

UCUENCA

Facultad de Filosofía, Letras y Ciencias de la Educación

Maestría en Lingüística Aplicada a la Enseñanza del Inglés como Lengua Extranjera

The Influence of Audio-Visual Material in the Oral Retelling of L2 Written Texts

Trabajo de titulación previo a la obtención del título de Magíster en Lingüística Aplicada a la Enseñanza del Inglés como Lengua Extranjera

Autor:

Darwin Ariosto Salazar Ojeda

CI: 0301692828

Correo electrónico: darwinaso@hotmail.com

Directora:

Sandra Leonor Cabrera Moreno

CI: 0105027049

Cuenca, Ecuador

03-agosto-2022

RESUMEN

El objetivo del presente proyecto de investigación fue analizar la efectividad de la incorporación de elementos audiovisuales en la narración de textos escritos en inglés como lengua extranjera. Este estudio de caso empleó un método experimental que implicó una prueba previa, la aplicación del tratamiento y una prueba posterior. Un total de 10 estudiantes de secundaria participaron en este estudio, los cuales se dividieron en dos grupos: un grupo de tratamiento y un grupo de control. El grupo de tratamiento utilizó el texto escrito en combinación con elementos audiovisuales mientras que el grupo de control recibió únicamente el texto. Los relatos orales de los estudiantes fueron analizados a través de una rúbrica que recopiló datos relacionados con los patrones gramaticales y semánticos. Un cuestionario fue empleado para evaluar las reflexiones metacognitivas de los participantes. El análisis de la prueba previa, prueba posterior y cuestionario metacognitivo se realizó mediante medidas de tendencia central y dispersión. Los resultados mostraron que antes de la intervención, el promedio de la narración oral del grupo de tratamiento fue de 4,2, mientras que después de la intervención, el mismo aumentó a 5,9. En el grupo de control, antes de la intervención, la puntuación total media fue de 6,0 y después de la intervención se situó en 6,5. No se observaron diferencias significativas ($p < 0,05$), lo cual implica un comportamiento similar entre los participantes de ambos grupos antes y después de la intervención. En cuanto al empleo de estrategias metacognitivas, se registraron correlaciones significativas en el desempeño de los participantes entre la narración oral y el uso de ciertas estrategias de conexión en ambos grupos. Se puede inferir que la narración oral puede estimular positivamente las habilidades de comprensión lectora de los estudiantes para una mejor producción oral.

Palabras clave: *Elementos audiovisuales. Estrategias metacognitivas. Narración oral.*

ABSTRACT

The objective of this research study was to analyze the effectiveness of the incorporation of audio-visual elements in the retelling of EFL written texts. This case study employed an experimental method which entailed a pre-test, the application of the treatment, and a post-test. A total of 10 high school students took part in this study and they were divided into two groups: one treatment group and one control group. The treatment group used the written text in combination with audio-visual elements while the control group received only the text. Students' oral retellings were analyzed using a rubric for collecting data related to grammatical and semantic patterns. A questionnaire was employed to evaluate participants' metacognitive reflections. The analysis of the pretest, posttest, and metacognitive questionnaire was made through measures of central tendency and dispersion. The results showed that before the intervention, the treatment group retelling mean was of 4.2, whereas after the intervention, it increased to 5.9. In the control group, before the intervention, the total score mean was of 6.0 and after the intervention, it was situated at 6.5. No significant differences were revealed ($p < .05$), which implies a similar behavior among the participants from both groups before and after the intervention. Regarding the employment of metacognitive strategies, high correlations were recorded between learners' performance in oral retelling and the use of certain connection strategies in both groups. It can be inferred that oral retelling can positively stimulate students' reading comprehension skills for better oral output.

Keywords: *Audio-visual elements. Metacognitive strategies. Oral retelling.*

TABLE OF CONTENTS

RESUMEN	2
ABSTRACT.....	3
Acknowledgement	8
Dedication.....	9
1. Introduction.....	10
2. Theoretical framework.....	11
3. Literature review.....	15
4. Method	18
4.1 Sample / Participants	18
4.2 Instruments	21
4.3 Data collection procedures	22
4.4 Data analysis.....	23
5. Results and discussion	23
5.1 Metacognitive strategies	26
5.1.1. Relationship between Metacognitive Strategies and Level of English	26
5.1.2. Use of Metacognitive Strategies per Group	27
5.1.3 Relationship between the Use of Metacognitive Strategies and Oral Retelling Performance (Post Test).....	28
5.2 Use of elements.....	30
5.3 Use of strategies	31
6. Conclusions.....	31
REFERENCES	34
APPENDICES	40
Appendix A. Diagnostic results.....	40
A.1 Treatment group (Group 1)	40
A.2 Control group (Group 2)	41
Appendix B. Oral Retelling Rubric	42
Appendix C. Use of elements	43

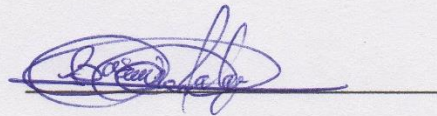
<i>Appendix D. Relation between Reading strategies and Level of English</i>	44
<i>D.1 (a)</i>	44
<i>D.1 (b)</i>	45
<i>Appendix E. Metacognitive questionnaire (Spanish version)</i>	46
<i>Appendix F. Request for Authorization for the Application of the Research Project</i>	48
<i>Appendix G. Participant Consent Letter</i>	49
<i>Appendix H. Pretest (Treatment and Control Group)</i>	51
<i>Appendix I. Posttest (Control Group)</i>	53
<i>Appendix J. Posttest (Treatment Group)</i>	55

Cláusula de licencia y autorización para publicación en el Repositorio Institucional

Darwin Ariosto Salazar Ojeda en calidad de autor y titular de los derechos morales y patrimoniales del trabajo de titulación "**The Influence of Audio-Visual Material in the Oral Retelling of L2 Written Texts**", de conformidad con el Art. 114 del CÓDIGO ORGÁNICO DE LA ECONOMÍA SOCIAL DE LOS CONOCIMIENTOS, CREATIVIDAD E INNOVACIÓN reconozco a favor de la Universidad de Cuenca una licencia gratuita, intransferible y no exclusiva para el uso no comercial de la obra, con fines estrictamente académicos.

Asimismo, autorizo a la Universidad de Cuenca para que realice la publicación de este trabajo de titulación en el repositorio institucional, de conformidad a lo dispuesto en el Art. 144 de la Ley Orgánica de Educación Superior.

Cuenca, 03 de agosto de 2022



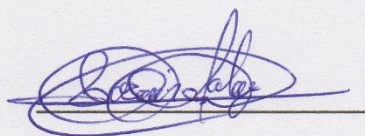
Darwin Ariosto Salazar Ojeda

C.I: 0301692828

Cláusula de Propiedad Intelectual

Darwin Ariosto Salazar Ojeda, autor del trabajo de titulación **"The Influence of Audio-Visual Material in the Oral Retelling of L2 Written Texts"**, certifico que todas las ideas, opiniones y contenidos expuestos en la presente investigación son de exclusiva responsabilidad de su autor/a.

Cuenca, 03 de agosto de 2022



Darwin Ariosto Salazar Ojeda

C.I: 0301692828

Acknowledgement

I would like to express my special thanks of gratitude to all the people who made it possible for this project to be carried out successfully, especially to my tutor, Sandrita Cabrera, for her support, patience, and dedication. Besides, I would like to thank University of Cuenca for allowing me to achieve my goals. My sincere thanks to Unidad Educativa Técnico Salesiano and my dear participants for being part of this project.

Thanks God for all your blessings.

Dedication

This academic project is dedicated to my wife, Lorena, who has been a constant source of support and encouragement during all my challenges. I am truly thankful for having you in my life. This work is also dedicated to my two wonderful sons, Joaquin and Diego, for being my inspiration. To my parents, Ariosto and Nube, who have always loved me unconditionally and whose good examples have taught me to work hard for the things that I aspire to achieve. Last but not least, I would like to thank my sisters for always making me realize that everything is possible through perseverance.

1. Introduction

When people start learning a new language, it is through reading that they become aware of the organization of lexical elements and grammatical patterns in the text. According to Beers (2003), reading is related to understanding, interpreting, and thinking about texts. In addition, Swihart (2009) foregrounds that reading is an essential skill in our lives and thus it is imperative for the success of students' academic career. As mentioned in these statements, the final purpose of reading has to do with comprehension. In Bloom's Taxonomy, comprehension takes up the second domain after knowledge (Wilson, 2016), which enables an individual to understand the literal meaning of a message and, based on that, create new ideas and experiences, turning information into something more personal and meaningful.

One of the strategies that have proved to enhance learners' written and oral output is retelling, a post-reading activity that allows a deeper understanding of the reader's use of language to reconstruct the sense of different types of texts. According to Brown and Cambourne (1987), retelling is the recalling of sequenced events and it is commonly used in school contexts to measure reading comprehension qualitatively. Retelling can be regarded as a valuable method, which produces a lot of benefits, including vocabulary acquisition and better speaking performance (Putri, Perdhani, & Isnaini, 2021). Leung (2008) mentions that recurrent readings and small group interactions help learners develop vocabulary and consequently their knowledge of the world.

Similarly, according to Stadler and Cuming (2010), retelling produces longer stories that hold more story grammar elements than the original texts. In the same line, retelling can additionally help students improve their capacity to make significant inferences about a text (Kissener, 2007), even more with the implementation of audio-visual elements (Schisler et al., 2009; Lin, 2010; Indrawati, 2013; Hsu, 2014). Therefore, we should consider oral retelling in the

EFL classroom as a means to understand how readers make sense of a text written in the target language in order to improve their reading comprehension skills as well as their oral output. Such understanding will provide a solid basis for discussing its pedagogical implications.

Currently, many studies have been carried out on the impact that retelling has on language production, but there is scarce information in the Ecuadorian context. For this reason, the purpose of this study is to analyze the influence of audio-visual elements in the retelling of a written text. Two retelling phases have been compared and contrasted to determine patterns: (1) the recall of the written text exclusively and (2) the recall of the text after audio-visual elements have been incorporated in the reading process. In addition, readers' metacognitive impressions have been analyzed to understand how they use reading strategies to make sense of a written text.

