Vásquez Cardona and Suárez Maya, 2011 and Jahandar et al., 2012; Seng, 2007; and Abdul-Majeed, 2015).

It can be observed that although the means in the pre-test of the control group were slightly lower than in its counterpart, the means in the post-test of both groups indicate that the differences per each activity draws practically the same results. The exception is observed in the question activity of the Comprehension section. Both groups started with a similar mean value as regards the question activity – as shown in the pre-test (see tables 3 and 4) – but after the treatment there was a considerable difference in favour of the experimental group.

Considering the fact that the True/False activity required less elaboration form the subjects as opposed to the question activity, the difference in favour of the treatment group may suggest a higher evolution in the comprehension skills, which indicates a positive effect of the new approach. This evolution in all subjects of the experimental group, as opposed to the subjects of the control group (see Appendix 11) suggests that the scaffolding interaction cycle method in combination with the think-aloud technique has had a positive impact on both the poor skilled subjects –with a low background

knowledge of the subject matter or of the English language– as well as on their counterparts in the same group[7]. This is in agreement with Sunardi et al's (2016) findings as regards the need of scaffolding to enable students to complete a task with sufficient guidance on how to perform the activity. Also, similar to Jahandar et al's (2012) conclusions in their study, collaborative work may have contributed to help poor skilled readers with a poor background knowledge, since as Martin and Rose (2005) stated in their proposal, the stages in scaffolding that imply joint work favour poor skilled readers.

As regards the subjects' attitude towards the new approach, a survey was administered after the post-test to observe how the subjects reacted to the new method used in the treatment (see Appendix 5). A similar survey was conducted to see the attitude the subjects of the control group had towards the mainstream approach (see Appendix 5). The data gathered in the surveys (see Appendix 12) will be compared in two parts: first, the impressions the subjects had on the noun phrase instruction method and then, the impressions on the instruction method used to teach strategies.

It could be observed that in the experimental group a bigger percentage of subjects found that the system of unpacking which the instructor modelled to teach both the noun phrase structure and its correct interpretation were clear, as compared to the system of explicit explanations used by the control group's instructor and the explanations included in the material of the control group. Also, in the control group half the subjects found the metalanguage difficult to follow whereas in the experimental group most of them found it easy to understand. This difference suggests that the metalanguage used by the instructor in the experimental group is more effective due to its simplicity. This is in agreement with Martin and Rose's (2005) proposal in which they suggest that the instructor should develop a metalanguage that allows a fluid and clear communication between instructor and student.

As far as the instruction of strategies is concerned, all of the subjects in the treatment group found the modelling of the application of strategies through the think-aloud technique clear to understand. In the control group, a lower percentage of the

[7] In order to pass the test of this subject, students in this course are expected to obtain a minimum score of 30 points. In the experimental group all students passed the test, whereas in the control group some of the subjects did not obtain the minimum score. Also, the number of students who did not do the post-test was much lower –just two– than those in the control group (around 6). Some of them abandoned the course for various reasons, but it could be inferred that one of the reasons of drop-outs may be the instruction approach used.

subjects found the explanations provided by the instructor clear and they considered that the explanations and examples included in the material were positive. However, it could be inferred that the instructor's intervention was necessary to understand the explanations in the material. A similar comparison was observed as regards the perceptions related to the application of the strategies to infer meaning from the text.

When the subjects of both groups were consulted about the way the instructions were given in the material, most of the subjects in the control group felt comfortable with the use of imperative. A similar situation was observed in the treatment group. However, when asked about their impression concerning the instructions given in first person (similar to the instructor's modelling during instruction) all of them felt comfortable. This might be in agreement with the scaffolding towards independent learning. That is to say, the instructions to the experimental group were first given in the form of modelling using think-aloud techniques, and then the subjects found the instructions in first person in the class material. But the mock test activity used to make a revision before the post-test had the instructions in imperative[8]. Thus, scaffolding towards independent learning was attained.

All in all, these observations suggest that the slight difference in impressions between the control and the experimental groups favours the new approach. The survey confirms that the subjects in the experimental group responded very positively to the new treatment.

6.3. Summary

A descriptive and an inferential analysis were provided which enabled us to demonstrate that the Scaffolding Interaction Cycle in combination with the use of the think-aloud technique had a positive impact on the experimental group. Also, the analysis made possible to determine the existence of some similarities and some differences regarding the studies reviewed and the present study. The chapter also discussed the significance of these outcomes. In the following chapter I will present the final conclusions, the limitations and the pedagogical implications.

[8] In terms of validity, both the pre- and the post-test had to respect the design of the mainstream course so that the control group could perform as expected.

CHAPTER 7

General conclusions, limitations and pedagogical implications

7.1. Introduction

The previous chapter provided the discussion of the results of this research work. This study was an attempt to contribute to the solution of the problems in the reading comprehension course at the School of Chemistry, National University of Cordoba, Argentina. The problems in the mainstream classroom approach included lack of understanding of the reading strategies and of the grammatical structures, and poor comprehension of semantically dense texts. Also, the metalanguage used in the explanations led some of the students to confusion. The results of the new approach as well as the questionnaire administered to the students after the treatment indicate that a solution to these issues could have been found. The most benefited students are apparently those who started the course with a low proficiency level in comprehending an academic text. The statistically significant results and the positive opinion of the students can be attributed to the Scaffolding Interaction Cycle combined with the think-aloud technique.

Based on the positive results of previous studies on the use of Martin and Rose's (2005) Scaffolding Interaction Cycle as well as research work on the implementation of the think-aloud technique combined with another type of scaffolding instruction, the main aim of this investigation was to explore a new method that combined the former and the latter approach into a new teaching method that could meet the needs of the students at the School of Chemistry. Therefore, on the basis of the results arrived at in this study, this chapter reviews the research questions and the hypotheses stated in Chapter 1 and provides the general conclusions for this study as well as the limitations found and the pedagogical implications.

