

INTERACTIVE WEB PLATFORM FOR ENCOURAGING READER COMPREHENSION

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ABSTRACT

This paper shows a web tool designed to encourage an active reader comprehension. Being a web-technology based system, it allows easy access for a wide number of users around the world, while at the same time it is easy to update.

The system may be used by teachers who create exercises, “validators” who check them before being published and students who can complete these exercises at school or at home. Many of the classical grammar and vocabulary exercises will be seen now by the students as a game, in a similar way to crosswords. Moreover instant answers will be provided.

This tool allows teachers not only to create interactive and guided reading exercises, but also to perform statistic follow-ups and global evaluations over a great population of readers. Feed-back has been preponderated so as to give the students the possibility to auto-evaluate their progress.

KEYWORDS

Reading comprehension, web, feed-back.

1. INTRODUCTION

The problem we face is reading comprehension for primary school and high school students.

Learning how to read is a continuous process, started when we are able to perceive and give a certain meaning to signs. This process involves two simultaneous aspects: learning to decode the message and understanding different types of texts. The reader is forced every time to adapt its cognitive processes (attention, memory, comparison, reasoning, etc.) to the specific characteristics of each text so as to give a meaning according to its nature and intentions.

Reading implies an active seek of meanings, where a reader rejects or confirms his own hypotheses from what is expressed in the text.

Many times, the student reads the text mechanically, but doesn't understand its real meaning. In opposition to this mechanical reading, he should be taught how to get to an active reading; a deeper and clearer understanding of the text, at least a great part of its richness; a reading that permits to realize, above all, whether the text is rich or poor, and that allows to enjoy it. To deeply read a text means to get inside it, to discover its beautifulness, its pros and cons, its errors and fallacies. Active reading goes together with a critical spirit.

During the sixties the process of reading was usually conceived as a set of abilities, and a simple one-way transference of information. Nowadays it is understood as an interchange between the text and the reader. This process will obviously be completed if the reader is able to interact with the text, and not only the other way around [Dubois -91].

In this paper we present a tool designed to encourage an active reading comprehension. Teachers are able to create interactive and guided reading texts that after being validated will be available for every student that gets to the web server. This system has many advantages: it makes the learning process more amusing for the student, it is easy for the teachers to create new texts and update the current resources and thanks to its data base, it is easy to obtain statistical results.

2. WEB PLATFORM

What follows is a description of the tool architecture and a guide of its use.

2.1 System Architecture

The platform is a system based on a client/server architecture using a web interface in order to facilitate an easy interaction with the users. System-users interaction is performed by applets, servlets and databases. These applets are executed not only in the student's computer but also in the teacher's. There are three applets in this system. The first one is used by the teacher to create readings; the second one is used by the experts in charge to validate readings in order to publish them. The last one is used by the students to do the exercises.

At the server side, relational databases contain the exercises, their right answers and the students' personal statistics. The communication between the applet and the database is possible thanks to the servlets.

The three user levels are:

School Teachers: They can create new readings, see them and check the students' answers.

Expert Teachers ("validators"): Mainly, they validate the created texts. They can also act as school teachers.

Students: They can only do exercises.

Everything can be done with the applets which are in the School Teacher's, the Expert Teacher's or the Student's Computer.

The architecture is shown in figure 1. As it can be seen, one computer contains two servers and two groups of servlets. These two servers are the Web Server and the Database Server. The Web Server is Apache but IIS could be used instead. The Web Server must include a Servlet Container. In our case, we use Tomcat. The Database Server is MySQL which contains two databases. One for the readings already validated and can be published and another for those not validated yet.

The two groups of servlets are the Student's and the Teacher's.

Another computer, which can be placed at school, in an office or even at home, using a standard Web Browser executes an applet. Depending on the kind of user (teacher, expert or student), a different applet is shown.

As it was said above, the communication between the Server Web and the computer which contains the applet and the Web Browser, is done via Internet