2. Theoretical framework

Understanding L2 reading comprehension by means of retelling after learners have been exposed to audiovisual support is the main purpose of this study. According to the American Heritage Dictionary, retelling can be defined as “a new account or an adaptation of a story” (Houghton Mifflin, 2022). Rog (2003) states that this strategy demands readers to generate a new construction of the facts of a text based on their own linguistic, social and cultural understanding. This post-reading construction expresses what somebody remembers by selecting significant information (Morrow, 1996; Fisher & Frey, 2000; Stoicovy, 2004).

Similarly, Searfoss and Readence (1994) state that story retelling is a suitable assessment tool to use with ESL students. Stoicovy (2004) claims that language teaching can get benefits from retelling, as this strategy can be employed as a way to encourage students' comprehension and understanding of written and spoken texts. In this line, oral retelling is a useful technique to assess reading comprehension qualitatively. That means, a reteller is supposed to remember, recognize,

and find the connection between events, before delivering the complete story in a logical and meaningful way. The theory that supports the retelling approach is founded on the assumption that, while they read, readers attempt to make sense of the written information (Dole et al., 1991). Goodman (1982) states that retelling after reading offers another possibility for the reader to keep on constructing the text.

To support this assumption, the meta-cognitive theory introduced by Flavell (1976) refers to learners' conscious mindfulness of the cognitive methods they use and any reasoning associated with those processes. Ulrike, Goetz, Hall, and Frenzel (2012) express that meta-cognition is related to thinking about thinking and monitoring the learning steps a student follows to solve a problem. That means that readers employ different strategies to grasp a text, but when they realize that a specific idea is complicated to understand, they modify their strategies, i.e. it is possible to read again and ask questions. To rephrase it, metacognition has to do with the mental process of controlling and orienting in order to achieve comprehension. It involves planning to select the most adequate method to learn, examining the learning process, and assessing the fulfillment of the objectives (Israel et al., 2005; Tracey & Morrow, 2006).

Grabe and Stoller (2002) underscore three approaches that readers employ to understand written content and are linked to metacognition: bottom up model, top-down model and interactive model. Bottom-up model suggests that during reading, individuals follow a mechanical pattern by focusing on individual words and phrases whose elements are put together in order to achieve understanding. During this type of processing, there is little interference from their background knowledge. Conversely, Alderson (2000) and Grabe and Stoller (2002) claim that the top-down model emphasizes both inferencing and the reader's background knowledge as significant features of this type of processing to achieve reading comprehension, which is mainly conducted by the

reader's goals and expectations. According to Grabe and Stoller (2002) and Nunan (2013), the interactive model represents a combination of bottom-up perspectives with key ideas from a top-down approach. This means that word recognition must be fast and effective which is supported by background knowledge for text understanding.

As mentioned above, retelling implies several mental processes which are meant to improve oral or written production among individuals. Nevertheless, retelling is not only related to reading a plain text, but it is also possible to integrate some instruments to make it more meaningful (Stoutz, 2011). For instance, the use of audiovisuals constitutes a useful alternative. One principle that supports this idea is the dual-coding theory (DCT) hypothesized by Paivio (1991), which intends to give equal value to verbal and non-verbal information processing. Paivio (1986) addresses that human consciousness is complex and fascinating because it considers both verbal and nonverbal objects and events for building on text understanding. Moreover, the singularity of each language emphasizes that linguistic input and output are directly related (either as spoken or written speech), which allows a simultaneous symbolic function that processes non-verbal objects, events, and behavior.

Paivio (1986) mentions that the human brain creates distinct representations of the information that is processed in each channel. The auditory/verbal channel processes information that results in spoken words, accounts, or sounds through the ears; and the visual/pictorial channel processes information in the form of images, graphs, animation, videos, etc., perceived through the eyes (Joseph & Nassar, 1995). Kanellopoulou et al. (2019) and Reed (2022) report that an individual can learn new information by means of verbal associations or visual imagery, but the incorporation of both is more effective in knowledge acquisition.

Bearing this visual-verbal association in mind, Mayer (2014) proposed the Cognitive Theory of Multimedia Learning (CTML), which examines how individuals learn from multimedia presentations. It is based on the idea that there are three types of memory storage: (1) sensory memory, (2) working memory and (3) long-term memory. Moreover, it establishes that individuals have separate channels to process verbal and visual materials. Each channel can process only a small amount of material at a time, and meaningful learning results from learners' cognitive activity as they build organized and integrated knowledge. The presentation of an excessive number of elements to the working memory may overtake the processing capacity, therefore, some elements might go unprocessed, resulting in cognitive overload. Then, Mayer highlights three important cognitive processes that are essential for meaningful learning: selection, organization and integration.

1. **Selection of words and images:** In the first step of learning, the student concentrates on perceiving the relevant words and images of the material presented.
2. **Organization:** After selecting the relevant information, the student mentally organizes the information in logical verbal models and visual representations.
3. **Integration:** Finally, these two types of representations are integrated with each other and assimilated with prior knowledge.

One concept that is linked to the cognitive theory of multimedia learning is the multimedia principle which suggests going further than DCT, considering that it is not limited to isolated words and pictures but related to diverse forms of visual and verbal representations when displayed together (Butcher, 2014). Visual components, on the one hand, comprise images, graphs, photographs, and particularly videos and animations (Butcher, 2014). The verbal constituents, on the other hand, refer to texts, spoken words, sounds, and accounts (Mayer, 2014). Sweller (2005)

reports that the employment of both words and pictures enables the brain to process more information in learners' working memory, which may be recalled from long-term memory when necessary.

3. Literature review

This section focuses on the effects of audio-visual elements on the retelling of L2 written texts. Research suggests that after reading a specific text, retelling may help learners to potentiate their fluency and vocabulary. In addition, various studies analyze the integration of audio-visual materials, which can help learners make better connections between ideas in the text as well as to recognize patterns, thus enhancing comprehension of the information embedded in different types of text genres.

Based on the principles of the dual-coding theory and with the purpose of analyzing the effects of audiovisual learning on understanding, Mayer and Anderson (1991, 1992) carried out several research studies, which examined some important hypotheses. In one of their experiments, one group of college students were shown a narrated animation on how a bicycle pump and automobile brakes worked. Another group only listened to a spoken explanation. The results revealed that the students who were exposed to the audiovisual animation performed better on a retelling quiz than the students who only listened to a narration. It was proved that learning is more relevant when simultaneous viewing and listening is presented rather than from listening alone.

Rachmawaty and Hermagustiana (2010) conducted a study with six students who were taking English classes but demonstrated low-proficiency in speaking. The main objective was to analyze the effect that retelling had in their oral production after reading six different texts. For that reason, their voices were recorded, transcribed, and finally taken into a questionnaire for data analysis. Both, a pre-test and a post-test were applied, and the results revealed that the use of

retelling improved students' oral skills, especially their fluency and vocabulary. In addition, the different techniques they employed before their presentations, such as writing down a list of vocabulary or simple sentences as a guide, played an important role. Rachmawaty and Hermagustiana additionally foreground the need to carry out further research to determine the impact of different techniques and methods on learners' oral fluency.

According to Yang et al. (2016), storytelling and retelling can be effective to develop the language proficiency of EFL learners in a non-English speaking setting. Two elementary schools, one from China and another from Taiwan were considered for this study, from which 43 fourth-grade students were part of the experimental group and 10 were randomly chosen for the assessment part. All the participants received specific instructions 5 days a week during 40-45 minutes per session for 6 weeks. The instruction consisted in reading 6 stories, 1 per week. Furthermore, teachers were trained by experts in order to know what to do exactly in each stage of the study. Once the project started, teachers provided students with direct vocabulary training, story reading, structured higher-order thinking questions and interactive debates scaffolding. During the pre and post-test, the participants were given 31 target vocabulary words taken from the six texts they had previously read. Then they were asked to provide a complete sentence with each term. The results of the study suggest that this kind of instruction can facilitate English spoken language improvement among elementary students from non-English speaking settings.

Concerning technological devices, Kervin (2013) addresses two research questions for studying the impact of computer-based technologies on retelling through discussion of an embedded case. First, how can 'digital retelling' be used to make a series of texts more meaningful? Second, how does 'digital retelling' promote reflective and receptive reading? A ten-year-old female student participated in this single case study, as she was a fluent reader, but

struggled with text comprehension, especially when she was asked to replicate different ideas. To engage the participant, a topic of her interest was chosen. It was about Africa, from which she had some inaccurate ideas. The next process was to provide her with a presentation tool, – PowerPoint—, a set of images downloaded from internet, a factual book about the topic, some travel brochures and a sponsorship letter. Then, she had to organize everything in her presentation using the retelling prompt “make a movie in your mind”. The results demonstrated that her attention increased as the participant was able to make connections, recognize patterns and show a higher level of text understanding.

Van den Broek, Segers, and Verhoeven (2014) formulated a hypothesis to determine if visual-only materials produce better outcomes than audio-visual elements one day after the learning process. In order to prove this hypothesis true or false, the researchers explored how students performed in two different presentations by measuring individual study times. Moreover, they analyzed if long-term reversed modality effects were limited to written questions, or if they might be located with oral questions. Eighty-four undergraduate university students took part in this study. The visual-only text was displayed on screen, while the audio-visual participants listened to oral narrations, which played automatically when a slide was opened. There were three main results. First, there was no modality effect immediately after instruction, but the visual-only group performed better than the audio-visual group. Second, learners examined the visual-only materials faster and repeated more slides. Third, the effects of reversed modality generalized across test modalities, but spoken questions seemed to be more difficult to respond than written ones.

With regard to the effects of silent reading and reading in combination with listening, Verlaan and Ortlieb (2012) suggest that reading involving the implementation of audio material supports less proficient readers from secondary level as it enhances their comprehension of the

ideas in the text. According to 10th grade participants, silent reading did not engage them in the process of reading as compared to text reading and listening as a whole system.

In general, research suggests that the incorporation of audio-visual elements for reading comprehension and retelling has some advantages for learners, as they promote lexical learning and text understanding, especially when readers feel motivated to engage in the reading process.

