



Please cite the source as:

Zarzosa, E. L., Luna, P. D., De Parrés, F. T., & Guarneros, E. (2007). Effectiveness of an interface for strategic reading on university students: an exploratory study. *Revista Electrónica de Investigación Educativa*, 9 (2). Retrieved month day, year, from: <http://redie.ens.uabc.mx/vol9no2/contents-zarzosa.html>

Revista Electrónica de Investigación Educativa

Vol. 9, No. 2, 2007

Effectiveness of an Interface for Strategic Reading on University Students: an Exploratory Study

Efectividad de una interfaz para lectura estratégica en estudiantes universitarios. Un estudio exploratorio

Luis Zarzosa Escobedo (*)
zarzosae@servidor.unam.mx

David Luna Pérez (*)
xeurop@hotmail.com

Tania De Parrés Fong (*)
tania_g_fong@yahoo.com

Esperanza Guarneros Reyes (*)
esperanzagr@gmail.com

* Facultad de Estudios Superiores Iztacala
Especialidad en Psicología
Universidad Nacional Autónoma de México

Av. De los Barrios N° 1
Col. Los Reyes Iztacala
Tlanepantla, 54090
Estado de México, México

(Received: November 22, 2006; accepted for publishing: August 27, 2007)

Abstract

A computer interface for training university students in reading comprehension of expository-argumentative texts is presented. A text is divided into several sections, for each of which several questions are presented; the reader must select an answer from among various choices and then a feedback screen is presented according to the answer. Two experiments were carried out to test the program's effectiveness. The first one compared the performance of 50 students in two successive but equivalent lessons. In the second one, the performance of 18 students after four lessons was compared with that of 15 students after a single lesson. There were statistically significant differences in both experiments that support the training effectiveness, although with noticeable variability between participants. The scope and limitations of the program due to the number of lessons and the size of the population sample in the second experiment are discussed in relation to the outcomes.

Key words: Reading, comprehension, strategic, argumentative text, university students.

Resumen

Se presenta el uso de una interfaz para el entrenamiento de estudiantes universitarios para la comprensión de textos expositivo-argumentativos. Un texto se divide en segmentos, en cada uno de ellos se realizan ejercicios consistentes en la solución de varios cuestionamientos; por cada cuestionamiento se ofrecen alternativas a elegir y se recibe realimentación de acuerdo con la alternativa elegida. Se evaluó la efectividad del sistema en dos estudios: en el primero, se comparó el desempeño de 50 estudiantes en dos lecciones sucesivas pero equivalentes, y en el segundo, se comparó el rendimiento de 18 estudiantes después de cuatro lecciones y con 15 estudiantes después de una sola lección. En ambos casos hubo diferencias significativas a favor de la efectividad del programa, aunque con notoria variabilidad entre participantes. Se discuten los alcances y limitaciones del programa y sus resultados de acuerdo con el tamaño de la muestra del segundo estudio y el número de lecciones llevadas a cabo.

Palabras clave: Lectura, comprensión, estrategias, texto argumentativo, universitarios.

Introduction

In the PISA 2000 study, aimed at assessing reading, math and science skills in 15-year-olds from 31 countries, the Latin American countries that participated placed among the bottom five places in reading skills (OCDE, 2002^{*}). One of the scales used was that of *Interpretation*, which illustrates the ability to construe meaning and draw inferences from written texts, particularly important when one is attempting to learn from said material.

^{*} Translator's note: OCDE is the Spanish abbreviation for the *Organisation for Economic Co-operation and Development* or OECD, in English. PISA is the abbreviation for the OECD's *Programme for International Student Assessment*.

Although the data correspond to precollege level students, it is important to consider their significance for those who will continue their studies at the higher education level, since they are poorly prepared to learn through reading. This has been made evident in other assessments of students at this level (Guevara, 1991; Rinaudo, 1997; Zarzosa, Garfias and Nagore, 1994; Zarzosa, 1997), and is predictive of inadequate professional training.

Students who enter higher education face different reading demands, depending on the field of knowledge to which their professional studies pertain. One example we could cite are the disciplines related to the social sciences and humanities, where *Interpretation* and *reflection* are emphasized, since the texts utilized generally attempt to prove a thesis by exposition and argumentation, or the benefits of certain models or categories of analysis. This type of expository-argumentative texts and the development of a strategy for its comprehension are the focus of this paper.

Expository-argumentative writing is characterized by continuous discourse which posits a central thesis supported by properly articulated arguments and which analyzes evidence with the help of examples. The information which it contains is static; it features a series of propositions that are related to each other and can assume different forms of organization (Slater and Graves, 1989). This type of text demands that special attention be paid to the logic of the argument. To fully understand such texts, the reader must identify the thesis, as well as the different propositions or parts of the argument, the relationships between them and assess their pertinence, clarity and scope.

