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Electronic texts or learning through textbooks: An experimental study

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Abstract

This is an experimental study in the area of Didactics applied to the learning of English as a foreign language and complemented by CALL. The main objective of this work is to know the degree of incidence existing between two groups of students: one, based on conference-style classes where students, guided by the teacher, have to search for information about a topic in the computer lab and present it in front of the class and, in the other, where students are taught by the teacher according to a printed text. The experimental design consisted of a pre-test/post-test plus the application of different techniques to develop the different linguistic and cognitive strategies, between these tests. The methodology used by the Experimental Group forced learners to generate their own knowledge, so they had to apply the information and work by themselves in Workshops; and the Control Group participated in the classroom according to the communicative approach, guided by the teacher in the traditional class. Statistics were applied to the scores obtained between both tests, and the scores obtained weekly in the different competences contributed to knowing whether there were significant differences between both groups.

1 Introduction

The main goal of this study is to compare the use of electronic texts with the use of teaching guidebooks in the process of language acquisition.

The study arises from the need to improve language learning in a country where university students are interested in the different linguistic competences, and want to practice oral skills and speak spontaneously in class, and, specifically, because of the teacher's interest in knowing the effects of Internet use on language acquisition. The development of strategies and integrated abilities through Internet use is supposed to develop more significant, innovative and collaborative learning.

The new trends in education lead professors to help students to "learn how to learn", "learn how to do", "learn to be" and "learn to live together", as citizens who can develop in competitive countries in accordance with modern trends, where the guide is the

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person who facilitates significant learning, and the students are the real monitors of their learning. In order to develop these goals, students are expected to develop critical thinking from kindergarten to high school. They need to acquire the different types of linguistic and cognitive strategies to face life successfully.

2 Theoretical background

This project will be developed partially in the Intelligent Classroom and partially in the Traditional Classroom. The Intelligent Classroom will be used so that learners can speak the language fluently in the context of an organized body of knowledge with which they will be able to develop processes and strategies to analyze the world around them, such as problem-solving, decision-taking, problem-evaluation (Tinzman & Fennimore, 2001). To Mencía (2002) this classroom is a new model of school that underlies the great principles of current teaching, since it radically changes the old educational schemes by proposing the development of a problem-solving capacity for problems like high-school educational failure and the present social problems of young people that constitute the worst problems of society and youth behavior due to drug addiction, boredom, insecurity and distress. This proposal will also be applied in the Traditional Classroom to be compared with the Intelligent Classroom with the purpose of discovering the best way of developing skills and abilities tending to internalize integrated competences.

In the past, the teaching of a foreign language has been considered only from the traditional perspective of teaching. This fact can be observed in the excessive importance given to teaching methods, the types of curricular design and materials applied. Therefore, the failure of learners depended, in the past, on the methods applied, materials used and particularly on the teacher's interest. Nowadays, when planning curricula, other elements must be emphasized, such as goals, objectives, content, and expected strategies in teaching and learning. Once the program is under way, some training procedures are required for its adequate monitoring so that the students can be evaluated positively.

In the twenty first century, the new model of teaching is centered on the student. Hence, learning has proved to be much more important than teaching. This can be observed in children and adolescents who are intrinsically motivated to learn in an autonomous way with the help and guidance of those teachers who put into practice constructivist and interactionist cognitive approaches assisted by available electronic tools to get a variety of information (Solar, 2003). The intrinsic stimulus allows the students to search for and internalize the required information. This fact leads to a change in attitude and values which is an integral part of the student's total experience; that is, to store the information and use it when necessary. This is not at all easy because when being used it also requires cognitive and affective elements.

We know that, for many teachers, it has been difficult to recognize the students' needs and help them in this type of creative learning; for that reason, they still prefer to guide their students with the help of textbooks. Although this type of curriculum is prepared and organized with somewhat rigid objectives, the quantitative tests are taken and scored according to the teacher's criteria. It is understandable that many of them prefer textbooks because they have been developed by world famous experts. Also, it is well known that textbooks, as a support to teaching/learning, deliver contents that must be

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learnt, practised and evaluated in the classroom and are focused on thematic areas, complemented with linguistic, lexical and phonetic content plus cognitive discourses of reading comprehension, and either monologal or dialogal orality. Although many teachers criticize the results, they like to split linguistic abilities into the production of sentences, learned from memory; they prefer to continue with the traditional methodology because they do not know any other significant models. Such memorization must not be considered in a derogatory sense since it is the first type of learning to be developed into critical thinking through the years. Besides, it is easy to evaluate (Schmeck, 1984; Bloom, 1956) since the process of learning is a continuum of thinking, which in learning foreign languages takes place in common classrooms or in hybrid courses which begin with memorization followed by methodical thinking and finally by elaborate and critical/creative thinking. (Cartes, 2001; 2002).