4. Method

The main objective of this quantitative case study was to analyze the effects of the incorporation of audio-visual elements in the retelling of L2 written texts in an EFL classroom. As specific objectives, the following were proposed: (a) To compare and contrast the grammatical and semantic patterns in L2 readers' retellings after the incorporation of visual and audio elements and (b) To evaluate readers' metacognitive reflections to determine their use of strategies to make sense of the two types of texts.

An experimental case study was carried out, where 10 students took part in it. The rationale for including a focus group of 10 participants in an experimental study was that these participants must have obtained a B1 level of English. Stratification sampling by means of a diagnostic test to determine a B1-stratum was used (Thompson, 2012, pp. 139–156). The type of research was correlational since it was determined if covariation happened between the dependent and independent variables (Creswell, 2014). In order to gather information, quantitative methods were employed.

4.1 Sample / Participants

This research study began with 74 students aged between 16 and 17. Thirty-six (36) were randomly assigned to the treatment group, consisting of 17 males and 19 females, while 38 students were assigned to the control group, consisting of 31 males and 7 females who studied in the second-

year of baccalaureate from “Técnico Salesiano” High School located in the city of Cuenca, Ecuador.

The starting point of the research consisted of an integral diagnostic evaluation to determine the students’ general level of English at that moment. The criteria considered to elaborate the diagnostic test were: Reading and Useful Language, Listening and Dictation, and Use of English. Table 1 shows that in “Reading and Useful Language”, both groups obtained oscillating scores ranging between 2 and 19 points, with a mean of 7.6 (SD = 4.0) in group 1, and 9 (SD = 4.5) in group 2. In the same way, "Listening and Dictation" mean scores were of 7.9 (SD = 4.7) and 7 (SD = 3.6) respectively. “Use of English” showed average values of 32.7 (SD = 6.3) and 34.6 (SD = 7.7), positioning it in the middle of the scale. Finally, the general level of English in group 1 ranged from 24 to 81 with a mean of 48.3 (SD = 12.7) and in group 2 between 31 and 78 with a mean of 50.7 (SD = 12.8), ranking at an A2.2 level according to the English scale proposed by the Ecuadorian Ministry of Education (Villalba & Rosero, 2014).

Table 1. Diagnostic test

Skill	Scale	Group 1				Group 2			
		Min	Max	Mean	SD	Min	Max	Mean	SD
Reading and Useful Language	0-24	2.0	16.0	7.6	4.0	2.0	19.0	9.0	4.5
Listening and Dictation	0-22	1.0	17.0	7.9	4.7	2.0	16.0	7.0	3.6
Use of English	0-66	19.0	49.0	32.7	6.3	21.0	49.0	34.6	7.7
Total	0-112	24.0	81.0	48.3	12.7	31.0	78.0	50.7	12.8

In Table 2, the classification criteria can be identified according to the scores per skill determined by the Ministry of Education. For this research, only those students located in a B level of English, in their different classifications: B1.1, B1.2 and B2, were considered.

Table 2. Reference level

Level	Reading and Useful Language	Listening and Dictation	Use of English	Total
A1.1	0-3	0-2	0-8	0-15
A1.2	4-6	3-5	9-17	16-33
A2.1	7-9	6-8	18-26	34-46
A2.2	10-13	9-11	27-33	47-56
B1.1	14-16	12-14	34-42	57-64
B1.2	17-19	15-17	43-51	65-74
B2	20-22	18-20	52-60	75-87
C1	23-24	21-22	61-66	88-112

Table 3 shows the distribution of students according to the level established by the Ministry of Education. Results showed that almost half of the students in both groups obtained at least a “B1” level in Use of English; while in the overall performance "Total", in Group 1 there were 8 students in levels: B1.1, B1.2, B2, and in group 2 there were 12 students in the same levels.

Table 3. Students level distribution (Skills)

	Group 1								Group 2							
	Reading and Useful Language		Listening and Dictation		Use of English		Total		Reading and Useful Language		Listening and Dictation		Use of English		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
A1.1	5	13.9	4	11.1	-	-	-	-	3	7.9	3	7.9	-	-	4	10.5
A1.2	11	30.6	10	27.8	-	-	4	11.1	8	21.1	11	28.9	-	-	-	-
A2.1	9	25.0	7	19.4	5	13.9	13	36.1	12	31.6	13	34.2	5	13.2	13	34.2
A2.2	7	19.4	6	16.7	16	44.4	11	30.6	8	21.1	7	18.4	13	34.2	9	23.7
B1.1	4	11.1	5	13.9	13	36.1	3	8.3	4	10.5	2	5.3	14	36.8	8	21.1
B1.2	-	-	4	11.1	2	5.6	4	11.1	3	7.9	2	5.3	6	15.8	2	5.3
B2	-	-	-	-	-	-	1	2.8	-	-	-	-	-	-	2	5.3

The level of English for each skill was similar in both groups, ranking B1.1 on average in “Reading and Useful Language” and “Listening and Dictation”. “Use of English” and “Total Level” were categorized at B1.2. No significant differences were found regarding the performance of these skills as seen in Table 4 ($p > 0.05$).

Table 4. English Level

Skill	Group 1				Group 2				p
	Min	Max	Mean	SD	Min	Max	Mean	SD	
Reading and Useful Language	12.0	15.0	13.2	1.3	10.0	19.0	14.8	4.3	0.690
Listening and Dictation	11.0	17.0	13.8	2.9	11.0	16.0	13.2	2.3	0.548
Use of English	37.0	49.0	43.0	4.4	42.0	48.0	44.8	2.8	0.690
Total Level	66.0	81.0	70.0	6.2	63.0	78.0	72.8	5.7	0.548

Students from each group were selected according to the criteria above mentioned (Appendix A) and the corresponding informed consents (Appendix G) were requested either from parents or students' legal guardians. A total of ten students voluntarily accepted to participate in the study, fulfilling the requirement of belonging to a B1 level in the overall score. Hence, five students were part of the treatment group where audiovisual elements were implemented during the reading process, and the other five were assigned to the control group in which reading practices in the EFL classroom were exclusively based on the written text.

4.2 Instruments

Two different factual texts were employed for the pre and posttests. In the pretest, (Appendix H), the researcher asked the students to retell "Defense or offense", which had to do with octopi. In the posttest, the students were asked to retell "Insects". For the pretest, both groups read a printed text which did not contain any other elements, i.e., images or audio. For the posttest, the treatment group watched a video containing text, audio, and images, (Appendix J) and the control group only read the printed text (Appendix I). After the reading process, they were asked to retell what they remembered from it while their voices were recorded for later transcription, tabulation, and analysis.

The rubric employed to evaluate students' oral production in pre and posttests integrated five retelling components: Sequence, Elements, Fluency, Semantics, and Syntax on a scale of 0 to

10 as required by the Ministry of Education, in order to establish the learning scope of the students. Some of the rubric components were adapted from (Marek & Wu, 2011). (see Appendix B).

Conversely, metacognitive strategies were evaluated through a questionnaire adapted from Kinsella (2001), Phakiti (2003), Lahuerta (2011) and Maryam et al. (2019), which contained twenty-three criteria divided into four sections: Before reading (2), During reading (10), During oral retelling (10), and After oral retelling (1). In addition, each of the twenty-three criteria was assigned to one of five global strategies: PACA reading strategy (1-4), Making connections (5–10, 13-19), Determining the significance of the text (11-12), Summarizing and synthesizing (20-22), and Auto-evaluation (23). (see Appendix E).

4.3 Data collection procedures

The application of the treatment for data collection procedures was developed in a period of twelve weeks with the five students previously selected, who attended regular classes together with their classmates in the treatment group. Only for the pretest and posttest, the ten students in both the treatment group and the control group were evaluated individually.

All learners received 2 hours of General English three times a week. During the first two sessions each week, some readings from the institution material were employed. This material included a printed textbook from Cambridge University Press and the corresponding Interactive Software version of it.

On the first and second sessions, the Interactive Software was used for the treatment group, where participants were able to read a text which was projected on the whiteboard and included some pictures and the audio version of it. On the other hand, the control group received a printed text transcribed from the textbook. After they read the corresponding text, they retold it orally.

Feedback was provided at the end of the session, including grammar, lexical and pronunciation aspects as well as the quality of the retellings.

The material employed in the third session was not based on the textbook and included two types of text genres: narrative-fictional and factual, which, in the case of the treatment group was adapted into a video that contained animated pictures, audio narration, and subtitles. In contrast, the control group received the written text printed. The process for oral retelling was similar to the first two sessions.

4.4 Data analysis

The analysis of the pretest, posttest, and metacognitive questionnaire was made through measures of central tendency and dispersion. The Spearman's rho correlation coefficient was used to establish a relationship between variables, since the size of the groups and the nature of the variables applied to non-parametric tests. For the comparison between groups, the U-Mann Whitney test was applied. For paired samples, the Wilcoxon test was employed. The data processing was carried out in the statistical program SPSS 25 with an alpha of 0.05.

5. Results and discussion

Results from the Pretest showed that on average, in Group 1, Syntax ($M = 7.4$; $SD = 1.3$) was the best developed component in students, followed by Semantics ($M = 5.0$; $SD = 2.4$), while Fluency ($M = 2.5$; $S = 3.6$) and Elements ($M = 3.4$; $SD = 2.2$) were the weakest. After the intervention, a slight decrease was found in the Sequence component ($M=3.2$; $SD=2.0$) and an increase in Elements ($M=5.7$; $SD=1.9$), Fluency ($M=5.5$; $SD=1.1$), Semantics ($M=6.8$; $SD=2$) and Syntax ($M=8.2$; $SD=0.9$), replicating the performance hierarchy behavior. In spite of this, no significant changes were appreciated in students' progress ($p > 0.05$). (See Table 5)

Table 5. Pre and post intervention (Group 1)

Component	Pre test		Post test		p
	Mean	SD	Mean	SD	
Sequence	3.4	2.2	3.2	2.0	0.677
Elements	2.7	3.0	5.7	1.9	0.127
Fluency	2.5	3.6	5.5	1.1	0.096
Semantics	5.0	2.4	6.8	2.0	0.506
Syntax	7.4	1.3	8.2	0.9	0.159
Total	4.2	2.5	5.9	1.6	0.313

As shown in Table 6, in Group 2, an average performance between 4.6 and 7.6 was evident in the pretest, while after the posttest, it ranged from 3.1 to 8.1. Similar to the treatment group, before the intervention, Syntax was the best developed component in the control group (M = 7.6; SD = 1.0), followed by Semantics (M = 6.4; SD = 1.8), while Sequence was the weakest (M = 4.6; SD = 3.2).