Carpio, Pacheco, Flores and Canales (2000) have argued that text comprehension is a function which requires the coordinated participation of a reader with his behavioral competencies, a manuscript and a standardized context, where certain success criteria are employed. For example, when trying to understand instructions, the reader may have different levels of knowledge about the material with which he is interacting and the lexicon being used; the text may have different degrees of difficulty according to various parameters; and the criteria for success will be a result that is compared to a standard. Successful reading in these circumstances would require slow and careful reading, bit by bit, verifying that each step produces the expected result. For an expository-argumentative text, we could say that there is effective reading to the extent that there is congruence between the reading competencies of the individual, the type of text and the established success criteria. According to Carpio, Pacheco, Flores and Canales (2000), strategic reading of expository-argumentative text is achieved to the extent that it analyzes the nature and structure of said text as well as the success criteria typically associated with it.

In many of the procedures and strategies aimed at developing reading ability, the correlation between the above factors is not emphasized; it is more common to find that text peculiarities such as gender, structure, finality, etc., and the competencies associated with the text, are relegated, diluted or ignored. Some programs are

limited to the implementation of a series of routines designed to improve reading comprehension in a general way (Anderson and Pearson, 1984; Argudín and Luna, 1998; Cázares, 2000; Fox, 1972; Pearson and Fielding, 1991; Rivera, 2003), focusing on the reader's cognitive effort and performance, to the detriment of more specific behaviors associated with text characteristics and educational criteria that define successful reading comprehension (Carretero, 2001; Gil, Riggs and Cañizales, 2001; Palincsar and Brown 1997). In other cases, only general recommendations are made about the characteristics that intervention programs should have (Rinaudo, 1997). All of this has given rise to an ambiguous relationship between what is diagnosed and the solutions that are proposed.

We believe that an intervention program aimed at mastery of expository-argumentative text should consider the following reading objectives:

1. Recognize and express different propositions without deforming them. Identify the author's arguments—estimating their limits (where they begin and end)—, and then state them in one's own words, which implies a minimum of lexical and expressive versatility.
2. Judge the aptness of the illustrations, arguments and examples used by the author to support his propositions. Identify the main ideas and distinguish them from their examples and illustrations.
3. Identify the relationships between the different propositions and their connection with the main theme, which encourages an articulated view of the parts and of the whole. Many interpretive distortions of the content of such texts result from the use of isolated fragments that are arranged to fit the tastes and prejudices of the reader.
4. Arrange the different propositions hierarchically. This outcome is closely related to the previous one, but here we have incorporated the need to recognize the level of importance of each argument.
5. Assess the author's clarity in the presentation of his ideas. Argumentative text requires a critical attitude, which involves reflection and evaluation. The reader needs to determine whether the evidence presented is sufficient and propose solutions for eliminating the deficiencies, if any.

Each of these objectives is in keeping with the nature of argumentative text. It is very likely that in effectively achieving these five outcomes, the student will have reached the different standards of success established by his or her respective educational institution, either explicitly or implicitly.

Nonetheless, an intervention program should consider the desired outcomes and how the teaching can best be carried out in order to achieve them. In this respect, through a meta-analysis of a series of studies that were aimed at young people with learning disabilities, Swanson and Deshler (2003) identified various instructional success factors that all the studies had in common. Among these

factors the following stand out: 1) the explicit practice of what is being taught; 2) stimulation of the psychological processes associated with the task by means of a series of codes or signs; 3) individual exercise of the skill adapted to the student's own pace; 4) dividing the task into small accessible sequenced units; 5) a system of frequent and significant feedback; and 6) the use of a modern interactive resource such as a computer, used as an element conducive to learning. Training is more effective if carried out at the precise moment the reading is taking place, not before or after, thereby eliminating the gap between instruction, feedback and behavior.

I. Method

With these teaching factors in mind and a focus on the five above-mentioned objectives, this research project set out to test the effectiveness of an intervention program that employed a computer interface for developing competencies for the reading of expository-argumentative texts at the university level. The interface consists of a sort of skeleton or template which acts as an intermediary for the interaction between a teaching specialist and the student. An initial study was carried out to estimate the impact of the training system by comparing the performance of the students in two consecutive lessons of equal complexity, followed by a second study to explore the effect of the training through four lessons with diversified content and complexity and which also included support sessions.

We used the computer interface shown in Figure 1, which incorporated the six previously mentioned factors that were considered by Swanson and Deshler (2003). The interface acts as an intermediary between the lessons designed by the researcher and the reader. It consists of a working window which displays text divided into sections, each containing one of the elements of expository-argumentative writing: any of the arguments that support the thesis or theses; a complete proposition; some annotation or explanation or any of the illustrative examples. For each section of text there are one or more questions and for each question several alternative answers are offered. Once the student chooses an answer, he receives a feedback message which states why the selected answer is considered correct or not, its implications and the recommended strategy for avoiding a repetition of the error (if the chosen answer was incorrect). This tool allows the user access at any time to a chart that displays the overall performance thus far achieved.