7.2. Revision of the research questions and hypothesis

Different studies have presented similar problems with the development of reading skills, specially seen in students with poor background knowledge of the subject matter or the language or who had a limited repertoire of reading strategies in L1. These students presented difficulties with understanding the strategies to be used or the pertinent grammatical structures that their instructors tried to explain using an explicit approach. The search for a new teaching method that could meet the needs of these students led to the research questions of this study. It would be interesting at this point to remember the research questions that guided this study:

1. Can the unpacking of linguistically and semantically dense texts through the Scaffolding Interaction Cycle impact positively on the learning process as compared to the mainstream classroom approach?

2. Can think-aloud (self-talk) techniques help on the understanding of strategy use and the deconstruction of grammar structures (noun phrase)?

3. Can the simplified choices of metalanguage impact positively on the interpretation of the structures of L2 grammar?

The comparison of means of the results between the pre- and post-test has shown a statistically significant difference in favour of the treatment group. This difference and the answers obtained in the questionnaire administered to the subjects of the treatment group suggest that the three questions have been answered positively. The Scaffolding Interaction Cycle phases and the simplification of the metalanguage have had a positive impact on the development of the reading skills of both poor-skilled and good readers of the experimental group. All students seem to have benefited from the avoidance of the use of direct instructions and unnecessary explanations, which were given instead by means of a technique based on modelling with think-alouds. Moreover, they could efficiently and effectively apply the strategies they have seen modelled for them when dealing with the deconstruction of a semantically dense portion of text or grammatical structure.

Therefore, the hypothesis formulated in this study that teaching reading comprehension with a focus on the Scaffolding Interaction Cycle using think-aloud techniques favours the development of reading comprehension proficiency has been proved as valid.

7.3. Limitations of the study

Although the pre- and post-test were designed by the Chair according to regulations that needed to be respected, the section of comprehension activities represented a limitation of this study. The True/False activity could only show recognition of ideas and the students obtained the same score for each item. However, the justification was only pertinent in the false items: hence, if the justification was considered incorrect, the score of this item got reduced, which limited the evaluation of the performance of the subject and could have affected the interpretation of the final results. Moreover, the question activity included only one question which limited the valuation of the reading skill development. Therefore, more research is needed in which a bigger population should be considered in the experiment as well as a modification of the test so that a larger margin of evaluation could be achieved. In addition, a bigger population sample would let a closer comparison of the evolution of different skilled subjects (good, medium, and poor readers).

7.4. Pedagogical implications

The context of this study was the School of Chemistry at the National University of Cordoba in Argentina. The aim of the study pointed at the problems that this population had in particular and found a possible solution to the problem that teachers face every day in their classes. Although the application of the new approach included only the first part of the course, the results indicate that students have improved considerably; this encourages them to continue in the class. One of the problems that come together with disadvantaged students is drop-outs. As a consequence, by solving the problem of poor skilled readers there is a possible solution for desertion.

Although the study was carried out in a particular context with a specific population, there are other schools of the same university that also have this kind of

reading comprehension courses as obligatory in their curricula. It would be interesting to see the possibility of extending this approach in those cases where similar problems have been reported by the Chair of each school year after year.

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APPENDICES

APPENDIX 1
Instructor's pack

Indicaciones y fundamentos teóricos para el instructor

Metodología Pedagógica

En general la simplificación tanto semántica como de metalengua se debe realizar mayoritariamente en el modelaje, además de las ejercitaciones escritas en general.

Según el ciclo de andamiaje descripto, se requiere de los siguientes pasos:

- Preparación: el instructor establece el contexto para el alumno a través de un razonamiento en voz alta que sirve de modelo a seguir por parte del alumno.
- Identificación: El alumno debe identificar los elementos del lenguaje tratados en el texto.
- Elaboración: Los alumnos reconstruyen, en español, el texto tratado en lengua extranjera en forma escrita u oral a través de un diálogo con sus pares y/o el instructor.
- Confirmación: El instructor y el alumno confirman la comprensión de los elementos tratados del texto.

Los dos primeros pasos se hacen, primero, a través de la técnica de modelaje y luego, se espera que los alumnos identifiquen los elementos tratados e imiten los pasos del instructor. Aquí es donde el trabajo en conjunto con un par es fundamental para el siguiente paso de confirmación. Seguidamente, se realiza la corrección en la cual se confirma la identificación y comprensión de los elementos tratados.

Del modelaje se pasa a los ejercicios escritos que están en primera persona, consistente al estilo en primera persona del modelaje del instructor. En las primeras guías, estos ejercicios requieren que el instructor modele el primer ítem y en las guías subsiguientes se trata de que el alumno lo haga más independientemente. Esto le permite al alumno desarrollar cierta independencia gradual en su análisis del texto. Siguiendo el ejemplo modelado por el instructor, el alumno hace suyo el análisis del texto en lugar de asimilar un análisis expuesto en tercera persona a modo de descripción.

Cabe destacar que el instructor toma el rol de facilitador durante los ejercicios a realizarse en forma independiente por el alumno.

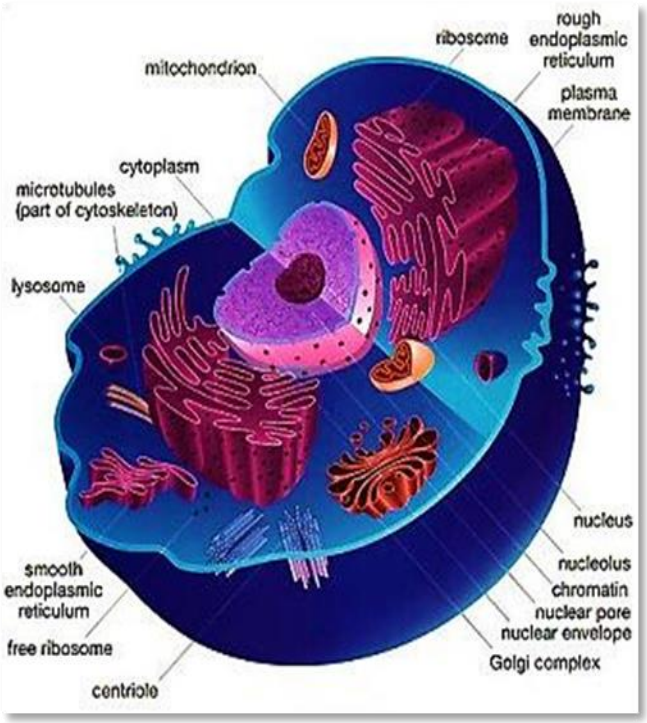
El ciclo de *Joint Rewriting* (parte de la "Interacción de andamiaje", según Martin and Rose") no es parte de los objetivos en el ciclo de la comprensión lectora. Sin embargo, el alumno realiza algunos ejercicios en conjunto con su compañero en forma escrita u oral. Si bien, no es reconstruir el texto en la lengua extranjera (como lo establece ese ciclo de *Joint Rewriting*), sí es una reconstrucción conjunta de los conceptos pero realizada en lengua materna que permite a los alumnos compartir diferentes puntos de vista en la realización de la deconstrucción semántica-léxica y en el análisis del texto.