After the intervention, Syntax (M=8.1; SD=0.7) and Semantics (M=8.0; SD=1.5) were the strongest components with similar mean ranks. It was also revealed that Sequence had a developmental regression, which means that compared with the pretest, the posttest had a loss of the previously acquired skill (M=3.1; SD=0.2), while the rest of the components: Elements (M=6.5; SD=1.1) and Fluency (M=6.9; SD=2.0) presented a slight progress which were not significant, ($p > 0.05$).

Table 6. Pre and post intervention (Group 2)

Component	Pre test		Post test		p
	Mean	SD	Mean	SD	
Sequence	4.6	3.2	3.1	0.2	0.643
Elements	5.9	2.0	6.5	1.1	0.536
Fluency	5.4	2.5	6.9	2.0	0.985
Semantics	6.4	1.8	8.0	1.5	0.430
Syntax	7.6	1.0	8.1	0.7	0.887
Total	6.0	2.1	6.5	1.1	0.696

To interpret the total scores obtained in the Retelling evaluation from both groups, the General Regulation of the Ecuadorian Organic Law for Intercultural Education was considered, which establishes an evaluation scale over 10 points as shown below (Ministry of Education, 2015).

Table 7. Evaluation scale

Qualitative scale	Quantitative scale
Dominates knowledge	9 - 10
Achieves knowledge	7 - 8,99
Close to achieve knowledge	4,01 - 6,99
Does not achieve knowledge	≤4

In Table 8, it can be seen that before the intervention, only one student in group 1 Achieved the required level, while after the intervention, the same student decreased his score slightly, and the rest of students had an increase in their performance. Nevertheless, results demonstrated that only 3 of them showed progress in their level with respect to the pretest, where they Did not achieve knowledge, being now close to Achieve knowledge. Conversely, before the intervention in group 2, one student Did not achieve the required level, 3 were Close to achieving it, and 1 Dominated knowledge. After the intervention, 3 students increased their performance and the remaining 2 decreased it, concluding that 4 students were Close to achieving the knowledge requirements and 1 of them Achieved it.

Table 8. Total retelling results based on the Ministry of Education's evaluation scale

ID	Group	Pre test	Equivalence	Post test	Equivalence
1	One	8,14	Achieves	7,38	Achieves
2	One	3,72	Does not achieve	5,86	Close to achieve
3	One	3,22	Does not achieve	4,00	Does not achieve
4	One	3,50	Does not achieve	5,44	Close to achieve
5	One	2,44	Does not achieve	6,70	Close to achieve
1	Two	4,34	Does not achieve	6,46	Close to achieve
2	Two	5,30	Close to achieve	6,32	Close to achieve
3	Two	5,12	Close to achieve	7,10	Achieves
4	Two	6,48	Close to achieve	6,04	Close to achieve
5	Two	8,64	Dominates	6,66	Close to achieve

It can be concluded that in group 1, the final retelling scores, calculated as the average of the five components, initially ranged from 2.4 to 8.1 with a mean of 4.2 (SD = 2.3), whereas after the intervention, the scores of the students were between 4 and 7.4 points (M = 5.9; SD = 1.3). In group 2, the results revealed that before the intervention, the total score showed variations between 4.3 and 8.6 with a mean of 6.0 (SD = 1.7) and after the intervention scores were situated between 6 and 7.1 with a mean of 6.5 (SD = 0.4). No significant differences were revealed ($p < .05$), which implies a similar behavior among the participants before and after the intervention.

5.1 Metacognitive strategies

5.1.1. Relationship between Metacognitive Strategies and Level of English

The results from the diagnostic test and the metacognitive questionnaire were compared to establish the different connections between the criteria from both components. The main outcomes are the following:

There was a positive relationship between students' level of English (Use of English, Listening, and Reading) from the diagnostic test, and the ability to tell when they understood something and when they did not, which was included in the metacognitive questionnaire ($r_s = .550$; $p = 0.000$). In the same way, the level of Listening was related to the Prediction from images ($r_s = .420$; $p = 0.008$). Prior knowledge as a support for understanding text content was related to all aspects measured in the levels of English except Listening.

The level of Reading was related to the Support that students felt from the text ($r_s = .424$; $p = 0.007$); the use of Prior knowledge to support the oral retelling ($r_s = .462$; $p = 0.003$); Thinking of the information in English and Spanish ($r_s = .322$; $p = 0.046$); Realizing that they made mistakes and corrected them ($r_s = .350$; $p = 0.029$), and Focusing on general content details ($r_s = .425$; $p =$

0.007). Likewise, the use of Prior knowledge to support the oral retelling was positively linked to Use of English ($r_s = .383$; $p = 0.016$) and Listening ($r_s = .462$; $p = 0.003$). (see Appendix D).

5.1.2. Use of Metacognitive Strategies per Group

To some extent, all students engaged in metacognitive strategies during their reading sessions. Table 8 illustrates that the Connection Strategies were the most useful during the reading of the text.

As evidenced, readers reported that they were able to (1) realize when they were able to understand or not specific content in the text; (2) understand the text based on prior knowledge; (3) identify basic grammatical structures (e.g., present simple or use of gerunds); and basic vocabulary. Another strategy that stands out is the Identification of the MAIN IDEA for determining the importance of the text.

With regard to the metacognitive strategies that students used scarcely before and during reading, data showed that: (1) The PACA reading strategies before and during reading and the identification of SECONDARY IDEAS that supported the main idea were the least used, all with a similar frequency. The use of such strategies between group 1 and 2 did not reveal significant differences ($p > 05$). (See Table 9)

Table 9. Strategies used in both groups

Moment	Strategy	Activity	¿What group do you belong to?			
			Group 1		Group 2	
			Mean	DE	Mean	DE
Before reading	PACA Reading Strategy	Based on the TITLE of the text, I could PREDICT what it would be about.	3.0	0.8	2.7	0.8
		Based on the IMAGES of the text, I could PREDICT what it would be about.	3.0	0.8	2.8	0.6

Moment	Strategy	Activity	¿What group do you belong to?			
			Group 1 Treatment		Group 2 Control	
			Mean	DE	Mean	DE
Before reading	PACA Reading Strategy	I was able to CONFIRM the topic with my predictions.	2.8	0.9	2.6	0.6
		I was able to figure out the DETAILS of the reading with my predictions.	2.8	0.9	2.6	0.8
During reading	Making connections	I was able to realize when I understood something and when I did not.	3.3	0.8	3.4	0.8
		There were certain words that I was unaware of, but the context allowed me to understand them.	3.3	0.8	3.3	0.8
		My PRIOR KNOWLEDGE allowed me to understand the content of it.	3.0	0.8	3.4	0.8
		I mentally translated the text from English to Spanish to understand it better.	2.7	1.1	2.9	1.1
		I was able to identify SIMPLE COMPONENTS (Present simple, Verb to be, Gerunds -ing, basic vocabulary).	3.1	0.9	3.4	0.8
		I was able to identify COMPLEX COMPONENTS (Passive voice, modals: can, may, specific vocabulary)	2.5	0.9	2.8	1.0
Determine the importance of the text		I was able to identify the MAIN IDEA.	3.3	0.9	3.1	0.6
		I was able to identify the SECONDARY IDEAS that supported the main idea.	3.1	1.0	2.7	0.8

5.1.3 Relationship between the Use of Metacognitive Strategies and Oral Retelling Performance (Post Test)

The retelling performance of Group 2 was not related to the PACA reading strategies; while Group 1 presented two strong relationships. This negative relationship involves Predicting from images ($r_s = -0.917$; $p = 0.03$) which means that the greater the use of this type of strategy, the lower participants performed in Semantic aspects. A positive relationship was found in Confirming strategies, as participants could confirm their predictions in relation to the topic of the text ($r_s = 0.892$; $p = 0.04$).

All the students in group 2 mentioned that they were always able to tell when they understood something and when they did not. In both groups, high correlations were recorded between performance in oral retelling and the use of certain connection strategies. The existence of certain words that participants in group 2 did not know, but that the context allowed them to understand was negatively related to the Sequencing score ($r_s = -.889$; $p = .04$), and Semantics ($r_s = -.913$; $p = .03$). Likewise, the mental translation from English to Spanish had a positive relationship with Semantics in both groups ($r_{s\text{Group1}} = .88$; $p = .05$; $r_{s\text{Group2}} = .92$; $p = .03$). Finally, in Group 2, Syntax showed a positive relationship with prior knowledge for understanding the content ($r_s = .89$; $p = .04$), while in group 1, the identification of simple components was directly linked to Elements ($r_s = .88$; $p = .05$). See details in table 10.