As has been stated before, the use of electronic tools has allowed the student to be in asynchronous contact with foreign language native speakers, and later on, it has been a helpful synchronic and asynchronous support. This fact has pushed foreign agencies to produce a great number of textbooks for the acquisition of fluency in the language, where the use of semiotics and social semantics are a priority because they form an interrelated set with systems of meanings that participate in the culture and social structure of the language (Chomsky, 1981). We are in a period of technology, globalization and the development of critical thinking (UNESCO, 1996) which implies that new technologies are supporting the new roles of the teacher and making self-learning easier. The Internet, the Web and the use of Virtual Learning Environments are taking the place of the use of textbooks as the main support to learning, taking advantage of the latest technologies and thus taking the teacher away from participating directly in the classroom with the support of a textbook to make learning uniform.

Tikunoff (1983) suggests three types of limited competence developed by foreign language students in the classroom: participative competence, interactive competence and academic competence. The first one corresponds to the ability to respond adequately to the aims of the class and rules of procedure; the second, the capacity to respond not only to discourse rules in the classroom but also to social discourse rules to interact with peers and adults while performing class activities; and lastly, the ability to acquire new strategies in order to assimilate new information and internalize new concepts and processes. The successful student uses these strategies to decode and understand the expected tasks as well as new information in committing to perform the tasks accurately and getting significant feedback with respect to the correct or incorrect performance of tasks. Students also develop different types of thinking, but from another perspective, although similar to those proposed by Schmeck (1984), Bloom (1986) and Paul (2000). Tikunoff considers, basically, linguistic competence, and the others consider cognitive strategies. Horizontal comprehension of reading texts has generally been developed among children and even adults, through understanding sentences and linguistic contexts, or better still, with emphasis on linguistic contexts, "bottom-up" reading (Richards, 1989) which delays reading comprehension and make students lose interest in this activity. Now, the student exposed to electronic texts is interested in grasping ideas vertically or "top-down" (*ibid*), developing cognitive reading strategies with a faster understanding of ideas (main, secondary, supporting, see Cartes, 2001). So, the reader is more attracted by reading and developing the ability to read.

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The different competences can also be developed in an integrated way, through the computer, by improving oral ability, written production and comprehension and emphasizing the new roles of the teacher as a true guide to learning, and the student as a true knowledge generator (Flavell, 1966). In other words, the students are able to use some learning strategies skilfully with a purpose, in controlling their own learning and guiding it towards new contexts. It has to be kept in mind, then, that metacognition – the process of thinking about thinking – makes the learner conscious of his/her learning in order to monitor and evaluate his/her academic performance (Flavell, 1993; Gardner, 1987; Resnick, 2001; Cartes, 2002).

On these grounds, it seems valid to investigate the importance of electronic texts in order to find out whether the teacher is a mere guide to learning or whether the students are the generators of learning, in contrast with the use of a texbook where the teacher teaches its contents systematically and the students learn what they have been taught.

3 General objectives

1. To develop the creative acquisition of English as a foreign language in the Intelligent Classroom, from the perspective of critical thinking, and compare it with creative acquisition in the Traditional Classroom, inferring the linguistic and cognitive strategies in two groups of university students of English at the University of Concepción, Chile.
2. To find out the extent of incidence of two methodologies used in English language learning: (a) a hybrid oral course developed by a guide, in computer assisted language learning with different texts from Internet and Web sites, and (b) a traditional oral course, assisted by an English textbook with units taught by a teacher.

4 Specific hypotheses

1. To identify the differences between the results reached in the Intelligent Classroom and those in the Traditional Classroom, with the help of the experimental design: Pre-tests and Post-tests, in both Control and Experimental Groups.
2. To describe the critical/creative quality of the language used by the individuals in the sample, in the internalization of contents of a free program with the support of Internet in the Intelligent Classroom as well as in the learning of English language with the help of a teaching textbook in the Traditional Classroom.
3. To analyze oral linguistic and cognitive strategies developed by the students in the samples when exposed to electronic texts and traditional learning of integrated abilities in the English language with the help of a textbook, when exposed to the development of strategies in language processing.
4. To identify the metacognitive strategies monitored and evaluated by the individuals in the samples.