APPENDIX 2
Example of instructions following the modelling approach

1. En el libro *Modern Biology* de Hopson J. & Postlethwait J. (2006), encuentro las siguientes imágenes. Las observo y respondo las preguntas a continuación.

(a) ¿Qué ilustran las figuras presentadas?

(b) ¿Qué conozco acerca de las características de la célula animal y vegetal?



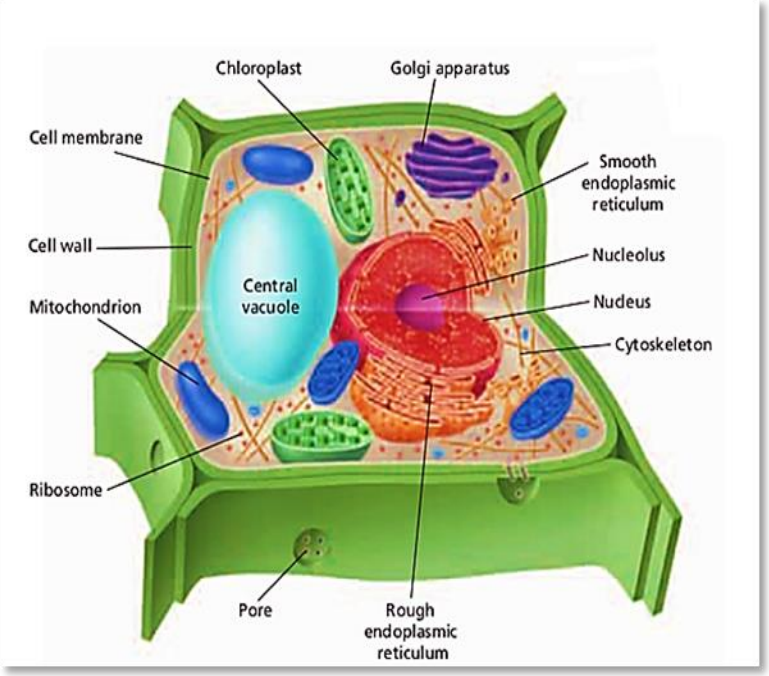


Figure 4-21

(c) Esta ilustración pertenece al texto que voy a leer a continuación. ¿Qué puedo predecir con respecto al tema a ser tratado en el texto titulado UNIQUE FEATURES OF PLANT CELLS?

APPENDIX 3
Example of simplified metalanguage

ACTIVIDADES SOBRE ELEMENTOS DEL LENGUAJE

3. **Leo los equivalentes en español de las siguientes frases, para, luego, responder las preguntas (a) y (b).**

central ***vacuoles*** (r.3)	vacuolas centrales
a rigid ***layer*** (r.17)	una capa rígida
plant cell ***chloroplasts*** (r.66) vegetales	cloroplastos de células

(a) ¿Qué función gramatical cumplen las palabras subrayadas: tema – modificador?

(b) ¿Qué diferencia puedo advertir entre la versión en inglés y la versión en español?

LA FRASE SUSTANTIVA O FRASE NOMINAL

La frase sustantiva básica en **inglés** consta de un tema (núcleo) al cual generalmente se le anteponen uno o más modificadores:

central	vacuoles
m	**n**

Me remito a las estructuras vistas en la guía 1. Muchas veces los modificadores se pueden confundir con un tema. Pero su ubicación en la frase es lo que determinará cuál es el tema y cuál el modificador.

plant	cells
m	**n**

Los artículos también se consideran modificadores.
En español, las frases anteriores se expresan según la secuencia n + m; es decir, los modificadores se mencionan, en general, a continuación del núcleo.

4. **Ahora, leo los equivalentes en español de las siguientes frases y luego, respondo la pregunta a continuación:**

APPENDIX 4
Example of independent activity imitating the procedures modelled by the instructor

6. **Ahora, observo las siguientes frases extraídas del texto y trato de dar un equivalente en español según lo visto anteriormente.**

a. a matrix of proteins and carbohydrates (r.18-19)

_____

b. a secondary cell wall (r.28)

_____

c. a thin layer against the plasma membrane (r.39)

_____

d. the toxin nicotine in a storage vacuole (r.49)

_____

e. certain photosynthetic bacteria (r.65)

_____

APPENDIX 5
Questionnaire administered after the post-test

The aim of this survey is to identify the effect that the approaches had on the subjects:

- Simplicity of the explanations related to the noun phrase.
- Approach to interpret the noun phrase: *unpacking* through the system of "theme –modifier".
- Level of comprehension of the simplified labels (action, theme, modifier) as opposed to preference to the traditional labels (adjective, adverb, verb, noun).
- The explanations and the examples provided by the instructor about how to proceed by means of modelling (think-aloud technique).
- General comprehension achieved after the instructor's modelling of the strategies.
- Deduction of meaning achieved after copying the examples modelled by the instructor.
- This approach vs. the mainstream classroom approach.