The rest of the strategies: PREDICTION based on the TITLE of the text, PREDICTION based on text IMAGES; Figuring out DETAILS based on predictions, REALIZING what was understood and what was not; and Identifying COMPLEX COMPONENTS were not related to the performance of oral retelling ($p > 0.05$). (See table 11)

Table 11. Use of strategies and performance in oral retelling

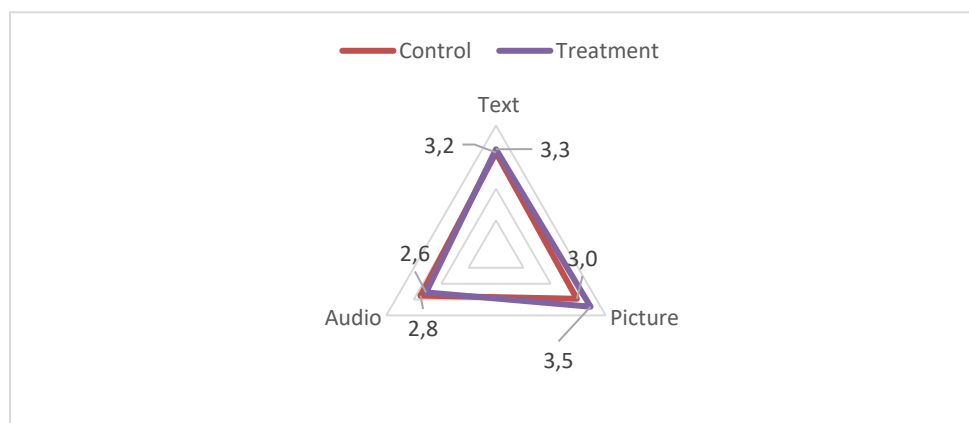
			Group 1					Group 2				
			Sequ	Elem	Flue	Sema	Synt	Sequ	Elem	Flue	Sema	Synt
PACA reading strategy	Based on the TITLE of the text, I was able to PREDICT what it would be about.	rs	-0.41	0.15	0.74	-0.15	-0.74	-0.57	-0.22	0.11	-0.53	0.52
		p	0.50	0.81	0.15	0.81	0.15	0.31	0.72	0.86	0.36	0.37
	Based on the IMAGES of the text, I was able to PREDICT what it would be about.	rs	0.79	0.47	-0.57	0.80	0.34	-0.87	-0.63	-0.26	-.917*	0.14
		p	0.11	0.42	0.31	0.10	0.57	0.06	0.25	0.67	0.03	0.83
	I was able to CONFIRM the topic with my predictions.	rs	-0.40	-0.06	0.63	-0.29	-0.63	-0.22	0.21	0.58	-0.25	.892*
		p	0.51	0.93	0.25	0.64	0.25	0.73	0.73	0.31	0.69	0.04
I was able to figure out the DETAILS of the reading with my predictions.	rs	-0.40	-0.06	0.63	-0.29	-0.63	-0.29	-0.34	-0.11	-0.35	0.34	
	p	0.51	0.93	0.25	0.64	0.25	0.64	0.58	0.86	0.56	0.57	

		Group 1					Group 2					
		Sequ	Elem	Flue	Sema	Synt	Sequ	Elem	Flue	Sema	Synt	
Making connections (During reading)	I realized when I understood something and when I did not.	rs	0.25	-0.19	0.36	0.00	-0.73	-	-	-	-	-
		p	0.69	0.76	0.55	1.00	0.17	-	-	-	-	-
	There were certain words that I was unaware of, but the context allowed me to understand them.	rs	0.00	,92*	0.00	0.65	0.16	-,89*	-0.58	-0.29	-,91*	-0.15
		p	1.00	0.03	1.00	0.24	0.79	0.04	0.31	0.64	0.03	0.81
	My PRIOR KNOWLEDGE allowed me to understand the content.	rs	0.25	-0.19	0.36	0.00	-0.73	0.15	0.29	0.58	0.00	,89*
		p	0.69	0.76	0.55	1.00	0.17	0.81	0.64	0.31	1.00	0.04
	I mentally translated the text from English to Spanish to understand it better.	rs	0.73	0.70	-0.29	,92*	0.03	0.63	0.78	0.45	,88*	0.00
		p	0.17	0.19	0.64	0.03	0.97	0.25	0.12	0.45	0.05	1.00
	I was able to identify SIMPLE COMPONENTS	rs	0.40	,88*	-0.29	0.86	0.29	0.30	0.00	-0.29	0.46	-0.30
		p	0.51	0.05	0.64	0.06	0.64	0.63	1.00	0.64	0.44	0.63
	I was able to identify COMPLEX COMPONENTS	rs	0.00	0.25	0.49	0.16	-0.65	-0.16	0.11	0.32	-0.08	0.65
		p	1.00	0.69	0.41	0.79	0.24	0.79	0.87	0.60	0.89	0.24

5.2 Use of elements

Regarding the extent to which the use of images and audio was useful to enhance reading comprehension, participants' responses in Group 1 suggest that the use of images constitutes a key element (M = 3.5; SD = 0.8), while participants in Group 2 pointed out that it was the text itself (M = 3.2; SD = 0.8). We can say that no significant differences were found ($p > 0.05$). (See Figure 1 and Appendix C).

Figure 1. Use of elements



5.3 Use of strategies

As can be seen in table 10, during oral retelling, Connection Strategies were the most useful. These metacognitive strategies highlight that participants: (1) Use their prior knowledge to retell the story, including knowledge of grammatical structures and vocabulary; (2) Use both L1 and L2 to think about the information provided in the text. On the other hand, the strategies in which participants order ideas including summarizing and synthesizing were not useful. In general, no significant differences were identified ($p > 0.05$).

Table 10. Strategies used in both groups

Moment	Strategy	Activity	¿What group do you belong to?			
			Group 1 Treatment		Group 2 Control	
			Mean	DE	Mean	DE
During oral retelling	Making connections	I used my PRIOR KNOWLEDGE to support my oral retelling. (Grammar structures and vocabulary).	3.2	0.8	3.3	0.7
		I used my EXPERIENCE to support my oral retelling. (This means that I had previously practiced my oral retelling with other texts)	2.9	1.0	3.2	1.0
		I thought of information in both English and Spanish. I realized I made some MISTAKES and I CORRECTED them immediately: (Grammar, Vocabulary, Pronunciation, Sequence, Elements, Details).	3.2	0.8	3.3	0.9
	Summarizing and synthesizing	I was able to focus on GENERAL details of the content.	2.9	1.0	3.1	0.8
		I was able to focus on SPECIFIC details of the content.	2.8	1.1	2.9	0.8
		I was able to retell each of the ideas in order, according to the order of the text.	2.8	1.0	2.8	0.9

6. Conclusions

The aim of this study was to investigate the effects of the incorporation of audio-visual elements in the retelling of L2 written texts in an EFL setting. The results suggest that students' retellings that came after reading supported by audio-visual material show similar levels of reading

comprehension than those retellings from participants in the control group. However, when comparing pre and posttest outcomes, it is evident that both groups obtained better results in the posttest with regard to the following retelling components: Elements, Fluency, Semantics, and Syntax, being Syntax the component showing a significant development. Sequence, on the other hand, involved a regression.

Regarding metacognitive strategies, it could be deduced that despite the fact that both groups presented similar results in their oral retellings, Group 1 (treatment) showed that there is a significant relationship between learners' grades and their use of reading strategies (i.e., PACA reading strategies and Making Connections), which implies a possible stimulation of these strategies as readers engaged in the activities and built on their knowledge during the reading process.

Based on these findings, retelling with or without the incorporation of audio-visual elements must be considered a technique which can significantly support teachers and instructors to stimulate high school students' reading comprehension skills in order to improve their oral output, motivating learners to engage in the reading process as they learn a foreign language through the retelling of factual and narrative texts.

The main limitation of this study has to do with the sample size which was reduced due to the requirement of a B1 level. Therefore, it is necessary to conduct further studies involving larger samples to draw more reliable conclusions. Additionally, these studies should be carried out in a longer time frame considering the length and type of the text genres to be used as well as the different levels of English proficiency that learners have, to go deeper into the analysis of the

impact of audio-visual clues in L2 retellings and consequently avoid threats to the validity and reliability of the results.

REFERENCES

- Alderson, J. C. (2000). *Assessing reading*. Cambridge: Cambridge University Press.
- Beers, K. (2003). *When kids can't read: What teachers can do*. Portsmouth: Heinemann.
- Brown, H., & Cambourne, B. (1987). *Read and retell*. Portsmouth, NH: Heinemann Educational Books.
- Butcher, K. (2014). The multimedia principle. In R. E. Mayer (Ed.), *The Cambridge handbook of multimedia learning* (2nd ed., pp. 174–205). New York: Cambridge University Press.
- Creswell, J. W. (2014). *Research design: qualitative, quantitative, and mixed methods approaches* (4th ed). Thousand Oaks: SAGE Publications.
- Psychology*, 29:2, 165-93, DOI: [10.1080/02702710801964090](https://doi.org/10.1080/02702710801964090)
- Dole, J. A. Duffy, G. G., Roehler, L. R., and Pearson, D. D. (1991). *Moving from the old to the new: research on reading comprehension instruction*. *Review of Educational Research* 61
- Fisher, D., & Frey, N. (2000). *Assessment for learning*. New York: London District Catholic School Board.
- Flavell, J. (1976). Meta cognitive Aspects of Problem Solving. In *The Nature of Intelligence*, L.B. Resnick. Hillsdale, NJ: Erlbaum, pp. 231–235.
- Goodman, Y. (1982). Retellings of literature and the comprehension process. *Theory Into Practice* 21 (4), p. 301-308.
- Grabe, W. & Stoller, F. L. (2002) *Teaching and researching reading*. London: Pearson Education.
- Houghton Mifflin Co. (2022). *The American Heritage Dictionary entry: retelling*. [online] Ahdictionary.com. Retrieved January 12, 2022, from <https://www.ahdictionary.com/word/search.html?q=retelling>

- Hsu, W. (2014). The effects of audiovisual support on EFL learners' productive vocabulary. *ReCALL*, 26(01), 62-79. doi.org/10.1017/S0958344013000220
- Indrawati, L. A. (2013). Enhancing the students' ability in story retelling through movies. *Language Circle: Journal of Language and Literature*, 8(1), 11-22.
- Israel, S. E., Collins, C., Bauserman, K. L., & Kinnucan-Welsch, K. (2005). *Metacognition in literacy learning: theory, assessment, instruction, and professional development*. Mahwah, N.J.: L. Erlbaum Associates.
- Joseph, R., & Nassar, L. (1995). *Dual coding as a possible explanation for the effects of multimedia on learning*. Georgia Institute of Technology, Georgia.
- Kanellopoulou, Kermanidis, & Giannakouloupoulos. (2019). The Dual-Coding and Multimedia Learning Theories: Film Subtitles as a Vocabulary Teaching Tool. *Education Sciences*, 9(3), 210. <https://doi.org/10.3390/educsci9030210>
- Kervin, L. (2013). Digital retell: A strategy to encourage responsive and reflective reading. *Universal Journal of Education and General Studies*, 2 (8), 255-264.
- Kissener, E. (2007). Retelling in Science class. *Science Scope*, 31(1), 48.
- Lahuerta, Ana. (2011). The relationship between metacognitive awareness and reading in English as a foreign language. *Revista de Lingüística de la Universidad de La Laguna*.
- Leung, C. B. (2008). Preschoolers' acquisition of scientific vocabulary through repeated read-aloud events, retellings, and hands-on science activities. *Reading Psychology*, 29, 165-193. [doi:10.1080/02702710801964090](https://doi.org/10.1080/02702710801964090)
- Lin, L. F. (2010). The impact of the retelling technique on Chinese students' English reading comprehension. *Asian EFL Journal*, 12(2), 163-191.