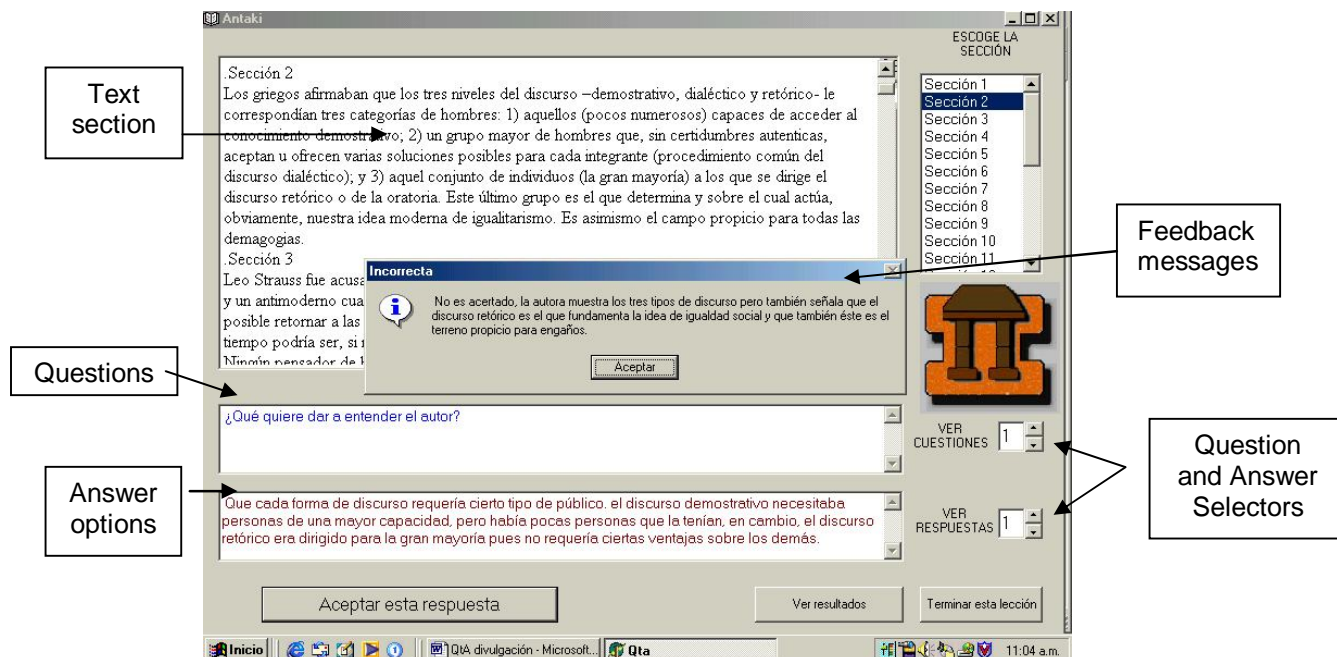


Figure 1. Interface working screen.

The interface creates a record that can be read with any electronic spreadsheet. The information thus captured allows playback of user behavior during the lesson, since the record includes the student's name and the date of the session, the section studied, the question, selected answer, whether it was right or wrong and if the correct answer was chosen on the first attempt.¹

The critical component of the training was the set of questions it contained, because these direct the reader's attention to the core elements defined in the objectives. Table I provides examples of the types of questions associated with the different objectives.

Table I. Training objectives and examples of the types of questions associated with them

Objective	Type of question
1. Recognize and express different propositions without deforming them.	What is the author's theme? What is the author trying to convey in this section?
2. Judge the aptness of the examples for supporting the propositions.	What is he/she trying to illustrate with this example? How does this example clarify or complement...?
3. Identify the relationships between the different propositions.	How does this idea relate to what was previously stated about...? What does this concept have to do with...? Are there any new ideas in this section?
4. Arrange the different propositions hierarchically.	Indicate whether the scheme that has been presented adequately reflects the different ideas and their relative importance.
5. Assess the author's clarity and sufficiency of exposition.	Has the author given enough arguments to convince us of his/her idea? Is the argumentation and manner of expressing him/herself clear?

Study 1

Participants. Fifty students between the ages of 19 and 21 were randomly selected from two different classes in their sophomore (second) year of the Bachelor in psychology program. Seven participants were male and the remaining 43 were female. The students were given a strategic reading course, in which the first two sessions included the lessons used for this study.

Materials. Forty Pentium II or III PC's equipped with Windows 98 and color monitors were used, distributed evenly between two computer rooms. Each PC was on an individual computer desk with a distance of approximately one meter between them, distributed in four rows of five desks each.

Lessons. The *Sk* and *Se* lessons were designed, each comprising an original text taken from some social science book and containing 16,997 and 15,216 characters respectively. This length was considered sufficient to state a thesis—or a substantial part thereof—with its arguments. Each lesson consisted of 17 sections of text and 22 and 20 questions respectively, all aimed at achieving the training objectives. The answer alternatives that the user could explore were based on the classification of interpretive errors of university students developed by Zarzosa (May, 2004). Appendix 1 includes a sample of each text.

The lessons turned out to be quite similar, according to the parameters established in Table II, and included questions of type 1, 2, 3 and 5 listed in Table I. The last six indicators were obtained using the tool embedded in the Microsoft *Word 2000* processor.