5 Hypotheses

H1: The students treated in the Traditional Classroom increase their orality level between Pre-test and Post-test, no matter what method is used.

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H2: The students treated in the Intelligent Classroom methodology reach a better performance as compared with those in the Traditional Classroom.

6 Universe and samples

The universe was formed by fifty university students belonging to two groups of twenty five students, who had completed three semesters in English Teaching at the University of Concepción, Chile. One group comprises students of a regular third semester English course in which the Professor teaches systematic contents in the Traditional Classroom and linguistic competence is developed on the basis of objectives and a textbook for the student. The other group is formed by students who registered in an optional course with the purpose of acquiring English in the Intelligent Classroom, through the development of critical thinking. In each sample, randomly chosen, there were 15 students so as to have Control and Experimental Groups.

Control Group (CG)	15 students
Experimental Group (EG)	15 students

7 Research design, methodology and evaluation

The design used in this study corresponds to an experimental longitudinal research project, whose objectives are to find out the degree of incidence in two different approaches with two different approaches used in one hybrid course in the Intelligent Classroom and the other, a text-based course in the Traditional Class.

In both groups, a Pre-test and Post-test will be applied at the beginning and at the end of the semester; they will consist of oral recordings with similar characteristics (Pre-test: to record "The role of women in the present century," and the Post-test: "The role of man in this century") with the purpose of finding out and diagnosing the students' use of the English language; that is to say, their possible progress in oral production and writing. Schmeck's Inventory will also be applied to find out the kind of learning that students have already developed and, therefore, the type of previous learning and thinking that they have and will develop in a weekly three-hour workshop. The scores obtained will demonstrate the use of "retention of facts" in the development of critical thinking. Those students who show development of elaborate and critical thinking will be eliminated from the universe of individuals to avoid bias in the cognitive strategies development.

The Control Group in the Traditional Classroom will be applied in three systematic classes a week with a textbook, selected by the Language Department, which contains specific lexical, grammatical, and phonological items. In addition, each unit has dialogues and texts for reading comprehension which contribute to developing dialogal and monologal discourses.

The Experimental Group will work three hours a week via computer in the Intelligent Classroom: one of them in the computer laboratory to search for information about the previous topic, and the other two in workshops, in which the students suggest the topics they will research from Internet or Web sites, to be presented in front of the class. Two students will present general information for five minutes and the rest of them will add

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information for three minutes each. In the first class, the students suggested the following topic "The Role of Women and Men through the different Ages in History," from which sub-topics like "The Role of women and men in ancient times/the Middle Ages/Modern/Contemporary and Globalization period," were taken. Moreover, other sub-topics were added, for example, "Roles of Men and Women" in India, Arabia, Africa, China, Japan, USA, Germany, England, Chile, Brazil, Argentina, among others.

The approach applied to the Experimental Group corresponds to the new model of education which tends to develop a contructivist and interactionist cognitive approach to get significant, innovative and collaborative discourses and critical thinking because during the search for information and the process of gradual internalization of higher cognitive strategies in the Intelligent Classroom the students started to act differently. In this way, the students working in the lab and workshops were real actors in their own learning.

A. Evaluation: Evaluation in the traditional Classroom tends to develop oral production and writing. It is expected that students develop the different integrated linguistic competences according to the lessons in the textbooks, where the professor teaches the contents, practises them and evaluates orality weekly, and gives written tests, three times in the semester. This evaluation is similar to the one in the Intelligent Classroom. In the Intelligent Classroom, the students, as constructors of their own learning, are expected to look for information to consider relevant articles to be presented to the group during the following two months. They gradually start using the language quasi-spontaneously after a month or longer when they apply their elaborate learning and thinking skills. Finally, they are supposed to develop critical thinking. These stages will be evaluated by the mediator according to the following guidelines:

(a) When evaluating the oral linguistic production of retention of facts and the use of methodical learning and thinking, the following scale and scores, out of 100, will be applied:

Pronunciation and Fluency	25 points
Syntactic Coherence	25 points
Lexical Coherence	25 points
Cohesion	25 points

(b) After a couple of months, cognitive strategies will be evaluated according to the types of cognitive strategies used:

Retention of Facts or memorization of the information:	50 points
Attempt to use the language in a semi-spontaneous way, together with the use of memorized learning	60 points
Attempt to apply elaborate thinking: the students talk and make some mistakes, but with better grammatical structures	80 points
When using critical thinking, students apply a variety of higher cognitive strategies in a fluid, coherent, cohesive way with few mistakes	100 points

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Table 1. *Performance analysis in the experimental group*