- Marek, Michael & Wu, Wen-chi. (2011). Oral Proficiency Rubric for EFL/ESL. 10.13140/RG.2.2.34188.31369.
- Maryam, I. S., Febriani, R. B., & Kurnia, A. D. (2019). EFL Learners' Perceptions towards their Self-Efficacy in Learning Public Speaking Course. *In Journal of English Education and Teaching* (Vol. 3, Issue 3, pp. 377–391). UNIB Press. <https://doi.org/10.33369/jheet.3.3.377-391>
- Mayer, R. (Ed.). (2014). *The Cambridge Handbook of Multimedia Learning* (Cambridge Handbooks in Psychology). Cambridge: Cambridge University Press. doi:10.1017/CBO9780511816819
- Mayer, R. E. and Anderson, R. B. (1991) Animations need narrations: An experimental test of a dual-coding hypothesis. *Journal of Educational Psychology*, 83(4): 484–490.
- Mayer, R. E. and Anderson, R. B. (1992) The instructive animation: Helping students build connections between words and pictures in multimedia learning. *Journal of Educational Psychology*, 84(4): 444–452.
- Ministerio de Educación (2015). *Reglamento General a la Ley Orgánica de Educación Intercultural*. Quito, Ecuador: Registro Oficial Suplemento 754 de 26-jul.-2012
- Morrow, V., & Richards, M. (1996). The Ethics of Social Research with Children: An Overview. *Children & Society*, 10(2), 90-105. <https://doi.org/10.1111/j.1099-0860.1996.tb00461.x>
- Nunan, D. (2013). *Practical English Language Teaching*. McGraw-Hill
- Paivio, A. (1986). *Mental Representations*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780195066661.001.0001>
- Paivio, A. and Clark, J.M. (1991) 'Dual-Coding Theory and Education' *Educational Psychology Review*, Vol.3, no. 3.

- Phakiti, A. (2003). A closer look at the relationship of cognitive and metacognitive strategy use to EFL reading achievement test performance. *Language Testing*, 20(1), 26–56.
doi:10.1191/0265532203lt243oa
- Yang, P.-lin, Tong, F., Irby, B. J., Lara-Alecio, R., Ramos, N., & Nava-Walichowski, M. (2016). The Effect of Storytelling and Retelling and Higher Order Thinking on Oral Performance of Elementary Students in English as Foreign Language (EFL) Program: A Pilot Study in Mainland China and Taiwan. *Asian Journal of Education and Training*, 2(1), 23–33.
<https://doi.org/10.20448/journal.522/2016.2.1/522.1.23.33>
- Putri, O.H.Y., Perdhani, W.C., & Isnaini, M.H. (2021). The effect of life-storytelling technique on students' speaking fluency. *Journal of English Literacy and Education*, 8(2), 113-124
- Rachmawaty, N., & Istanti, H. (2010). Does retelling technique improve speaking fluency? *TEFLIN Journal*. 21(1), 1-8.
- Reed, S. K. (2022). *Cognition: Theory and Applications (10th Edition)*. Thousand Oaks, CA: SAGE.
- Searfoss, L. W., & Readence, J. E. (1994). *Helping children learn to read* (3rd ed). Boston: Allyn and Bacon.
- Rog, L. J. (2003). *Guided Reading Basics*. Canada: Pembroke Publishers.
- Schisler, R., Joseph, L. M., Konrad, M., & Alber-Morgan, S. (2009). Comparison of the effectiveness and efficiency of oral and written retellings and passage review as strategies for comprehending text. *Psychology in the Schools*. <https://doi.org/10.1002/pits.20460>
- Stadler, M. A., & Cuming, G. (2010). The effect of props on story retells in the classroom. *Reading Horizons*, 50(3), 169-192.

- Stoicovy, C.E., (2004). Using Retelling to Scaffold English Language for Pacific Island Students. *The Reading Matrix*, Vol.4, No.1, April 2004.
- Stoutz, Sarah, "Retelling Using Different Methods" (2011). *Education Masters*. Paper 199. https://fisherpub.sjfc.edu/education_ETD_masters/199
- Sweller, J. (2005). Implications of cognitive load theory for multimedia learning. In R. E. Mayer (Ed.), *Cambridge handbook of multimedia learning* (pp. 19 –30). New York: Cambridge University Press
- Swihart, P. (2009) *Reading*. Geen 1102. Workshop, August 2009.
- Thompson, S. K. (2012). *Sampling*. Wiley. <https://doi.org/10.1002/9781118162934.ch11> (pp. 139-156)
- Tracey, D., & Morrow, L. M. (2006). *Lenses on reading: An introduction to theories and models*. New York: Guilford Press.
- Ulrike, E., Goetz, T., Hall, C. & Frenzel, C. (2012). Meta cognitive Strategies and Test Performance: An Experience Sampling Analysis of Students' Learning Behavior. *Education Research International*, vol. 2012, Article ID 958319, 16 pages, 2012. doi:10.1155/2012/958319.
- Van den Broek, G. S. E., Segers, E., & Verhoeven, L. (2014). Effects of text modality in multimedia presentations on written and oral performance. *Journal of Computer Assisted Learning*, 30, 438e449.
- Villalba, J. & Rosero, I. (2014). National English Curriculum Guidelines. Ministerio de Educación. Quito. Ministerio de Educación del Ecuador.

Verlaan, W., & Ortlieb, E. (2012). Reading while listening: Improving struggling adolescent readers' comprehension through the use of digital-audio recordings. *What's Hot in Literacy Yearbook*, 1, 30-36.

Wilson, R. M., Gambrell, L. B., & Pfeiffer, W. R. (2015). The Effects of Retelling Upon Reading Comprehension and Recall of Text Information. *The Journal of Educational Research*, 78(4), 216-220. <https://doi.org/10.1080/00220671.1985.10885604>

Wilson, L. O. (2016). Anderson and Krathwohl–Bloom's taxonomy revised. *Understanding the New Version of Bloom's Taxonomy*.

APPENDICES

Appendix A. Diagnostic results

A.1 Treatment group (Group 1)

ID	Reading level	Listening level	Use of English level	Total Level	Decision	ID	Reading level	Listening level	Use of English level	Total Level	Decision
1	A2.2	A2.2	B1.1	A2.2	No	19	A1.2	A2.1	A2.2	A2.1	No
2	A1.1	A2.1	A2.1	A1.1	No	20	B1.1	B1.2	A2.2	B1.1	Selected
3	A2.1	A2.1	A2.2	A2.1	No	21	B1.1	B1.2	B1.2	B2	Selected
4	A1.2	A1.1	A2.1	A1.2	No	22	A2.1	B1.2	B1.1	B1.1	Selected
5	A1.1	A1.2	A2.1	A1.2	No	23	A1.2	A2.1	A2.2	A2.1	No
6	A1.2	A2.2	A2.2	A2.2	No	24	A2.1	A1.1	A2.2	A2.1	No
7	A1.2	B1.1	B1.1	A2.2	No	25	A1.2	A1.2	A2.2	A2.1	No
8	A1.1	A1.2	A2.1	A1.2	No	26	A1.1	A1.2	A2.2	A1.2	No
9	A2.1	A2.1	A2.2	A2.2	No	27	A2.1	A2.1	B1.1	A2.2	No
10	A2.1	B1.1	B1.1	A2.2	No	28	B1.1	A2.2	B1.1	B1.2	Selected
11	A1.2	A1.1	B1.1	A2.2	No	29	A2.2	B1.2	B1.1	B1.2	Selected
12	A1.2	A1.2	B1.1	A2.1	No	30	A2.2	A1.2	A2.2	A2.1	No
13	A2.2	A1.2	A2.2	A2.1	No	31	A2.2	B1.1	B1.1	B1.2	Selected
14	A2.2	A2.2	B1.1	A2.2	No	32	B1.1	B1.1	A2.2	B1.1	Selected
15	A2.1	A2.1	A2.2	A2.2	No	33	A1.2	A2.2	A2.1	A2.1	No
16	A1.2	A1.2	A2.2	A2.1	No	34	A1.2	A1.2	A2.2	A2.1	No
17	A1.1	A1.2	A2.2	A2.1	No	35	A2.2	B1.1	B1.2	B1.2	Selected
18	A2.1	A1.1	B1.1	A2.2	No	36	A2.1	A2.2	B1.1	A2.2	No

A.2 Control group (Group 2)

ID	Reading level	Listening level	Use of English level	Total Level	Decision	ID	Reading level	Listening level	Use of English level	Total Level	Decision
1	A2.1	A1.2	B1.1	A2.2	No	20	A2.1	A1.2	A2.2	A2.1	No
2	B1.1	A2.1	B1.1	B1.1	Selected	21	A1.2	A2.1	A2.2	A2.1	No
3	A2.1	A1.2	A2.2	A2.1	No	22	A2.1	A2.1	B1.1	B1.1	Selected
4	B1.2	A2.2	B1.2	B2	Selected	23	A2.2	A1.2	B1.1	A2.2	No
5	A2.2	A2.2	B1.1	B1.1	Selected	24	A1.2	A1.1	A2.2	A1.2	No
6	A2.2	A2.1	B1.1	A2.2	No	25	A1.1	A2.1	B1.2	A2.2	No
7	A2.1	A1.2	B1.1	A2.1	No	26	A1.2	A2.1	B1.1	A2.2	No
8	A2.1	A2.2	A2.2	A2.1	No	27	B1.1	A2.2	A2.2	A2.2	No
9	B1.2	A2.1	B1.1	B1.1	Selected	28	A2.1	A1.2	B1.1	A2.2	No
10	B1.1	A1.1	A2.1	A2.1	No	29	A1.2	A1.2	A2.1	A1.2	No
11	A1.2	A2.1	A2.1	A2.1	No	30	A2.1	A2.1	A2.1	A2.1	No
12	A2.2	A1.2	A2.2	A2.1	No	31	A2.1	A1.2	A2.2	A2.1	No
13	A2.2	B1.1	B1.1	B1.1	Selected	32	A1.1	A1.1	A2.2	A1.2	No
14	B1.2	B1.1	B1.1	B1.2	Selected	33	B1.1	B1.2	B1.2	B2	Selected
15	A1.2	A2.1	A2.2	A2.1	No	34	A2.2	A2.2	B1.1	B1.1	Selected
16	A2.1	A2.2	B1.1	B1.1	Selected	35	A2.2	A2.2	A2.2	A2.2	No
17	A1.2	A2.1	B1.2	B1.1	Selected	36	A1.2	A1.2	A2.2	A2.1	No
18	A1.1	A1.2	A2.1	A1.2	No	37	A2.1	A2.1	A2.2	A2.1	No
19	A2.1	A2.1	B1.2	A2.2	No	38	A2.2	B1.2	B1.2	B1.2	Selected