Table II. Parameters in which the two experimental lessons and the values associated with each were similar

Parameter	Lesson 1 (Sk)	Lesson 2 (Se)
Number of sections	16	16
Number of questions	22	20
Number of syllables	6,986	6,692
Number of words	3,278	3,255
Number of syllables per word	2.1	2.5
Number of sentences per paragraph	5.2	6.7
Index of sentence complexity	62	68
Vocabulary complexity	76	76

Design. A counterbalanced design was used in the first study. Half of the participants started with Lesson 1 *Sk* and continued the following week with Lesson 2 *Se*; the other half of the group carried out the exercise in inverse order. The initial lesson was randomly assigned.

An overall performance index was used as the dependent variable, consisting of the percentage of correct answers selected on the first attempt. This overall index was adopted because of the insufficient number of questions of each type to be able to make a detailed analysis for each target.

Procedure. The study took place during three days. The first day the students were taught the operation of the interface through an *ad hoc* lesson. The following day, each participant was randomly assigned to work with either Lesson *Sk* or *Se*. One week later the students worked on whichever lesson they had not yet studied. In both groups there was no limit to the time for completing the lesson and the professors were available to address problems or dissipate doubts.

To estimate the possibility of a significant change in reading competency between the first and second lesson, we proceeded to perform an analysis of covariance, given the heterogeneity of the participants' initial reading skills. Once the appropriate adjustment was made, we did a comparison of two matching samples using a t-test for means.

Study 2

For this study the lesson content, length, style and so forth were diversified, although the text genre was maintained, in order to determine whether better reading performance was eventually achieved as a result of more practice.

Participants. 35 students with the same profile as those in the first study participated in the second phase. The ages ranged from 19 to 23. Two groups were formed from among students who responded to an invitation to participate in a strategic reading workshop. The experimental group consisted of 18 female students and one male; the control group was composed of 15 females and one male. For the control group only the reading performance data for the first lesson studied—the so-called *Ak* lesson—was considered. These data were compared with the performance of the experimental group on the same lesson, but which, in their case, was actually the last of the four lessons studied. In this way we were able to compare reading performance for the same lesson of the students who had practice in using the interface with those who had not.

Materials. The same PC's, resources and support sessions were used as in Study 1.

Lessons. Two additional lessons were added to those of the exploratory study, that is, lessons *Sk*, *Se*, *Bb* and *Ak* were used. The same criteria were employed in the selection of the additional texts as for the previous lessons: that they have the characteristics of expository-argumentative writing and their content be related to the social sciences (see Appendix 1, which contains fragments of these lessons). The parameters for these two new lessons are shown in Table III.

Table III. Parameters for the two additional lessons

Parameter	Lesson 3 (Bb)	Lesson 4 (Ak)
Number of sections	17	23
Number of questions	24	30
Number of syllables	5814	7038
Number of words	2357	3394
Number of syllables per word	2.7	2.7
Number of sentences per paragraph	2.75	9.43
Index of sentence complexity	65	44
Vocabulary complexity	66	69

These lessons included a couple of questions of type 4, which refer to the assessment of the hierarchical levels of different propositions (see Table I).

Design. The performance of the experimental group on the fourth lesson was compared with that of the control group on the same lesson, but without having had any previous experience. The comparison was done in terms of the percentage of correct answers on the first attempt. The performance on Lesson 4 *Ak* was chosen as it was considered more complex according to most of the parameters indicated in Tables II and III.

Procedure. The experimental group had five daily sessions with a maximum duration of three hours. The first hour of the first session provided an orientation on user interaction with the interface and its operation. Afterwards, as well as during the first hour of the subsequent days, the theoretical rationale of the training

was explained and illustrated. This involved recommending and exemplifying the adaptation of reading strategy according to the type of text and the success criteria; a structural analysis of expository-argumentative text and its relationship with the relevant objectives and related questions. We also addressed the impressions and doubts which participants had about the lessons previously studied. These activities took place in a classroom; at the end of the first hour the students moved to the computer room where they worked in the same way as the participants in the first study.

Control group members worked directly in the computer rooms, without any support sessions and in the same manner as the participants in Study 1.

II. Results

We found evidence to support the effectiveness of the training program. The interface promotes systematic and careful reading, allowing the user to construe the overall meaning of the text. First, it appears that from one lesson to another, positive changes in reading behavior can be seen. It appears that the most striking effect of the training program is the elimination of low scores and a greater homogeneity in the students' performance.

Study 1. To determine if there were changes in reading skills between the first and second lesson, we used a t-test for means to compare the averages of two matched-pair samples. The results are statistically expressed as:

$$t = -1.8537 \text{ g.l. } 49, p < .0349$$

This indicates that there is a difference which is statistically significant; the training system produces a reasonably reliable improvement in the second lesson. However, it is necessary to more precisely identify the nature and location of the change, since the t-test results indicate a general result but ignore the distribution patterns of individual cases.

To account for the distribution of scores received by the students, we developed Figure 2. In order to properly interpret this type of box-and-whisker plot, we must consider that the *T-shape* and *inverted T-shape* represent a range of 25% of the maximum and minimum values respectively. The box is divided by the median, and the two segments into which the box is divided represent another 25% above and 25% below the central tendency (Triola, 2004). According to these results, it is possible to estimate the empirical distributions.