Mean of Differences	42.66667
Variance of Differences	52.48877
Standard Deviation	7.244914
Standard Error	1.936288
Value of Students t-Test	22.0353
Degree of freedom	14
Pearson's Correlation Cfnt,	0.5896119

Table 2. *Performance analysis in the control group*

Mean of Differences	33.8
Variance of Differences	96.42676
Standard Deviation	9.819712
Standard Error	2.624428
Value of Students ´t-Test	12.879
Degree of freedom	14
Pearson's Correlation Coefficient	0.3159505

Table 3. *Covariance analysis*

Experimental Group	ET1	ET2	*AM*
	23.8	66.5	*67.48*
Control Group	TC1	*AM*	TC2
	28.6	*61.7*	62.7

(c) Evaluation of reading comprehension and writing: Reading comprehension in the computer laboratory acts as information input which influences the internalization of lexical referents, various grammatical structures and cohesive elements that will help to develop cognitive strategies, which will also help the students to present information and to write articles.

Finally, the arithmetic media test will be applied to find out how significant the results have been.

B. Evaluation of Reading Comprehension and Writing: Reading comprehension in the laboratory acts as students' information input which will influence language acquisition: lexical referent, various verbal structures, use of cohesive elements that will help to internalize them and present oral texts, whose ideas and structures will also be emphasized when writing articles.

To develop this piece of work, the student has to include an Introduction, Development of Ideas and Conclusions. If the oral text is related to Problem

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Solving, the student will have to include a relevant question on the subject with logical answers, congruent with different perspectives given by scholars, analysts and scientists. The article will finish with Conclusions about the subject. The writing of articles is evaluated weekly by the teacher and includes suggestions for each student, at the bottom of the page.

Finally, an arithmetic mean test of performance, the Students' t-Test, will be applied for independent samples; that is to say, to compile the infomation from Pre-tests and Post-tests to be compared, later on, with the corresponding progress of the Experimental and Control Groups. Also, the co-variance analysis (see Annex 2) will be used, in which X corresponds to Pre-test and Y to Post-test, according to the observed variables.

8 Information gathering and results

The elicited information in oral recordings of Pre-tests and Post-tests of Experimental and Control Groups was useful in order to discover the performance of students' orality in both groups, which was submitted to different statistical data so as to quantify the results and, later, to analyze the texts qualitatively, as seen in Table 1.

The mean of differences improvement in the Experimental Group is highly significant (DM = 42.66667), and cannot be explained randomly. The value of Students' t-Test reveals that the development of performance is significant with respect to the orality developed by the students. The Pearson Correlation Coefficient, 0.5896119, confirms the significant results with respect to the orality developed – see Table 2.

In the Control Group, the mean of differences was 33.8, which means it is significant at 5% level and at 1% level too, in which t = 2.977.

In short, it can be stated that there is a difference of 8.8 points between the two groups and, furthermore, the mean of performance in the Experimental Group is higher. It can also be stated that both treatments are effective and significant, but the treatment of the experimental group is more effective because performances are considerably higher.

Initial and final conditions of tests, applied to both groups, are illustrated in Table 3. It is irrelevant to compare both final tests because there is a considerable difference in the initial conditions of both texts. These groups cannot be compared because each group has significant differences in their analyses. This leads to the use of a statistical design of analysis interpretation to adjust such a situation, such as the well known "covariance analysis". For this reason, the comparison between the final tests will be done after having adjusted statistically the initial mean performances. (See Appendix 1.2 with the model of covariance.)

Application of the covariance analysis model: The application of this statistical model allows us to estimate that the Experimental Group has an adjusted performance of 67.48 points, while the adjusted mean performance for the Control Group is 61.78. Thus, the adjusted difference of final performances is 5.69. When the Student's t-Test is applied to analyze the mean differences for independent samples, the value of "t" = 2.11 is obtained, and it is significant at the level of 5%. DF-28. On the basis of all this information it can be inferred that with error probability at 5%, the students treated with the methodology of the Intelligent Classroom (H2) have a better performance in orality than those treated in the Traditional Classroom.

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9 Qualitative analysis of the information obtained in EG and CG pre-tests and post-tests

In order to show the results or to discover the possible differences in the students' oral production, it is relevant to do a quantitative analysis so as to observe, in an objective way, the quality of the orality development in both groups of the sample and to infer the linguistic, cognitive and metacognitive strategies accomplished. After interviewing the students about "The Women's Roles in the Present Century", the information obtained in the Pre-tests of the Experimental and Control Groups was compiled and tabulated (See Annex 1), in order to diagnose the oral production information in both Groups (EG and CG), and compare the typical characteristics of their language competence.