Appendix B. Oral Retelling Rubric

	0-2	3-4	5-6	7-8	9-10
Syntactic acceptability	Retelling shows the use of inappropriate verb conjugation within (sentence fragments)	Retelling shows the use of inappropriate verb conjugation within syntactically incorrect sentences.	Retelling shows the use of appropriate verb conjugation within syntactically incorrect sentences.	Retelling shows the use of inappropriate verb conjugation within syntactically correct sentences.	Retelling shows the use of appropriate verb conjugation within syntactically appropriate sentences.
Semantic acceptability	The reader neither identifies the main idea nor includes relevant details	The reader identifies the main idea but does not include relevant details	The reader uses very few details to support the main idea of the text.	The reader uses some details to support the main idea of the text.	The reader includes a lot of details to support the main idea of the text.
Sequence	None of the facts in the text are mentioned in the correct order	Very few facts in the text are mentioned in the correct order	Some facts in the text are mentioned in the correct order	Most facts in the text are mentioned in the correct order	All facts in the text are mentioned in the correct order
Elements	Reader provides insufficient characteristics of the living things in the text and her descriptions are very poor.	Reader provides very few characteristics of the living things in the text and each description is very limited.	Reader provides detailed descriptions of some characteristics of the living things in the text.	Reader provides detailed descriptions of most of the characteristics of the living things described in the text.	Reader provides detailed descriptions of all of the characteristics of the living things described in the text.
Fluency (Ease and Smoothness of Speech)	- Reader produces very hesitant and uneven speech or struggles to find basic words	- Reader produces sentences at a slower than normal speed. - Many hesitations in search of vocabulary and sentence structure.	- Reader produces sentences at a normal speed with some hesitations	- Reader produces sentences at a normal speed with very few hesitations	- Native or native-like fluency with the same ease and expression.

Appendix C. Use of elements

To what extent did these elements help me with my oral retelling after reading the text?

	Group 1		Group 2	
	Treatment		Control	
	Mean	SD	Mean	SD
Text	3.3	0.9	3.2	0.8
Images	3.5	0.8	3.0	0.9
Audio	2.6	1.0	2.8	0.9

Appendix D. Relation between Reading strategies and Level of English

D.1 (a)

		Use of English	Reading	Listening	Total	
PACA reading strategy	I realized when I understood something and when I did not.	rs	,438**	,464**	,503**	,550**
		p	0.005	0.003	0.001	0.000
	Based on the title of the text, I was able to predict what it would be about.	rs	0.109	-0.015	0.304	0.151
		p	0.508	0.928	0.060	0.360
	Based on the images of the text, I was able to predict what it would be about.	rs	0.127	0.106	,420**	0.233
		p	0.440	0.522	0.008	0.154
	I was able to confirm the topic with my predictions.	rs	0.170	0.126	0.216	0.194
		p	0.301	0.444	0.187	0.237
	I was able to figure out the details of the reading with my predictions.	rs	0.202	0.289	0.130	0.241
		p	0.218	0.074	0.428	0.139
Making connections	There were certain words that I was unaware of, but the context allowed me to understand them.	rs	0.162	0.022	0.168	0.155
		p	0.324	0.893	0.307	0.347
	My previous knowledge allowed me to understand the content of it.	rs	,342*	,411**	0.267	,408**
		p	0.033	0.009	0.101	0.010
	I mentally translated the text from English to Spanish to understand it better.	rs	0.194	0.141	-0.030	0.125
		p	0.237	0.393	0.857	0.448
	I was able to identify simple components (Present simple, Verb to be, Gerunds -ing; basic vocabulary)	rs	0.298	,418**	0.286	,380*
		p	0.066	0.008	0.078	0.017
	I was able to identify complex components (Passive voice, modals: can, may, specific vocabulary)	rs	0.202	0.281	0.221	0.270
		p	0.217	0.083	0.177	0.097
Determine the importance of the text.	I was able to identify the main idea.	rs	0.162	0.294	0.117	0.223
		p	0.323	0.069	0.476	0.173
	I was able to identify the secondary ideas that supported the main idea.	rs	0.149	0.229	0.247	0.229
		p	0.366	0.161	0.129	0.160

D.1 (b)

			Use of English	Reading	Listening	Total
	Text support	rs	0.121	,424**	0.114	0.234
		p	0.464	0.007	0.491	0.152
	Images support	rs	0.156	0.186	0.214	0.208
		p	0.344	0.256	0.190	0.204
	Audio support	rs	0.101	0.281	0.082	0.182
		p	0.539	0.083	0.622	0.266
Making connections	I used my previous knowledge to provide my oral retelling.	rs	,383*	,462**	,423**	,508**
		p	0.016	0.003	0.007	0.001
	I used my experience to provide my oral retelling.	rs	0.258	0.185	0.142	0.247
		p	0.112	0.260	0.388	0.130
	I thought of information in both English and Spanish.	rs	0.253	,322*	0.137	0.290
		p	0.120	0.046	0.407	0.073
I realized that I made some MISTAKES and I corrected them.	rs	0.254	,350*	0.089	0.292	
	p	0.119	0.029	0.589	0.071	
	I was able to focus on GENERAL details of the content.	rs	0.272	,425**	0.210	,355*
		p	0.093	0.007	0.199	0.027
Summarizing and synthesizing	I was able to focus on SPECIFIC details of the content.	rs	0.253	0.220	0.103	0.246
		p	0.120	0.178	0.532	0.132
	I was able to relate each of the ideas in order, according to the order of the text.	rs	0.231	0.134	0.149	0.222
		p	0.158	0.415	0.364	0.175

Appendix E. Metacognitive questionnaire (Spanish version)

	CRITERIA	0 (nunca)	1 (casi nunca)	2 (algunas veces)	3 (muchas veces)	4 (siempre)
ESTRATEGIAS	Antes de la lectura:					
Estrategia lectora PACA (Predecir, leer y confirmar, sustentar las predicciones)	A partir del TÍTULO del texto, pude PREDECIR de qué se trataría.					
	A partir de las IMÁGENES del texto, pude PREDECIR de qué se trataría.					
	Durante la lectura del texto.					
	Fui capaz de CONFIRMAR el tema con mis predicciones.					
	Fui capaz de detectar los DETALLES de la lectura con mis predicciones.					
Hacer conexiones	Fui capaz de darme cuenta cuándo entendía algo y cuándo no.					
	Existieron ciertas palabras que desconocía, pero el contexto me permitió entenderlas.					
	Mi CONOCIMIENTO PREVIO me permitió entender el contenido del mismo.					
	Traduje el texto mentalmente del inglés al español para entenderlo mejor.					
	Pude identificar COMPONENTES SENCILLOS (<i>Present simple, Verb to be, Gerunds -ing</i> ; vocabulario básico)					
	Pude identificar componentes complejos (<i>Passive voice, modals: can, may</i> , vocabulario específico)					
Determinar la importancia del texto.	Pude identificar la IDEA PRINCIPAL .					
	Pude identificar las IDEAS SECUNDARIAS que sustentaban a la idea principal.					

Durante el relato Oral.							
¿En qué medida me ayudaron estos elementos para brindar mi relato oral después de leer el contenido?							
	Nada	Poco	Medianamente	Mucho	Totalmente		
Hacer conexiones	Texto						
	Imágenes						
	Audio						
		0 (nunca)	1 (casi nunca)	2 (algunas veces)	3 (muchas veces)	4 (siempre)	
	Utilicé mi CONOCIMIENTO PREVIO para poder brindar mi relato oral. (Estructuras gramaticales y vocabulario)						
	Utilicé mi EXPERIENCIA para poder brindar mi relato oral. (Esto significa que anteriormente ya había practicado mi relato oral con otros textos)						
	Pensaba en información tanto en inglés como en español.						
	Me di cuenta de que cometí algunos ERRORES y los CORREGÍ inmediatamente: (Gramática, Vocabulario, Pronunciación, Secuencia, Elementos, Detalles)						
Resumir y sintetizar	Pude enfocarme en detalles GENERALES del contenido.						
	Pude enfocarme en detalles ESPECÍFICOS del contenido.						
	Pude relatar en orden cada una de las ideas según el orden del texto.						
Después del relato oral							
		SI		NO			
Autoevaluación	Autoevalué mi desempeño en el relato.						

Appendix F. Request for Authorization for the Application of the Research Project

Cuenca, 15 de enero de 2019

Ing. Omar Álvarez

VICERRECTOR DE LA UETS

Presente

De mis consideraciones:

Luego de extenderle un cordial saludo, me permito darle a conocer que como parte de mis estudios de postgrado en Lingüística Aplicada a la Enseñanza del Inglés como Lengua Extranjera Cohorte II, que actualmente me encuentro cursando en la Universidad de Cuenca, se considera muy importante la realización de actividades de investigación que fomenten la aplicación de estrategias innovadoras dentro de un contexto educativo, lo cual me permitirá estructurar mi proyecto de grado.

En este marco, se pretende aplicar durante el Primer Quinquemestre, comprendido entre los meses de septiembre 2018 a febrero 2019, un estudio sobre el impacto que tendría la técnica conocida como **“Retelling”** en la producción oral de los estudiantes mediante la utilización de instrumentos audio-visuales.

Es de sumo interés que esta investigación se pueda desarrollar con una muestra de no más de diez (10) estudiantes pertenecientes al Segundo de Bachillerato.