Cuestionario para el grupo experimental

En cuanto a la frase sustantiva:

1. ¿Cómo le resultó la forma en la que se explicó la estructura de la frase sustantiva? CLARA – NO CLARA
2. ¿Cómo le resultó aprender a dar el equivalente en español de frases sustantivas en inglés con el sistema de "tema –modificadores? FÁCIL – DIFÍCIL
3. ¿Le parece que los rótulos "tema", "modificador" y "acción" son más simples (fáciles) para comprender las frases y oraciones que los rótulos "adjetivo", "sustantivo", "verbo" y "adverbio"? FÁCIL – DIFÍCIL

En cuanto a las estrategias de lectura:

4. Las explicaciones provistas por la docente fueron ¿CLARAS o POCO CLARAS?
5. ¿Los ejemplos de estrategias provistos por la docente para interpretar los textos le resultaron FÁCIL – DÍFICIL?
6. ¿Qué impresión tuvo de la técnica "pienso en voz alta" que la docente empleó para comprender cómo utilizar las estrategias de lectura? POSITIVA – NEGATIVA
7. ¿Cómo le resultó copiar las estrategias que la docente modeló para usted mediante la técnica "pienso en voz alta" para aprender a deducir el significado? FÁCIL – DÍFICIL
8. ¿Cómo le resultó aprender a deducir significado de las palabras-frases-oraciones a partir de los ejemplos que la docente modeló para usted mediante la técnica "pienso en voz alta"? FÁCIL – DÍFICIL
9. ¿Cómo se sintió con las instrucciones dadas en primera persona (ejm.: "Observo las imágenes y trato de predecir el contenido del texto a continuación")? CÓMODO – INCÓMODO
10. ¿Cómo se sentiría con las instrucciones dadas en imperativo (ejm.: "Observe las imágenes y trate de predecir el contenido del texto a continuación")? CÓMODO – INCÓMODO

Cuestionario para el grupo control

En cuanto a la frase sustantiva:

1. ¿Cómo le resultó la forma en la que se explicó la estructura de la frase sustantiva? CLARA – POCO CLARA
2. ¿Cómo le resultó aprender a dar equivalentes en español de frases sustantivas en inglés con el sistema de "pre-modificadores – núcleo – post- modificadores"? FÁCIL – DIFÍCIL
3. ¿Cómo le resultó comprender los rótulos "adjetivo", "sustantivo", "verbo" y "adverbio"? FÁCIL – DIFÍCIL

En cuanto a las estrategias de lectura:

4. Las explicaciones provistas por la docente fueron ¿CLARAS o POCO CLARAS?
5. ¿Cómo le resultó comprender cómo interpretar los textos con los ejemplos de estrategias provistos en el manual? FÁCIL – DIFÍCIL
6. ¿Qué impresión tuvo de la técnica de cuadros explicativos provistos en el manual para aprender a cómo utilizar las estrategias de lectura? POSITIVA - NEGATIVA
7. ¿Fueron las aclaraciones hechas por la docente sobre las explicaciones provistas en los cuadros explicativos NECESARIAS – INNECESARIAS?
8. ¿Cómo le resultó aplicar las estrategias de lectura enunciadas en los cuadros explicativos? FÁCIL – DIFÍCIL
9. ¿Cómo le resultó aprender a deducir significado de las palabras-frases-oraciones a partir de los ejemplos provistos en el manual y por la docente? FÁCIL – DIFÍCIL
10. ¿Cómo le resultó seguir las instrucciones provistas en el manual? FÁCIL – DIFÍCIL
11. ¿Cómo se sintió con las instrucciones dadas en imperativo (ejm.: "Observe las imágenes y trate de predecir el contenido del texto a continuación")? CÓMODO –INCÓMODO

(For results see Appendix 12)

APPENDIX 6
Subject's profile questionnaire

POR FAVOR CONTESTE LAS SIGUIENTES PREGUNTAS CON LA MAYOR PRECISIÓN

NOMBRE
APELLIDO
MATRÍCULA
AÑO DE INGRESO
AÑO DE CURSADO
CONOCIMIENTOS PREVIOS DE INGLÉS:
ESCUELA PRIMARIA
ESCUELA SECUNDARIA
INSTITUTOS PRIVADOS (AÑOS DE ESTUDIOS)
VIAJES A PAÍSES DE HABLA INGLESA
EDAD
SEXO
CARRERA

¿CURSÓ ALGUNA VEZ ESTA MATERIA?
SI NO
¿HACE CUÁNTO TIEMPO?
UN AÑO MÁS DE UN AÑO

¿RINDIÓ ALGUNA VEZ ESTA MATERIA? SI NO

¿HACE CUÁNTO TIEMPO?
UN AÑO MÁS DE UN AÑO

¿CUÁNTAS VECES SE INSCRIBIÓ Y NO CURSÓ?
UNA VEZ DOS O MÁS VECES
¿CUÁNTAS VECES COMENZÓ EL CURSADO ANTERIORMENTE?
UNA VEZ DOS O MÁS VECES

¿REALIZO ALGÚN OTRO CURSO DE LECTO-COMPRENSIÓN EN ESPAÑOL U OTRO IDIOMA?
SI NO

There follows the results about the age obtained from the questionnaire of the subject profile survey.

Respuesta	GRUPO CONTROL				GRUPO EXPERIMENTAL			
	Media	E.E.	LI (95%)	LS (95%))	Media	E.E.	LI (95%)	LS (95%))
EDAD	20,12	0,45	19,16	21,08	22,87	1,20	20,29	25,45

In this case, it is observed that the control group was conformed by students with a mean age of 20.12, age that could range from 19.16 to 21.08 with a 95% confidence interval. In the case of the experimental group, the mean age was 22.87 with a possible range from 20.29 to 25.45 with a 95% confidence interval.