Student 7.1 in the Experimental sample, when facing the Pre-test, said:
(a) *Well….I think… I think women are…ehm… womens and mens are different now. The..man…uh….I think ehm…. The woman go to work."*

According to the spontaneous oral production of this student, similar in all the participants in the samples, the students in the Experimental group produce a sentence with many structural mistakes and they show the lack of appropriate lexical items in context, and the usage of the only connector "and". With the reading of the example, the student shows that he still has not internalized the plural forms of irregular nouns (woman/ ens), and produces incorrect verb structures in the present tense (the woman go to work) and, cognitively, gives an opinion or probably two, in a very simple way, with several pauses, filling words and repetitions of unnecessary elements, (Well, I think).

Student 7.2 in the Control Group, when facing the Post-test said:
(a)*"Well, I think that the role of the woman in the present century… uhm… The…..…..woman.…..…in…the…..…present century…eh…well,…uh…changed, and now the woman is different. That's all."*

Although this answer seems to be of a better quality, at first sight, the individual shows insecurity and lack of information since he repeats it and then states an obvious idea (the woman is different) and ends abruptly without adding another idea. Moreover, he gives an opinion with grammar mistakes when he does not use a subject at the beginning of the sentence "Well, changed and now the woman is different", and he ends with a simple repetition of vocabulary, with silences and repetitions of fairly evident phrases. His nervousness suddenly ends with "that's all". Consequently, no considerable variation between the two students is observed, although student 7.1 is slower in the production of ideas than student 7.2.

10 Information obtained from post-tests in EG and CG

It is valid to recognize the oral competence developed by subjects Nº 7 to find out similarities and differences in orality observed in the Post-test, in EG and CG. Student 7.1 corresponds to a member of the EG who participated in the Post-test and 7.2 corresponds to a member of the CG, whose texts were the following, let's continue with:

Experimental Group. Subject 7.1:"I'll speak about the roles of men and women in

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Table 4. *Gradual evaluation of lingustic, cognitive and metacognitive development*

During the first two months	In the two following months	In the fifth month
A. EXPERIMENTAL GROUP: TYPE OF LEARNING AND THINKING USED		
Applying thinking to remember facts	Applying methodic/elaborate thinking	Applying critical thinking up to problem-solving
B. CONTROL GROUP: TYPE OF LEARNING AND THINKING USED		
Applying thinking to remember facts.	Applying methodic thinking	Applying elaborate thinking.

Table 5. *Linguistic development in both groups 9a and b) EG and CG*

First and second months	Third and fourth months	Fifth month
Lack of fluency because of repeated silences and pet words or phrases.	Fluency interrupted by some pet words or phrases.	Considerably fluent.
Use of lexical items varied by memorized sentences.	Semi-spontaneous use of correct lexical items.	Fluent use of correct scientific lexical items.
Use of present, past and future tenses with mistakes in negative, interrogative and affirmative sentences.	Correct use of verbal forms, passive	Correct use of present and past perfect. Use of modals generally incorrect.
Difficulty in using wh - questions.	Use of perfect verb forms, with wrong modal verbs. Use of preposition + ing.	Correct use of present and past perfect.Use of modals generally incorrect..
Use of connectives: and but, though.	Varied use of intratextual connectives.	Intra – and inter texts use of connectives

the latest centuries. To begin with, men have been in charge of the world during the entire history of mankind, and I'll express some ideas about the different changes developed by women mainly after the Independence War and Cold War.

As I have mentioned before, the man has been in charge of his fellow members in this planet since ancient times. Though nobody has assigned him the authority, he was considered "genetically" designed to be better as a breadwinner, a political leader, among others, because of his arrogant attitudes when providing food and welfare for the sake of the family. In the 20th century, the man started to act differently. At the end of the 20th and the beginning of the 21st centuries, he has changed into a

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Table 6. *Cognitive strategies developed*

A. EXPERIMENTAL GROUP		
Giving opinions; defining; recognizing, reproducing, conclusions.	Constructing, relating associating, describing narrating, inferring, explaining, designing creating, analyzing, debating.	Analyzing; synthesizing arguing, criticizing, problem solving, comparing creating or interpreting, evaluating with appropriate statements.
B. CONTROL GROUP		
Giving opinions, defining recognizing, coming to conclusion .	Reproducing, constructing describing, narrating explaining.	Designing, relating, creating, associating, inferring, analyzing criticizing, debating without bases.