Los resultados que se logren obtener de los participantes posteriormente serán analizados de manera cualitativa y cuantitativa, lo cual permitirá establecer la validez de la aplicación de la técnica antes mencionada. Una vez terminado el proceso de análisis de datos, se procederá a la redacción de los resultados que luego serán enviados a una revista indexada para su revisión y publicación. Cabe mencionar que el nombre de esta Unidad Educativa constará en el artículo que será publicado.

Es importante además señalar que esta actividad no conlleva ningún gasto para su institución y que se tomarán las provisiones necesarias para no interferir con las demás actividades planificadas dentro de la materia. De igual manera, se entregará tanto a los participantes como a sus representantes un consentimiento informado donde se les invita a participar del proyecto y se les explica en qué consistirá la evaluación.

Sin otro particular y esperando su valiosa acogida, me suscribo de Usted.

Atentamente,

Lcdo. Darwin Salazar
POSTGRADISTA

CARTA DE CONSENTIMIENTO

Universidad de Cuenca

Facultad de Filosofía, Letras y Ciencias de la Educación

Maestría en Lingüística Aplicada a la Enseñanza del Inglés como Lengua Extranjera

Lugar y fecha: 06 de marzo de 2019

Estimada/o participante:

Identificación de los investigadores y propósito del estudio.

Se le pide que participe en un estudio de investigación a realizarse por el Lcdo. Darwin Salazar, quien actualmente se encuentra cursando la maestría en Lingüística Aplicada a la Enseñanza del Inglés como Lengua Extranjera ofertada por la Universidad de Cuenca. El propósito de este estudio es analizar la influencia de los elementos audiovisuales en el recuento de un texto escrito. Este estudio contribuirá a que el investigador complete el proyecto de investigación de su maestría.

Procedimientos de investigación

Este estudio consiste en una prueba previa y una prueba posterior para evaluar la producción oral. De la misma forma, se les entregará un cuestionario basado en estrategias metacognitivas. Todo será administrado a los participantes de manera individual. Todas sus respuestas se registrarán para el análisis de datos.

Tiempo requerido

La participación en este estudio requerirá un mínimo de 32 horas de su tiempo distribuido en diferentes sesiones.

El investigador no percibe ningún riesgo sobre su participación en este estudio.

Beneficios

Los beneficios potenciales de la participación en este estudio incluyen la posibilidad de leer material narrativo y volverlo a contar, ofreciendo algún tipo de práctica oral.

Confidencialidad

Los resultados de esta investigación se presentarán en un artículo de investigación. Si bien las respuestas individuales se obtienen y registran de forma anónima y se mantienen en la más estricta confidencialidad, los datos globales se informarán en su totalidad. No se recopilará información identificable del participante y tampoco se presentarán respuestas identificables en la versión final de este estudio. Todos los datos se almacenarán en un lugar seguro al que solo podrá acceder el investigador. El investigador se reserva el derecho de usar y publicar datos no identificables. Después de cinco años desde la aplicación del estudio, todos los registros serán destruidos.

Participación y Abandono

Su participación es totalmente voluntaria. Usted es libre de elegir no participar. Si decide participar, puede retirarse en cualquier etapa del estudio. Sin embargo, una vez que sus respuestas hayan sido registradas, no será posible retirarse del mismo.

Preguntas sobre el estudio

Si tiene preguntas durante su participación en este estudio, o al finalizarlo, comuníquese con:

Nombre del investigador: Darwin Salazar O.

Institución: Universidad de Cuenca.

Dirección de correo electrónico: darwinso@uets.edu.ec

Número de teléfono: 0984047528

Consentimiento

He leído esta carta de presentación y entiendo que se me está solicitando participar en este estudio. Acepto libremente participar. He recibido respuestas satisfactorias a mis preguntas.

Nombre y apellido (Estudiante) CI: _____

Firma Fecha

Nombre y Apellido (Representante) CI: _____

Firma Fecha

Appendix H. Pretest (Treatment and Control Group)

Defense or Offense

Some people say that the best defense is a good offense; an octopus, however, would disagree. In addition to being one of the strangest and most beautiful creatures in nature, the octopus has some of the most inventive and effective defense mechanisms imaginable. While other animals have teeth, horns, or claws to help defend them from predators, the octopus concentrates its energy on hiding from and confusing its attackers. When it wants to get away, the octopus has an impressive arsenal of tricks at its disposal.

The most well-known of the octopus's defense mechanisms is its ability to squirt clouds of ink into the water. Some octopi use this cloud of ink as camouflage; after squirting the ink, the octopus retreats into the ink cloud where the predator cannot see it. Other octopi use the ink cloud as a decoy. If a large, intelligent predator such as a shark knows that octopi use ink clouds for camouflage, it might simply attack the ink cloud blindly, hoping to make contact with the octopus inside. However, some sneaky octopi will release the ink cloud in one direction and scurry away in another direction, leaving the predator with nothing but a mouthful of ink. In addition to confusing predators' sense of sight, these ink clouds also confuse their sense of smell. The ink is composed primarily of melanin (the same chemical that gives human skin its color), which can shut down a predator's sense of smell. If an octopus cannot be seen or smelled, it has a much higher chance of escaping an attack.

Another defense mechanism possessed by many octopi is the ability to change color, much like a chameleon. Most animals get their skin color from chemicals in the skin called chromatophores (melanin is one of these chromatophores). Chromatophores might contain yellow, orange, red, brown, or black pigments, and the amount of each pigment present in the skin determines an animal's color. While most animals are always the same color, some species of octopi can control the amount of each color pigment in their skin cells, allowing them to change color. Some poisonous octopi, when provoked, will change their skin to a bright, eye-catching color to warn predators that they are dangerous and ready to strike. Other octopi use this ability to change their skin to the color and texture of seaweed or coral, allowing them to blend in with their environment. Finally, some octopi—such as the mimic octopus—use this colorchanging ability to masquerade as another type of animal. The body of an octopus is highly flexible, and some species can combine this flexibility with their color-changing skills to make themselves resemble more dangerous animals such as sea snakes or eels.

Yet another defense mechanism possessed by some octopi is the ability to perform an autotomy, or self-amputation, of one of their limbs and regrow it later. Many species of skink and lizard also possess this ability, which allows them to shed their tails when caught by a predator and therefore get away. When a predator catches a tentacle, the octopus can amputate this tentacle,

thereby unfettering itself, and regrow the tentacle later. Some octopi, however, are even cleverer. When threatened by a predator, these octopi will shed a tentacle before being attacked in the hope that the predator will go after the detached tentacle rather than the octopus itself.

While the octopus may not be the most vicious creature in the ocean, its numerous and clever defense mechanisms help it to survive in the dangerous undersea world.

Appendix I. Posttest (Control Group)

INSECTS

Insects are variously formed, but as a rule the mature ones have three and only three pairs of legs, one pair of feelers, one pair of large eyes, and one or two pairs of wings. The body is divided into a head, thorax and abdomen. The head bears the eyes, feelers and mouth, the thorax bears the legs and wings, and the abdomen is made up of a number of segments. The presence of wings at once decides whether or not it is an insect, for, aside from bats and birds, insects alone have true wings. These are the distinguishing characters of the full-grown insect, but, like birds, they hatch from eggs and while young do not always look like their parents. When young they may take on various shapes as caterpillars, borers, maggots, grubs, hoppers, and the like. Young insects are often difficult to distinguish from true worms, centipedes, snails, and such forms, but after one has collected and reared some of the young and watched them pass through the different stages and emerge with wings they are much more easily recognized.

Young insects as a rule are soft like caterpillars and maggots, while the old ones usually have a hard body wall, similar to the beetles and wasps. The wings are usually thin and transparent though in some cases they are leathery or hard as in case of beetles or covered with scales as in the butterflies. The three pairs of legs are jointed and used for running, climbing, jumping, swimming, digging or grasping. The feelers or antennae are usually threadlike, clubbed, or resemble a feather and extend forward or sidewise from the head. The large eyes are compound, being made up of many great small units which, when magnified, resemble honeycomb. In some cases, two or three small bead-like eyes may be present besides the two large eyes. The mouth parts of insects may be formed for chewing, as in the grasshopper, or for sucking up liquids, as in the mosquito. The mouth of an insect is built on an entirely different plan from our own.

Chewing insects have an upper and lower lip and between these there are two pairs of grinding jaws. These jaws are hinged at the side of the face and when chewing they come together from either side so as to meet in the middle of the mouth. They therefore work sidewise rather than up and down. The mouth parts of the sucking insects are drawn out to form a sucking tube or proboscis as in case of the butterfly or mosquito.

The internal organs of insects are similar to those of other animals. The digestive tube consists of esophagus, gizzard, or stomach, and intestines. The nervous system is well developed as shown by the extreme sensitiveness of insects to touch. The brain is comparatively small except in the bees and ants. The circulatory system consists simply of a long tube heart, the blood vessels being absent. In this way the internal organs of the insect are simply bathed in the

blood. The system of respiration is most complicated. The air is taken in through pores usually along the side of the body and is then carried through fine tracheal tubes to all parts of the body.

You cannot drown an insect by putting its head under water, since it does not breathe through its mouth. The muscular system is similar to that of other animals which have the skeleton on the outside.

INSECTS



Insects are variously formed, but as a rule the mature ones have three and only three pairs of legs,



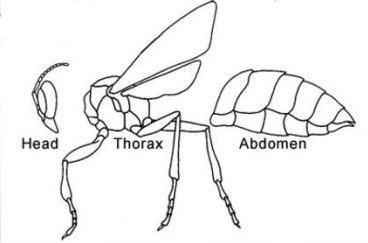
one pair of feelers,



one pair of large eyes,



and one or two pairs of wings.



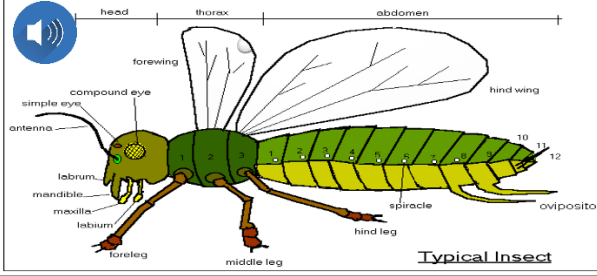
The body is divided into a head, thorax and abdomen.



The head bears the eyes, feelers and mouth,



the thorax bears the legs and wings,



and the abdomen is made up of a number of segments.