APPENDIX 7
Pre-test and Post-test

UNIVERSIDAD NACIONAL DE CÓRDOBA
FACULTAD DE LENGUAS
DIFA

PRE-TEST Y POST-TEST

Idioma: Inglés
Modalidad: Cuatrimestral
Facultad de Ciencias Químicas

Nombre del alumno / a: …… Comisión: ……
Fecha: ……..
Matrícula: …… Calificación: ____/ 50

Lea el siguiente texto para, luego, completar los ejercicios a continuación:

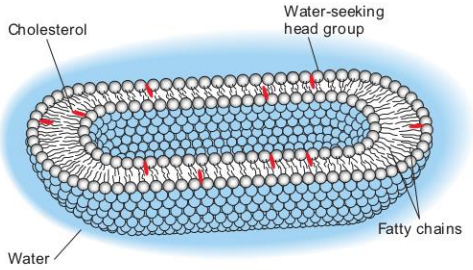
THE WORK OF CELLS

In essence, any cell is simply a compartment with a watery interior that is separated from the external environment by a surface membrane (the plasma membrane) that prevents the free flow of molecules in and out of cells. In addition, as we've noted, eukaryotic cells have extensive internal membranes that further subdivide the cell into various compartments, the organelles. The plasma membrane and other cellular membranes are composed primarily of two layers of phospholipid molecules. These bipartite molecules have a "water-loving" (hydrophilic) end and a "water-hating" (hydrophobic) end. The two phospholipid layers of a membrane are oriented with all the hydrophilic ends directed toward the inner and outer surfaces and the hydrophobic ends buried within the interior (Figure 1-13). Smaller amounts of other lipids, such as cholesterol, and many kinds of proteins are inserted into the phospholipid framework. The lipid molecules and some proteins can float sidewise in the plane of the membrane, giving membranes a fluid character. This fluidity allows cells to change shape and even move. However, the attachment of some membrane proteins to other molecules inside or outside the cell restricts their lateral movement.

The cytosol and the internal spaces of organelles differ from each other and from the cell exterior in terms of acidity, ionic composition, and protein contents. For example, the composition of salts inside the cell is often drastically different from what is outside. Because

of these different "microclimates," each cell compartment has its own assigned tasks in the overall work of the cell (Chapter 5). The unique functions and microclimates of the various cell compartments are due largely to the proteins that reside in their membranes or interior.

We can think of the entire cell compartment as a factory dedicated to sustaining the well-being of the cell. Much cellular work is performed by molecular machines, some housed in the cytosol and some in various organelles. Here we quickly review the major tasks that cells carry out in their pursuit of the good life.



Lodish, H. et.al. (2000). *Molecular Cell Biology*. 5th Ed. New York: W.H Freeman and Company.

SECCIÓN COMPRENSIÓN

1. Responda la siguiente pregunta en español y en forma completa. Indique, luego, los renglones de donde extrajo la información. (8p)

a- ¿Cómo están compuestas la membrana plasmática y otras membranas celulares? ¿Qué características presentan esas moléculas?

.....

.....

.....

.....

(Renglones: _____)

2. Indique si los siguientes enunciados son verdaderos (V) o falsos (F), según la información ofrecida por el texto.
a) En ambos casos (V y F), indique renglones de referencia.
b) En caso de ser falsos (F), corríjalos (en forma completa y en español). (3x4p = 12p)

Enunciados	**V/F**	**Renglones**
a- Se menciona al colesterol como uno de los ejemplos de proteínas que se encuentran insertas en la estructura fosfolipídica. *Corrección:*		
b- Las células son capaces de cambiar su forma e incluso moverse gracias a la fluidez que caracteriza a las membranas. *Corrección:*		
c- Muchas de las tareas de la célula son llevadas a cabo por máquinas moleculares que se localizan exclusivamente en el cytosol. *Corrección:*		

SECCIÓN ESTRUCTURAS DE LA LENGUA

3. Dé un equivalente en español de las siguientes frases. (10x3p=30p)

a- a surface membrane (r.3)

……

b- the external environment (r.3)

……

c- the free flow of molecules in and out of cells (r.4)

……

d- a compartment with a watery interior (r.2)

……

e- the attachment of some membrane proteins to other molecules (r.14-15)

……

f- a fluid character (r.13-14)

……

g- acidity, ionic composition, and protein contents (r.18)

……

h- the major tasks that cells carry out (r.25-26)

……

i- the well-being of the cell (r.23-24)

……..

j- the cell exterior (r.17-18)

……..

APPENDIX 8
Practice Test

UNIVERSIDAD NACIONAL DE CÓRDOBA
FACULTAD DE LENGUAS
DIFA

PRÁCTICA DE TEST

Idioma: Inglés
Modalidad: Cuatrimestral
Facultad de Ciencias Químicas

Nombre del alumno / a: …… Comisión: ……

Fecha: …….

Matrícula: …… Calificación: ____/ 50

Lea el siguiente texto para, luego, completar los ejercicios a continuación:

Organic Chemistry

What Is Organic Chemistry?

Organic chemistry is the study of the structure, properties, composition, reactions, and preparation of carbon-containing compounds, which include not only hydrocarbons but also compounds with any number of other elements, including hydrogen (most compounds contain at least one carbon–hydrogen bond), nitrogen, oxygen, halogens, phosphorus, silicon, and sulfur. This branch of chemistry was originally limited to compounds produced by living organisms but has been broadened to include human-made substances such as plastics. The range of application of organic compounds is enormous and also includes, but is not limited to, pharmaceuticals, petrochemicals, food, explosives, paints, and cosmetics

Where Is Organic Chemistry Used?

Organic chemistry is a highly creative science in which chemists create new

14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	molecules and explore the properties of existing compounds. It is the most popular field of study for ACS chemists and Ph.D. chemists. Organic compounds are all around us. They are central to the economic growth of the United States in the rubber, plastics, fuel, pharmaceutical, cosmetics, detergent, coatings, dyestuff, and agrichemical industries, to name a few. The very foundations of biochemistry, biotechnology, and medicine are built on organic compounds and their role in life processes. Many modern, high-tech materials are at least partially composed of organic compounds. Organic chemists spend much of their time creating new compounds and developing better ways of synthesizing previously known compounds. Which Industries Hire Organic Chemists? Organic chemists at all levels are generally employed by pharmaceutical, biotech, chemical, consumer product, and petroleum industries. Chemists in industry mainly work in development, while chemists in academia are involved in more basic research. The federal (e.g., Food and Drug Administration, Patent and Trademark Office) state, and local governments also hire organic chemists. Source: https://www.acs.org/content/acs/en/careers/college-to-career/areas-of-chemistry/organic-chemistry.html

SECCIÓN COMPRENSIÓN

1. Indique si los siguientes enunciados son verdaderos (V) o falsos (F), según la información ofrecida por el texto.
a) En ambos casos (V y F), indique renglones de referencia.
b) En caso de ser falsos (F), corríjalos (en forma completa y en español).
(3x4p = 12p)

Enunciados	**V/F**	**Renglones**
a- La química orgánica estudia los compuestos de carbono como así también otras substancias fabricadas por el hombre. *Corrección:*		
b- El campo de aplicación de la química orgánica está limitado a las farmacéuticas, petroquímicas, alimentos y pinturas. *Corrección:*		
c- Muchos materiales modernos y de alta tecnología están en parte hechos de compuestos orgánicos. *Corrección:*		

2. Responda la siguiente pregunta en español y en forma completa. Indique, luego, los renglones de donde extrajo la información. (8p)

a- ¿Para qué industrias son esenciales los compuestos orgánicos en los Estados Unidos?