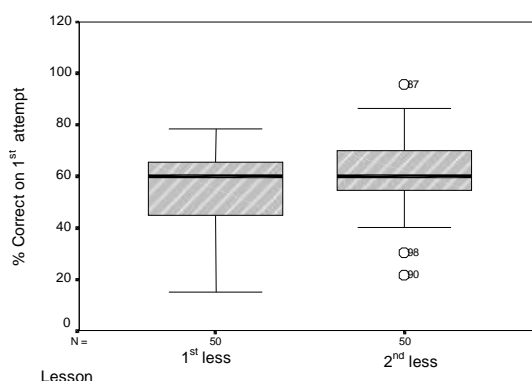


Figure 2. Diagram of a box-and-whiskers plot that compares the quartile distribution of students' scores in the two experimental groups on Lessons 1 and 2, according to the percentage of correct answers on the first attempt.

Figure 2 shows a more compact and uniform distribution for the second lesson as well as a stronger trend towards high scores. In the first lesson the upper range for correct answers on the first attempt was between 65.2% and 78.3%, but in the second lesson there is a positive upward movement, with scores starting at 70.2 % and reaching 87.5%. There is also a very significant decrease in the scores in the lowest quartile, as the scores ranging from 15% to 41% virtually disappear, which indicates that one effect of the training is the elimination of low scores, since it is the segment with the greatest change.

In Study 2, the first analysis compared the performance of the experimental group on the fourth lesson *AK*, with that observed on the same lesson in the control group. This was done using a t-test, with the results showing a statistically significant difference in favor of the experimental group, which is expressed:

$$t = -3.271 \text{ gl. } 33 \text{ } P < .001$$

Thus we can assert that there is evidence of superior performance in the group that studied the four lessons and received additional support sessions.

We then proceeded to analyze the distribution of scores. In Figure 3 we can observe that in the experimental group the scores were higher, and the comparison of the quartiles shows a positive difference in each of the four segments of the diagram, although more pronounced in the lower two quartiles (a difference of 12.9 and 12.1 points respectively). These data are consistent with the findings of Study 1, with respect to the elimination of the lowest scores as an effect of the training. The distribution in the experimental group is slightly more compact and uniform, as in the results of the second lesson of Study 1. This suggests that a possible effect of the training may also be a reduction of the variability.

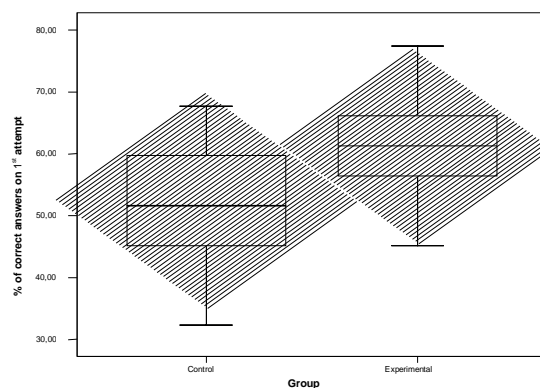


Figure 3. Quartile distribution of scores in the control and the experimental group, according to the percentage of correct answers to questions on the first attempt

Consequently it can be affirmed that there are very encouraging data on the effectiveness of this mode of training; it is very likely that a good proportion of the students have improved their mastery of expository-argumentative text, since the differences found exceed what might be due to chance.

III. General discussion

In this paper we proposed a training model for the comprehension of expository-argumentative text. The five basic objectives that were outlined were accomplished by means of responses to questions about the expository-argumentative text readings. The satisfactory fulfillment of these objectives made it more likely that we could achieve various success criteria, since the questions were closely related to the nature and objectives of expository-argumentative text.

The outcome indicators show that through the implementation of this system favorable changes in reading effectiveness were achieved. Nevertheless, the data should be considered with caution, given the limitations in its measurement and instrumentation, the amount and type of training and possible sampling problems.

In the first place, it is important to recognize that the dependent variable used is just an overall indicator of readers' behavior, since the number of lessons and questions developed so far do not permit a more specific estimate of the degree to which each objective was achieved. The outcomes can be attributed to the whole package. A more precise estimate of the degree of fulfillment of these objectives—an important element for programming the lessons more strategically—must be deferred until further research is done. That is, we need to determine how much training through the application of questions is necessary to achieve each of the objectives as well as to identify the respective importance of each question.

Another point that should not be overlooked is the wide variability observed among the readers. Some of them showed no signs of improvement in reading comprehension, thereby making it necessary to obtain further information on the conditions which produce the best results, since reading competence itself is very

heterogeneous among students. The absence of good outcomes in these students could well be due to the lack of basic elements for reading comprehension, such as a lexical or expressive inadequacy or poor mastery of the mechanics of reading itself.

Study 1 has greater experimental relevance because it included a larger population and maintained reasonable control over the equivalence of the complexity of the two lessons studied. In Study 2 the content, length and style of the two additional lessons were diversified, which could have caused variations in the students' performance. Therefore, future studies should show that the favorable outcomes of the second study occur regardless of the factors which are mentioned here as limiting generalization. Due to the above, the results of the second study are presented here only as evidence in support of the effectiveness of the program, not as conclusive data. These could be achieved with the implementation of more lessons in a larger population.