new kind of human being. Men will accept to be part of his role to work and participate in society without being disturbed or upset by the similar participation that men will have. Men will begin to look at himself as a woman's complement. Both will make similar work and will become the new contribution to society. Man is a social creature who need to understand by himself that he will never survive by himself, without a woman. Therefore, he must accept the woman as his equal without conditions. Besides, after the Independence War and the Cold War, the woman was forced to leave home in order to get her husband's job, to build planes, machines, guns, fix refrigerators, to work as a driver, a hairdresser, as a baker or a butcher, among others. This sociopolitical system has helped her to be better than people from other countries, so she has felt free to work, to study and to perform lots of jobs she has dreamed of, such as being a soldier, a scientist, a political officer, etc. Moreover, at the beginning of the century, women began a sex revolution which indicated that the rge 18th century has given them the right not to be treated as an accessory, but as a vital part of society. They have obtained the right to vote and in the 60s, women began to wear pants, listen to rock'n roll, and other innovative forms of music and arts-like the Woodstock Festival – where they expressed their new free spirit of Independence. In conclusion, it is possible to say that both toads are leading to the same place, t so they'll become real friends or mates some day".

Control Group: Subject 7.2 expressed the following:

> "I'm going to speak about the future roles of men and their changes in some specific areas. First of all, men will see the world in a different way because they will have an important participation in different fields. Men and women will not be working all day long in offices, but they will prefer to stay at home with their children too. Today, the family is raising children; so both boys and girls can help them at home, too. Another help they are having is the computer and technology. Because with these devices, men's work will be easier.
>
> A second point that they have top deal with now is the right to vote. Finally, the

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relationships between men and women will be equal and inequalities will be broken. Men will treat women in a better way because they must see them as their peers."

11 General analysis of information

In the information analysis obtained from the individuals in the Experimental and Control Groups (EG and CG), it is possible to observe sentences of a better quality and variety of ideas in the EG in the Intelligent Classroom, in comparison with the CG in the Traditional Classroom. This is the result of the amount of information found on the Internet, that facilitates a greater production of ideas, a better comprehension of texts and, indirectly, a considerable correction in the subconscious use of the source language. In the classes with a text book, the students learnt only the ideas contained in the book, without worrying much about producing and adding new information. Now, if we compare this information with that of the Pre-test, the orality development is obvious. No hesitations, pet words, silence or stammering are observed, and fluency demonstrates the use of adequate linguistic-cognitive strategies.

As to the type of oral structures, they are similar in both groups, although more spontaneity is observed in the Experimental Group. These students know the topic better and express their knowledge with interest. Although when they begin to develop critical thinking they feel somewhat tense about oral production in the English language, especially in the stages of memorization and methodic thinking, they are all conscious that during the development of elaborate thinking, they will improve; it is important to say that this linguistic barrier inhibits the spontaneous and fluent oral production of ideas. This is the time in which they start applying cognitive strategies and gradually develop the process of creative thinking.

The students in the Control Group are more conscious of their oral linguistic production, which leads them to be more careful when they speak and produce fewer sentences in order to finish sooner. The use of structures is similar to that of the EG, but the students with printed texts are conscious of their metacognition, which influences stress and tension when speaking English (see performance in Appendix 1). Cognitive evaluation shows that the students slowly develop metacognition, emphasize the recall of facts and methodic thinking and, later, elaborate thinking. Unfortunately, they only develop critical thinking sporadically. This indicates that although both groups were similar at the beginning of March, they do not reach the expected cognitive development. This fact is demonstrated in the shorter types of answers of the Control Group, which have an effect on the lack of cohesive contextualized logical ideas.

12 Conclusions

1. According to the results, we can conclude that general objectives were completely developed and hypothesis 2 was accepted. It claimed "The students that learn by means of a free program in the Intelligent Classroom reach a better performance than those taught with printed texts." Consequently, it is valid to develop language acquisition, development of creativity and fluent oral production in a foreign language in the Intelligent Classroom from a linguistic as well as a cognitive viewpoint in the frame of critical thinking, for the following reasons:

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a. The students feel confident and optimistic when they realize that their oral production has changed considerably, so they can speak with fluency and with fewer grammar mistakes.
b. They are able to read comprehensively and quickly not only electronic texts but also printed ones.
c. They feel comfortable because listeners understand their oral discourses since they do not have to repeat what they say.
d They know that the vocabulary taken from Internet has facilitated the use of lexical referents.
e. They are conscious that the input and use of the language depends on them and the language output is the result of their own work.
f. They realize that writing strengthens oral production and this, in turn, contributes to fluency.
g. They know that logical content helps to produce the clear expression of ideas and improve the quality of sentences.
h. They infer that learning in the Traditional Classroom, applied in previous years, can be complemented, later on, by activities in the Intelligent Classroom. In the Traditional Classroom students do not worry about the development of cognitive strategies and emphasize the linguistic strategies. The oral production reached in a semester in the Intelligent Classroom will require two or more additional semesters in the Traditional Classroom.