(Renglones: _____)

.....

.....

.....

.....

SECCIÓN ESTRUCTURAS DE LA LENGUA

3. Dé un equivalente en español de las siguientes frases. (10x3p=30p)

a- carbon-containing compounds (r.4)

……..

b- one carbon–hydrogen bond (r.6)

……..

c- role in life processes (r.18)

……..

d- basic research (r. 25)

……..

e- the economic growth (r. 15)

……..

f- the most popular field of study (r. 13)

……

g- branch of chemistry (r. 7)

……

h- organic chemists (r. 22)

……

i- local governments (r. 26-27)

……

j- the range of application (r. 9)

……..

APPENDIX 9
Criteria for the correction of the test
(These criteria were provided by the Chair.)

1. **Ejercicio V/F**
   a. Si no se dan los renglones de referencia en el enunciado falso, quitar 1 punto.
   b. Si los renglones dados son incorrectos, pero la justificación del enunciado falso es correcta, quitar 1 punto.
   c. Si la corrección del enunciado falso es incorrecta, quitar 3 puntos.
   d. Si se dan los renglones de referencia incorrectos en el enunciado verdadero, quitar 3 puntos.
   e. Si se justifica el enunciado verdadero, quitar 1 punto del puntaje total del ejercicio. (El punto se quita por no haber respetado la consigna.)

2. **Preguntas**
   a. Si la respuesta está completa, pero no se dan los renglones de referencia, quitar 1 punto.
   b. Si la respuesta está incompleta, quitar 2 ó 4 puntos (según cuán incompleta esté).
   c. Si la respuesta está en inglés, quitar todos los puntos.
   d. Si la respuesta contiene sólo los renglones de referencia, dar 1 punto del valor total de la respuesta correcta.

   La clave de corrección es una guía. A veces, los alumnos pueden dan respuestas correctas diferentes a las de la clave, en cuyo caso es necesario ampliar/flexibilizar el criterio de corrección.

3. **Frases Sustantivas**
   a. Si el núcleo es incorrecto (es decir, si no se identificó el núcleo correctamente), quitar todos los puntos.
   b. Si la frase contiene un verbo conjugado, quitar la mitad de los puntos.
   c. Si no se identifican/proveen los plurales de las palabras, quitar 0,5 ó 1 punto.
   d. Si el núcleo es correcto, pero los modificadores son incorrectos, quitar 1 ó 2 puntos.

APPENDIX 10

Result of the pre-test in the experimental group

Subject	Sección comprensión				Sección Estructuras de la Lengua										Total
	Verdadero o Falso			Pregunta	Frases sustantivas										
	a	b	c	a	a	b	c	d	e	f	g	h	i	j	
1	1	4	4	4	2	2	1	3	1,5	2	2,5	2	3	0	**32**
2	1	0	1	4	0	2	2	0	3	3	2	1	3	3	**25**
3	4	4	1	5	3	0	3	2,5	0	3	3	0	3	3	**34,5**
4	1	1	4	6	3	0	0	3	0	2,5	2	0	0	3	**25,5**
5	4	4	1	6	3	3	2	3	0	3	2,5	0	0	0	**31,5**
6	1	1	4	2	0	1	0	2,5	0	2,5	0	0	0	0	**14**
7	1	4	1	8	0	3	2	3	3	0	2	1	0	3	**31**
8	4	0	4	4	0	0	0	1	0	0	2,5	0	0	0	**15,5**
9	4	4	1	8	0	0	0	2,5	3	3	2	1	0	3	**31,5**
10	4	4	2	7	0	3	2,5	3	0	2,5	2,5	3	3	3	**39,5**
11	0	4	4	3	3	3	2,5	2,5	3	3	3	1	0	3	**35**
12	1	4	1	5	2	3	2	3	3	3	3	2,5	1	3	**36,5**
13	1	4	4	6	1	0	2	3	0	2	2,5	0	2	3	**30,5**
14	1	4	4	6	0	3	2	3	3	3	2,5	2	2	3	**38,5**
15	1	4	4	3	3	0	3	2,5	3	0	2	1	0	3	**29,5**

Result of the post-test in the experimental group

Subject	Comprehension Section				Language Structure Section										TOTAL
	True or False			Question	Noun Phrases										
	a	b	c	a	a	b	c	d	e	f	g	h	i	j	
1	4	4	4	6	3	1,5	0	3	3	3	2,5	2	3	3	**42**
2	4	4	4	8	3	3	2,5	3	3	3	2,5	2	3	3	**48**
3	4	4	4	7,5	3	3	2,5	3	2	3	3	0	3	3	**45**
4	4	4	4	8	3	3	2,5	3	2	3	2,5	2,5	3	3	**47,5**
5	4	4	4	8	3	3	3	3	3	2	2,5	1,5	3	3	**47**
6	4	4	4	8	0	3	3	1,5	1,5	3	2	1,5	3	3	**41,5**
7	1	4	4	8	3	3	3	3	3	0	2,5	0	3	3	**40,5**
8	4	4	4	8	0	3	0	3	2	0	1,5	0	1,5	3	**34**
9	4	4	4	6,5	0	3	3	2	3	3	2,5	1,5	0	3	**39,5**
10	4	4	4	8	0	3	3	3	2,5	3	2	2,5	3	3	**45**
11	4	4	4	8	3	3	3	3	2	3	3	3	3	3	**49**
12	4	4	4	7,5	3	3	3	3	3	3	3	2,5	3	3	**49**
13	4	4	4	8	0	3	3	3	0	3	3	2	3	3	**43**
14	1	4	4	8	3	3	3	3	2	2,5	2,5	3	3	3	**45**
15	4	4	1	8	3	3	3	2	3	3	3	2	0	3	**42**