With respect to the sampling problems, we may assume that the number of participants in the second study is not sufficiently large to prevent individual differences from having too much weight, an important consideration for validating the findings. Nor should we lose sight of the fact—for the purpose of generalization—that the participants attend the same educational institution, study the same degree program and are of the same socioeconomic level; of equal importance is the fact that the sample was predominantly female, a population which often displays superior performance in reading related tasks (OCDE, 2002).

In Study 2 supplementary classroom support was provided for the lessons themselves, which could have contributed to the improvement in the positive outcomes of the experimental group. A subject for future research could be the question, *What is the importance of supplementing the training through this type of interpersonal relation or additional lessons?* We believe that some properly sequenced additional lessons could provide greater reliability to the present findings. On this point we await systematic replication.

IV. Conclusion

In conclusion, we note that in the context of the poor performance of Latin American students in reading literacy, which has become evident in international assessments, the aim of this research was to propose and evaluate the effectiveness of a computer interface that contains lessons designed expressly for expository-argumentative texts. According to our findings, there is good reason to believe that this program could develop into an effective system for overcoming some of the deficits in reading literacy. This will require the development of additional lessons, more detailed assessments and the testing of the program in larger populations.

Appendix 1

Representative samples of the texts used**.

Lesson Sk, with texts by Skinner (1970).

Section 2

We are concerned, then, with the causes of human behavior. We want to know why men behave as they do. Any condition or event which can be shown to have an effect upon behavior must be taken into account. By discovering and analyzing these causes we can predict behavior; to the extent that we can manipulate them, we can control behavior.

Section 3

There is a curious inconsistency in the zeal with which the doctrine of personal freedom has been defended, because men have always been fascinated by the search for causes. The spontaneity of human behavior is apparently no more challenging than its "why and wherefore." So strong is the urge to explain behavior that men have been led to anticipate legitimate scientific inquiry and to construct highly implausible theories of causation. This practice is not unusual in the history of science. The study of any subject begins in the realm of superstition. The fanciful explanation precedes the valid. Astronomy began as astrology; chemistry as alchemy. The field of behavior has had, and still has, its astrologers and alchemists. A long history of prescientific explanation furnishes us with a fantastic array of causes which have no function other than to supply spurious answers to questions which must otherwise go unanswered in the early stages of a science.

Section 11

Eventually a science of the nervous system based upon direct observation rather than inference will describe the neural states and events which immediately precede instances of behavior. We shall know the precise neurological conditions which immediately precede, say, the response, "No, thank you." These events in turn will be found to be preceded by other neurological events, and these in turn by others. This series will lead us back to events outside the nervous system and, eventually, outside the organism. In the chapters which follow we shall consider external events of this sort in some detail. We shall then be better able to evaluate the place of neurological explanations of behavior. However, we may note here that we do not have and may never have this sort of neurological information at the

** Translator's note: In the case of the two texts which are available in English, we used the published English versions here. The original Skinner text can be found on the website of the B.F. Skinner Foundation: <http://www.bfskinner.org/BFSkinner/Home.html> The book from which the Norberto Bobbio text was taken, *Left and Right*, was translated into English by Polity Press, copyright 1996, and published in the U.S. by the University of Chicago Press, Chicago. The other two texts, by Simone and Antaki, are not available in English, and so were translated into English from the Spanish versions included in this paper.

moment it is needed in order to predict a specific instance of behavior. It is even more unlikely that we shall be able to alter the nervous system directly in order to set up the antecedent conditions of a particular instance. The causes to be sought in the nervous system are, therefore, of limited usefulness in the prediction and control of specific behavior.

Lesson Se, with texts by Simone (2001).

Section 1

This essay is the fruit of the feeling that we are entering a new phase of an extraordinarily important story: the history of knowledge, which would have to describe how our knowledge, our ideas and our information is created and developed. I think that of the many stories that are written there is none devoted to such an important issue, and that is a pity, especially because we are in the midst of great changes of which we have, perhaps, not too clear a picture.

Indeed, I have many reasons to be confident that we are in a “Third Phase” (later I will explain what the First and Second Phases are) of the history of how the knowledge of the human species is formed and how this intellectual heritage is nourished.

Naturally, with the word *knowledge* I am not referring solely to that of intellectuals or scientists; I refer, more generally, to *all forms of knowledge* that we have and that we use spontaneously in everyday life. For this reason, a profound change in the process of formation of knowledge is not an academic subject, but a matter that affects everyone’s life (for example, because it influences the opinions and decisions that each one of us makes).

Section 7

As a result, the types of knowledge that are currently circulating, in the Third Phase, are less articulate and less subtle, and indeed, may even dispense with the support of verbal formulations. This has led some to maintain that, in the passage from the 20th to the 21st century, there has been a qualitative deterioration of general knowledge, whereas perhaps it is only its nature that has changed.