2. Learners of a foreign language in the Intelligent Classroom can acquire the different integrate competences, that is, they can acquire the language. Then, reading comprehension of electronic texts, fluency in oral production and correct writing of texts are the processes developed, but the role of the guide is fundamental to internalize and grasp some strategies which are still undeveloped. The reader grasps the difference between the "bottom-up" reading comprehension, that is to say, the horizontal reading centered on the structures of the language and the "top-down" type, vertical reading centered on ideas; both are complementary and facilitate electronic reading. The student usually begins the reading of texts in the computer through "horizontal linguistic reading", such as when reading printed texts and, later on, through "vertical cognitive reading", which is necessary when reading electronic texts. The student develops reading ability and reads several pages very fast. Students say it is important to read electronic texts from different perspectives presented by different experts, to reinforce the type of orality through time, since they have internalized new strategies which will be applied in all stages of thinking. Gradually, the learner moves away from paralinguistic elements to the production of linguistic and cognitive elements: this is the moment in which a change of attitude is observed in the student, because he worries more about verbalizing ideas than the use of grammar. Then, the development of elaborate thinking begins, because the learner is interested in stating contents or applying the internalized vocabulary and structures subconsciously, thanks to the reading of electronic texts which imply knowledge and processes and the development of new strategies.

   Moreover, the speaker is so interested in showing his knowledge in the Intelligent Classroom that he feels that it is unnecessary to use blank spaces, pet

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words and stammering so he can apply critical thinking in quite a natural way.
All the above fulfills the general objectives of the study as a result of one semester of this hybrid course in order to apply this methodology to develop linguistic and cognitive strategies. Now, the slowest stage in language development is "writing" because the writer needs other learning and other strategies like punctuation and editing, among others.

3. The quality of orality is considered better in the hybrid course because of the use of the computer since language learners speak fluently, with few grammar mistakes, with lexical items appropriate for the context, with cohesive elements inter- and intra paragraphs and with a logical sequence that contributes to differentiate the introduction, development and conclusions of the work; facts that can be observed in the linguistic and cognitive development expressed in the analysis of qualitative evaluation. Therefore, it is possible to reach real language acquisition through the use of electronic texts in the Intelligent Classroom.
4. Metacognition developed by the students with the indirect help of the Internet and the teacher as a guide facilitates language acquisition, especially in students who are not successful. The student changes his attitude toward the language when he is conscious of the needs and resources he has to improve oral production. After going onto the Internet and reading at least 20 pages or more weekly, after understanding the central topic subject, without being afraid of speaking, he gradually forgets grammar, to focus on ideas only. Since the acquisition of orality is accomplished in a semester, knowing the stages of critical thinking that he still has to develop, the learner feels more motivated and he is aware of metacognition. It is basic to accept memorization as the first type of thinking, as something natural to make many mistakes in speaking, to be interested gradually in ideas and to talk for about five minutes at least, students are confident enough in their knowledge to verbalize cognitive strategies and to develop processes. From here on, the learner plans his learning and monitors and evaluates the procedures and strategies he applies.
5. The selection of the topic is fundamental in the development of the language from the perspective of critical thinking, because the contents of the central topic must be repeated in each class; that is, when working on Globalization it is possible to work in the hybrid course on Globalization in the USA, the UK, Germany, Africa, Argentina, Chile and Brazil, just to name a few developed, developing and underdeveloped countries. In choosing a topic like Man in the Universe, it is possible to talk about life on Mars, Earth, Venus, Neptune, Pluto, etc. The reinforcing of knowledge helps in the acquisition of grammatical, lexical, cohesive and cognitive structures, with which the target language is gradually internalized.
6. In the Traditional Classroom, the printed text helps in the learning of grammatical, lexical, cohesive and cognitive strategies, which affect the lack of spontaneity when using the language. If real development of critical thinking and problem solving is expected, a longer period of time is required. In other words, these students learn the foreign language, but they do not acquire it.