Result of the pre-test in the control group

Subject	Sección comprensión				Sección Estructuras de la Lengua										Total
	Verdadero o Falso			Pregunta	Frases sustantivas										
	a	b	c	a	a	b	c	d	e	f	g	h	i	j	
1	1	1	0	4	0	1,5	2	1	0	2,5	1,5	0	0	2,5	**17**
2	3	4	4	8	2	0	1	2	1,5	0	3	3	0	2,5	**34**
3	1	0	1	5	1	0	0	0	0	2,5	0	0	3	0	**13,5**
4	0	1	1	3	3	0	2	2	0	0	0	0	0	0	**12**
5	1	4	4	4	0	0	2	2,5	3	0	2,5	1	0	3	**27**
6	4	4	4	6	2,5	3	3	2,5	3	3	3	2	0	3	**43**
7	1	4	1	4	2,5	0	0	0	0	0	2,5	0	0	0	**15**
8	1	0	4	4	0	3	2	3	0	3	2,5	0	3	0	**25,5**
9	1	1	4	4	2	0	0	2	0	3	2	0	0	3	**22**
10	3	4	1	6	0	3	2	2	2	3	2,5	1,5	2	3	**35**
11	1	4	4	6	2,5	0	2	2	0	2	0	0	0	0	**23,5**
12	0	0	3	4	0	0	0	0	0	0	1	0	0	3	**11**
13	1	4	2	4	3	0	0	0	0	0	2,5	0	0	0	**16,5**
14	1	0	1	5	0	0	0	0	0	0	0	0	0	0	**7**
15	1	0	0	7	2	0	0	2,5	0	3	2,5	0	0	0	**18**
16	4	4	1	5	3	3	2	2,5	0	0	2,5	0	0	3	**30**
17	1	1	1	6	3	3	2	3	0	0	2,5	0	0	0	**22,5**

Result of the post-test in the control group

Subject	Sección comprensión				Sección Estructuras de la Lengua										Total
	Verdadero o Falso			Pregunta	Frases sustantivas										
	a	b	c	a	a	b	c	d	e	f	g	h	i	j	
1	1	4	4	5	0	3	1	3	0	3	3	1	0	3	**31**
2	1	4	4	7,5	3	3	3	3	0	2	3	3	3	3	**42,5**
3	1	4	4	2	3	3	0	3	3	2	0,5	1	3	0	**29,5**
4	1	1	4	6	3	0	3	2	1	0	2,5	2	3	0	**28,5**
5	4	4	4	5	3	3	2,5	3	0	0	2,5	1	0	3	**35**
6	4	4	4	6	3	3	3	3	3	3	2,5	2	3	3	**46,5**
7	1	4	4	4	2	3	2	1	0	1	2,5	1	0	3	**28,5**
8	4	4	4	4	0	3	3	3	0	3	2,5	2,5	3	3	**39**
9	1	4	4	6,5	3	0	2	3	0	3	3	0,5	0	0	**30**
10	1	4	4	8	0	3	2	3	0	3	3	2	0	1	**34**
11	1	0	4	7	3	3	3	2	1,5	3	2	1,5	3	0	**34**
12	1	4	4	6	0	3	2	2	0	0	2	1,5	3	3	**31,5**
13	1	4	4	6	0	0	0	3	2	0	1	1,5	3	3	**28,5**
14	1	4	4	4	0	3	3	3	0	0	1,5	1	3	0	**27,5**
15	4	4	4	5	0	3	3	3	1,5	3	3	2	3	0	**38,5**
16	4	4	4	8	3	3	3	3	0	3	3	2,5	2,5	3	**46**
17	1	4	4	6	3	3	3	3	2	0	3	2	3	0	**37**

APPENDIX 11

Comparison of the results between the pre-test and post-test in the experimental group

Sujeto	Com Tot V/F	Com preg	Com Total	Com %	Estr Total	Estr %
1	9	4	**13**	65	19	63,33
2	2	4	**6**	30	19	63,33
3	9	5	**14**	70	20,5	68,33
4	6	6	**12**	60	13,5	45
5	9	6	**15**	75	16,5	55
6	6	2	**8**	40	6	20
7	6	8	**14**	70	17	56,66
8	8	4	**12**	60	3,5	11,66
9	9	8	**17**	85	14,5	48,33
10	10	7	**17**	85	22,5	75
11	8	3	**11**	55	24	80
12	6	5	**11**	55	25,5	85
13	9	6	**15**	75	15,5	51,66
14	9	6	**15**	75	23,5	78,33
15	9	3	**12**	60	17,5	58,33

Sujeto	Com Tot V/F	Com preg	Com Total	Com %	Estr Total	Estr %
1	12	6	**18**	90	24	80
2	12	8	**20**	100	28	93,33
3	12	7,5	**19,5**	97,5	25,5	85
4	12	8	**20**	100	27,5	91,66
5	12	8	**20**	100	27	90
6	12	8	**20**	100	21,5	71,66
7	9	8	**17**	85	23,5	78,33
8	12	8	**20**	100	14	46,66
9	12	6,5	**18,5**	92	21	70
10	12	8	**20**	100	25	83,33
11	12	8	**20**	100	29	96,66
12	12	7,5	**19,5**	97,5	29,5	98,33
13	12	8	**20**	100	23	76,66
14	9	8	**17**	85	28	93,33
15	9	8	**17**	85	25	83,33

Comparison of the results between the pre-test and post-test in the control group