Section 10

What is the engine of this Third Phase in the history of knowledge? There are two possible answers. The first, very simple, is the following: the engines of change are television and the computer, with all of the effects that they have had in society and the technological developments that have occurred. Let us not forget that television was born under the label (perhaps false from the beginning) of “friendly appliance”, an instrument of pure entertainment. But now the mask has been removed and it shows itself for what it is: for better or worse, the most formidable school of thought—or, as Sartori, 1998, even speaks of, “postthought”; and which Popper, 1995, considered “a danger to democracy”—that man has ever attended.

Even someone who has never gone to school or read a book can absorb some knowledge, information or opinion from the images (more than from the words) on television. Its role in the formation of political judgment—of which there are very worrisome recent examples in Italy—is the aspect that has been most studied. But there are many other areas we could consider in which television is no longer an entertaining companion but an arrogant and authoritarian partner.

Lesson Bb, with texts by Bobbio (1998).

Section 9

The following reflections arise from the assertion that there is longer any relevance to the distinction between left and right which, over the two centuries since the French Revolution, has been used to divide the political universe into opposing camps, an assertion which has been made repeatedly in recent years, to the point of becoming a cliché. It is now *de rigueur* to quote Sartre who, it appears, was one of the first to argue that left and right were empty vessels. They are no longer supposed to have any heuristic or classificatory value, and emphatically no evaluative application. Often they are referred to with a certain irritation, as though they represent one of the many linguistic traps which political debate can fall into.

Section 12

To reduce them to purely ideological expressions would be an unjustifiable simplification: they indicate opposing programmes in relation to many problems whose solution is part of everyday political activity. The contrasts concern not only ideas, but also interests and judgements on which direction society should be moving in; they exist in all societies, and it is not apparent how they could disappear. Naturally, one could reply that such contrasting positions exist, but they are not the same as those encountered when the distinction was created, and during the period of its success these positions have changed so much as to make the old names anachronistic and therefore misleading.

Section 16

If one wanted to flirt a little with the terminology of logic, one could say that while the dyadic concept of politics can be defined as the excluded middle, according to which politics is divided into just two parts, which are mutually exclusive, with nothing in between them, a triadic concept can be defined as the 'included middle', according to which there is an intermediate space between the left and the right which is neither one nor the other. In the first case, the two terms, which have an 'either ... or ...' relationship, are contradictory; whereas in the second case, in which the intermediate area can be expressed as 'neither ... nor...' they are opposites. No problem then: black and white are divided by grey, and day and night are divided by dusk. Grey takes nothing away from the distinction between black and white, and dusk takes nothing away from the distinction between day and night.

Lesson Ak, with texts by Antaki (2000).

Section 2

The Greeks affirmed that the three levels of discourse—demonstrative, dialectical and rhetorical—corresponded to three categories of men: 1) those (few in number) who are able to access demonstrative knowledge; 2) a larger group of men that, without authentic certainty, accept or offer several possible solutions for each member (a common procedure of dialectical discourse); and 3) that group of individuals (the great majority) to whom rhetorical discourse or oratory is directed. It is this latter group that determines our modern idea of egalitarianism, and on whom, obviously, said idea acts. It is also fertile ground for all demagogues.

Section 10

We should understand the inevitability of this transformation, that is, its certainty. The question is, how to tame it? The accusation made of mass media, that it drags the spirit down, is true, but it could equally be made of public schools, which are both free and compulsory. The academic level conferred by private tutors was higher for the simple reason that they had fewer children to educate. It is an irony of history that the greatest achievement of modernity, the democratization of information, is at the same time the point of its trivialization. In his time, the Athenian philosopher rejected the spread of writing, fearing that this dissemination would kill live debate and reduce culture. Writing seemed to represent decline, as the screen does to us today. Civilization will not survive if it fails to reconcile its two poles, brothers and enemies: fascination with progress (represented by the media) and the demonstrative rigor of good arguments.

Section 15

The off-course detours of the media are obvious: lack of general information, inadequate education, structural weakness. Our journalists are more polemicists than great investigative reporters. They tend to fill every space; this is totalitarianism. They are arrogant and partisan, and their morality is deficient. Journalism is a cutting-edge profession because it utilizes high technology for its purposes; it benefits all areas of show business—of which the media is a part, in addition to belonging to the market society. Although the media have played an important role in the criticism of public power, their own harmful effects and abuses should also be rigorously criticized. In antiquity the sages thought that writing reduced culture; now civilization is in danger because of the screen. Mass media is projected as the demolisher of social relations. Viewers are considered buyers, and this degrades and perverts the reality. Communicators have influence over millions of people, a circumstance requiring that they be cultivated, ethical, responsible, and so on; but no one can measure these variables and thus professionals enter mass media occupations with enormous socio-educational deficiencies. Previously, the media and journalists were harassed by the power

structure; now they themselves are the power structure, but their lack of education has transformed them into mere entertainment for the market society.