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APPENDIX: TO CHECK THE RESULTS

ANEXO 1.1 Registro de Datos

GRUPO EXPERIMENTAL				GRUPO CONTROL			
Sjts.	T1	T2	Av	Sjts.	T1	T2	Av.
1.	15	65	+50	1.	20	55	+35
2.	20	60	+40	2.	30	58	+28
3.	35	70	+35	3.	20	56	+36
4.	18	65	+47	4.	15	60	+45
5.	20	80	+60	5.	30	70	+40
6.	25	70	+45	6.	40	65	+25
7.	18	65	+47	7.	30	65	+35
8.	22	75	+53	8.	30	80	+50
9.	20	58	+38	9.	26	56	+30
10	35	74	+39	10.	18	66	+48
11	30	65	+35	11.	40	68	+28
12	25	62	+37	12.	30	70	+40
13	20	55	+35	13.	20	54	+34
14	15	52	+37	14.	30	58	+28
15	40	82	+42	15.	50	60	+10
Prom	23.87	66.53	+42.6	Prom.	28.6	62.73	+34.1

ANEXO 1.2 (Ver Garret. Páginas 328–330)

INFORME DEL GRUPO A (EXPERIMENTAL)

Sumatoria de las X	358
Sumatoria de las X*X	9382
Sumatoria de las Y	998
Sumatoria de las Y*Y	67462
Sumatoria de los XY	24375
La Media de las X	23.86667
La Media de las Y	66.53333

INFORME DEL GRUPO B (CONTROL)

Sumatoria de las X	429
Sumatoria de las X*X	13525
Sumatoria de las Y	941
Sumatoria de las Y*Y	59771
Sumatoria de los XY	27194
La Media de las X es	28.6
La Media de las Y es	62.73334

INFORME DEL TOTAL A+B

El total de elementos es	30
La suma de las X	787
La suma de las X*X	22907
La suma de las Y	1939
La suma de las Y*Y	127233
La suma de las X*Y	51569

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PASO 1. *Términos de Corrección*

Término de Corrección de X	20645.63
Término de Corrección de Y	125324
Término de Corrección de XY	50866.44

PASO 2. *Suma de Cuadrados Total*

La suma de cuadrados total para X	2261.367
La suma de cuadrados total para Y	1908.969
La suma de cuadrados total para XY	2261.702.5665

PASO 3. *Suma de Cuadrados entre Grupos*

La suma de cuadrados entre para X	168.0352
La suma de cuadrados entre para Y	108.2969
La suma de cuadrados entre para XY	-134.9024

PASO 4. *Suma de Cuadrados dentro de Grupos*

La suma de cuadrados dentro para X	2093.332
La suma de cuadrados dentro para Y	1800.672
La suma de cuadrados dentro para XY	837.4688

PASO 5. *Análisis de Varianza de X e Y tomados por separado*

	G.L.	SCX	SCY	SCXY	CMX	CMY
ENTRE	1	168.0352	108.2969	-134.9024	168.0352	108.2969
DENTRO	28	2093.332	1800.672	837.4688	74.76186	64.30971
TOTAL	29	2261.367	1908.969	702.5665		
FISHER para X		2.247606				
FISHER para Y		1.68399				

PASO 6. *Suma de Cuadrados Ajustados para Y*

Suma de Cuadrados Ajustados para XY	1690.694
Suma de Cuadrados Ajustados dentro	1465.63
Suma de Cuadrados Ajustados entre	225.0639
Varianza Estimada entre	225.0639
Varianza Estimada dentro	54.2826
Fisher para las Y ajustadas	4.146151
Con G.L. = 1 Y G.L. =27	

PASO 7. *Coeficientes de Correlación y Regresión*

Correlacion Total	R = .3381446
Regresion Total	B = .31068822
Correlacion Entre	RE = -1.000026
Regresion Entre	BE = -.8028221
Correlacion Dentro	RD = .4313525
Regresion Dentro	BD = .400065

PASO 8. *Cálculo de Medias Ajustadas*

La media de X en grupo A es	23.86667
La media de X en grupo B es	28.6
La media de Y en grupo A es	66.53333

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La media de Y en grupo B es	62.73334
La media general de X es	23.86667
La media general de Y es	64.63333

La media ajustada de Y en el grupo A es	67.48016
La media ajustada de Y en el grupo B es	61.78652
La diferencia corregida entre las medias de Y	5.693642
La desviación estándar de las Y ajustadas es	7.367672
El error estándar es	2.690294
El valor de la t de Student	2.116365

Consultar tabla t de Student para .05 con g.l. = 28 y decidir si la diferencia es significativa.

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