Sujeto	Com Tot V/F	Com preg	Com Total	Com %	Estr Total	Estr %
1	2	4	**6**	30	11	36,66
2	11	8	**19**	95	15	50
3	2	5	**7**	35	6,5	21,66
4	2	3	**5**	25	7	23.33
5	9	4	**13**	65	14	46,66
6	12	6	**18**	90	25	83,33
7	6	4	**10**	50	5	16,66
8	5	4	**9**	45	16,5	55
9	6	4	**10**	50	12	40
10	8	6	**14**	70	21	70
11	9	6	**15**	75	8,5	28,33
12	3	4	**7**	35	4	13,33
13	7	4	**11**	55	5,5	18,33
14	2	5	**7**	35	0	0
15	1	7	**8**	40	10	33,33
16	9	5	**14**	70	16	53,33
17	3	6	**9**	45	13,5	45

Sujeto	Com Tot V/F	Com preg	Com Total	Com %	Estr Total	Estr %
1	9	5	**14**	70	17	56,66
2	9	7,5	**16,5**	82,5	26	86,66
3	9	2	**11**	55	18,5	61,66
4	6	6	**12**	60	16,5	55
5	12	5	**17**	85	18	60
6	12	6	**18**	90	28,5	95
7	9	4	**13**	65	15,5	51,66
8	12	4	**16**	80	23	76,66
9	9	6,5	**15,5**	77,5	14,5	48,33
10	9	8	**17**	85	17	56,66
11	5	7	**12**	60	22	73,33
12	9	6	**15**	75	16,5	55
13	9	6	**15**	75	13,5	45
14	9	4	**13**	65	14,5	48,33
15	12	5	**17**	85	21,5	71,66
16	12	8	**20**	100	26	86,66
17	9	6	**15**	75	22	73,33

APPENDIX 12
Response obtained from the questionnaires administered after the post-test to both groups

In this section it is shown the results obtained in the questionnaire administered to the students. Each item is numbered and corresponds to two different sections according to the objectives established in the questionnaires (see Appendix 5). The quantity of answers obtained for each item and the corresponding percentages are determined first for the control group and then for the experimental group.

CONTROL GROUP

Pregunta	Cantidad	%
Frase Sustantiva		
1- ¿Cómo le resultó la forma en la que se explicó la estructura de la frase sustantiva?		
CLARA	23	95,83
POCO CLARA	1	4,17
2- ¿Cómo le resultó aprender a dar equivalentes en español de frases sustantivas en inglés con el sistema de "pre-modificadores – núcleo – post- modificadores"?		
FÁCIL	15	62,50
DIFICIL	8	37,50
3- ¿Cómo le resultó comprender los rótulos "adjetivo", "sustantivo", "verbo" y "adverbio"?		
FÁCIL	12	50,00
DIFICIL	12	50,00
Estrategia de Lectura		
4- Las explicaciones provistas por la docente fueron:		
CLARA	24	100,00
POCO CLARA	0	0,00
5- ¿Cómo le resultó comprender cómo interpretar los textos con los ejemplos de estrategias provistos en el		
FÁCIL	19	79,17
DIFICIL	5	20,83

6- ¿Qué impresión tuvo de la técnica de cuadros explicativos provistos en el manual para aprender a cómo utilizar las estrategias de lectura?		
POSITIVA	22	91,67
NEGATIVA	2	8,33
7- ¿Fueron las aclaraciones hechas por la docente sobre las explicaciones provistas en los cuadros explicativos:		
NECESARIA	19	79,17
INNECESARIA	5	20,83
8- ¿Cómo le resultó aplicar las estrategias de lectura enunciadas en los cuadros explicativos?		
FÁCIL	18	75,00
DIFICIL	6	25,00
9- ¿Cómo le resultó aprender a deducir significado de las palabras-frases-oraciones a partir de los ejemplos provistos en el manual y por la docente?		
FÁCIL	22	91,67
DIFICIL	2	8,33
10-¿Cómo le resultó seguir las instrucciones provistas en el manual?		
FÁCIL	21	87,50
DIFICIL	3	12,50
11-¿Cómo se sintió con las instrucciones dadas en imperativo (ejemplo.: “Observe las imágenes y trate de predecir el contenido del texto a continuación”)?		
CÓMODO	20	83,33
INCÓMODO	4	16,67

EXPERIMENTAL GROUP

	Cantidad	%
Frase Sustantiva		
1- ¿Cómo le resultó la forma en la que se explicó la estructura de la frase sustantiva?		
CLARA	18	100,00
POCO CLARA	0	0,00
2- ¿Cómo le resultó aprender a dar el equivalente en español de frases sustantivas en inglés con el sistema de "tema –modificadores?		
FÁCIL	14	77,78
DIFICIL	4	22,22
3- ¿Le parece que los rótulos "tema", "modificador" y "acción" son más simples (fáciles) para comprender las frases y oraciones que los rótulos "adjetivo", "sustantivo", "verbo" y "adverbio"?		
FÁCIL	14	82,35
DIFICIL	3	17,65
Estrategia de Lectura		
4- Las explicaciones provistas por la docente fueron:		
CLARA	18	100,0
POCO CLARA	0	0,00
5- ¿Los ejemplos de estrategias provistos por la docente para interpretar los textos le resultó:		
FÁCIL	18	100,000
DIFICIL	0	0,00
6- ¿Qué impresión tuvo de la técnica "pienso en voz alta" que la docente empleó para comprender cómo utilizar las estrategias de lectura?		
POSITIVA	18	100,00
NEGATIVA	0	0,00
7- ¿Cómo le resultó copiar las estrategias que la docente modeló para usted mediante la técnica "pienso en voz alta" para aprender a deducir el significado?		
NECESARIA	17	94,44
INNECESARIA	1	5,56

8- ¿Cómo le resultó aprender a deducir significado de las palabras-frases-oraciones a partir de los ejemplos que la docente modeló para usted mediante la técnica "pienso en voz alta"?		
FÁCIL	18	100,00
DIFICIL	0	0,00
9- ¿Cómo se sintió con las instrucciones dadas en primera persona (ejm.: "Observo las imágenes y trato de predecir el contenido del texto a continuación")?		
CÓMODO	18	100,00
INCÓMODO	0	0,00
10- ¿Cómo se sentiría con las instrucciones dadas en imperativo (ejemplo: "Observe las imágenes y trate de predecir el contenido del texto a continuación")?		
CÓMODO	16	94,12
INCÓMODO	1	5,88