References

- Anderson, R. C. & Pearson, P. D. (1984). A schema-theoretic view of basic processes in reading comprehension. In P. D. Pearson, R. Barr, M. L. Kamil, & P. Mosenthal (Eds.), *Handbook of reading research* (Vol. 1, pp. 255-291). White Plains, New York: Longman.
- Antaki. I. (2000). Los medios. In *El manual del ciudadano contemporáneo* (pp. 293-306). Mexico: Ariel.
- Argudín, Y. & Luna, M. (1998). *Aprender a pensar leyendo bien. Habilidades de lectura a nivel superior*. Mexico: Universidad Iberoamericana-Plaza y Valdés.
- Bobbio, N., (1998). *Derecha e Izquierda* (pp. 49-55). Mexico: Taurus.
- Carpio, R. C., Pacheco, V., Flores, C., & Canales, C., (2000). La naturaleza conductual de la comprensión. *Revista Sonorense de Psicología*, 14 (1 & 2), 25-34.
- Carretero, M. (2001). *Constructivismo y educación*. Buenos Aires: Aique.
- Cázares, G. F. (2000). *Estrategias cognitivas para una lectura crítica*. Mexico: Trillas.
- Fox, L. (1972). El establecimiento de hábitos de estudio eficientes. In R. Ulrich, T. Stachnik, & J. Mabry (Eds.), *Control de la conducta humana* (Vol. 1, pp. 157-169). Mexico: Trillas.
- Gil, G. A., Riggs, E., & Cañizales, R. (2001). Metacognición: punto de ignición del lector estratégico. *Lectura y Vida: Revista Latinoamericana de Lectura*, 22 (3), 28-35.
- Guevara, N. G. (June, 1991). ¿México: un país de reprobados? *Nexos*, 162, 33-44.
- Organización para la Cooperación y Desarrollo Económicos (2002). *Conocimiento y aptitudes para la vida: resultados de PISA 2000*. Mexico: Santillana-Aula XXI.
- Palincsar, A. S. & Brown, A. L. (1997). La enseñanza para la lectura autorregulada. In L. Resnick & L. Klopfer (Eds.), *Currículum y cognición* (pp. 43-73). Buenos Aires: Aique. (Reprinted from the annual volume of the Association for Supervision and Curriculum Development, 1989, Virginia, EE. UU.: Association for Supervision and Curriculum Development).

Pearson, P. D. & Fielding, L. (1991). Comprehension instruction. In R. Barr, M. L. Kamil, P. B. Mosenthal, & P. D. Pearson (Eds.), *Handbook of reading research* (Vol. II, pp. 835-839). White Plains, New York: Longman.

Rinaudo, M. C. (1997). Estudiar y aprender. Investigaciones sobre la comprensión y aprendizaje de textos. *La Educación: Revista Interamericana de Desarrollo Educativo* (126-128,) 1-13. Retrieved November 11, 2004, from: <http://www.iacd.oas.org/template-spanish/laeducacion.htm>

Rivera, L. M. (May, 2003). Estrategias de lectura para la comprensión de textos escritos: el pensamiento reflexivo y no lineal en alumnos de educación superior. *Revista digital Umbral*. Retrieved December 12, 2003, from: <http://www.reduc.cl>
Abstract available: <http://dialnet.unirioja.es/servlet/articulo?codigo=1248135>

Simone, R. (2001). El orden de los sentidos. In *La tercera fase: formas de saber que estamos perdiendo* (pp. 9-40). Mexico: Taurus.

Skinner, B. F. (1970). Por qué actúan los organismos. In *Ciencia y conducta humana* (pp. 50-57). (Trans. M.J. Gallofré). Barcelona: Fontanella. (Original work published 1953).

Slater, W. H. & Graves, M. F. (1989). Research in expository text: Implications for teachers. In K. D. Muth (Ed.), *Children's Comprehension of Text* (pp.140-166). Newark, DE: International Reading Association.

Swanson, H. L. & Deshler, D. (March/April, 2003). Instructing adolescents with learning disabilities: Converting a meta-analysis to practice. *Journal of Learning Disabilities*, 36 (2), 124 -135.

Triola, M. F. (2004). *Estadística*. Mexico: Pearson Educación.

Zarzosa, E. L. (1997). Lectura y escritura en la población universitaria. *Revista del Consejo Nacional para la Enseñanza e Investigación en Psicología*, 2 (1), 94-123.

Zarzosa, E. L. (May, 2004). Programa de cómputo para el desarrollo de lectura estratégica a nivel universitario. *Revista digital Umbral* 2000, 15. Available at: <http://redalyc.uaemex.mx/redalyc/pdf/373/37302706.pdf>

Zarzosa, E. L. (December, 2004). Relación entre nociones teóricas, entrenamiento y evaluación: el caso de la comprensión de textos. *Revista electrónica de psicología Iztacala VII* (4), 109-128. Available at: <http://www.iztacala.unam.mx>

Zarzosa, E. L., Garfias, S. S., & Nagore, del M. L. (1994). Habilidades léxicas y de uso del contexto en la lectura de estudiantes universitarios. *Revista Intercontinental de Psicología y Educación*, 7(1), 131-159.

Translator: Jeanne Eileen Soennichsen

¹ This interface and its lessons can be downloaded from the following site: <http://psicologia.iztacala.unam.mx> or by clicking on “Licenciaturas” and then “Psicología”, at <http://www.iztacala.unam.mx>