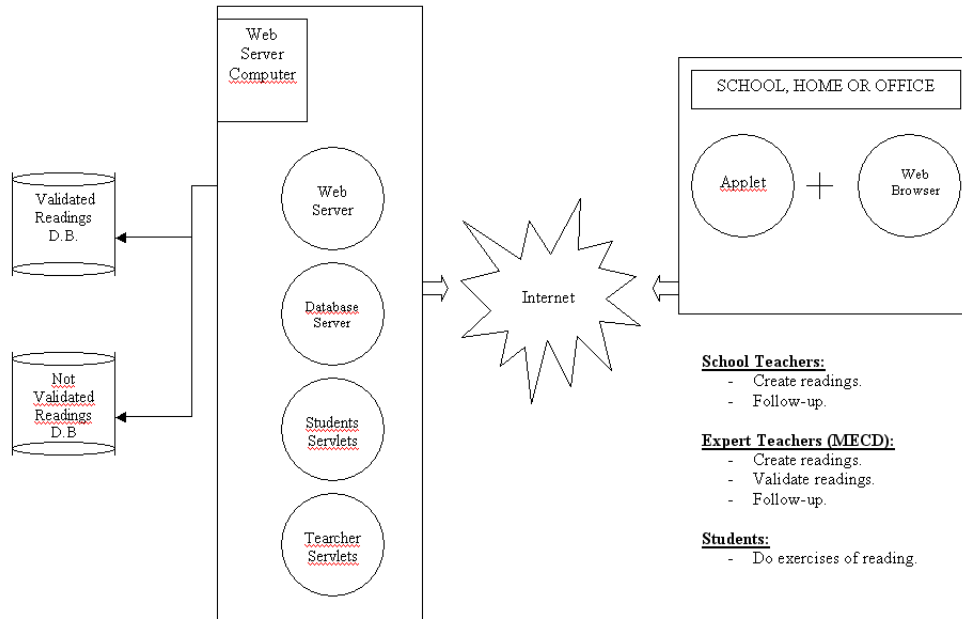


Figure 1. System architecture

2.2 Functionality and guide of use

The three applets are very similar and intuitive. The teacher’s and validator’s consist approximately of the same sections as the student’s tool, but with “new text”, “text edit”, and “validate options” respectively.

One of the possibilities it has for the teacher is to enter different kinds of help texts with hints for the students. The application works in Spanish because it is sponsored by the Spanish Ministry of Education (MECD) and is now subject to test for the student’s interface on the following URL:

http://iris.cnice.mecd.es/fomentolectura/recursos/animadores/sendas/lectura_activa/lecturactiva.php?id0=5&id1=5&id2=5¹

2.2.1 Student’s applet

Figure 2 shows the tree structure of the student’s applet.

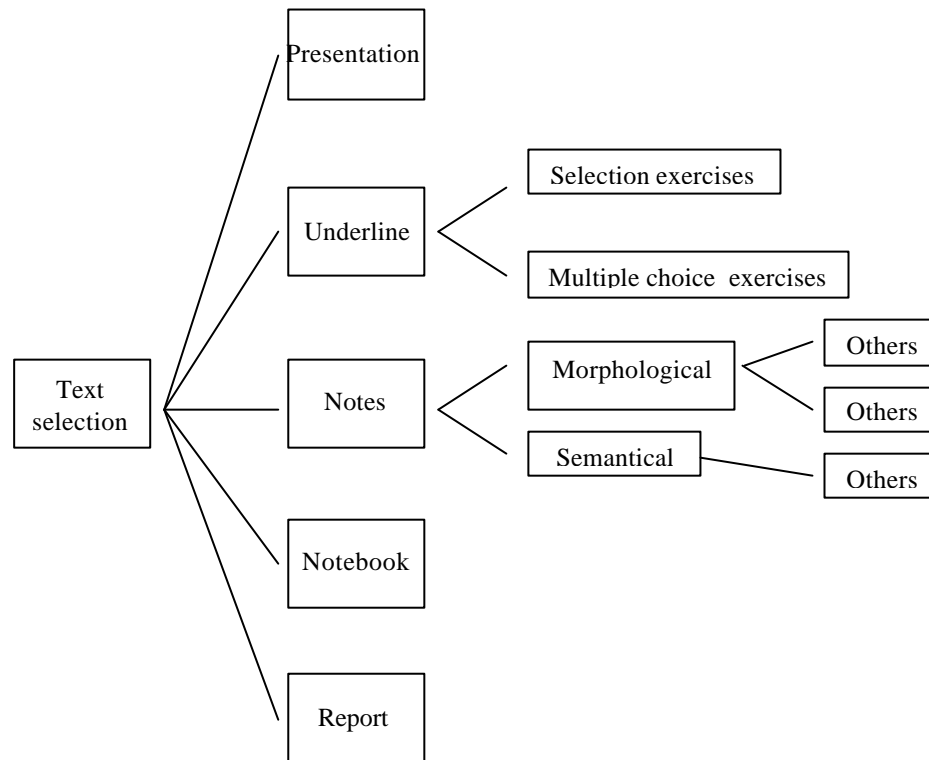


Figure 2. Tree structure of the different available menus

Text Selection

The first menu of the tool allows the user to choose one of the accessible readings (Figure 3). There are now more than ten different texts ready for use. A description of each one is generated when the user clicks on the titles. Once a text has been selected the student can do different actions by clicking on the corresponding tabs.

¹ In order to be able to view the application, a java virtual machine needs to be installed. Sun Java Virtual Machine can be downloaded from <http://java.sun.com/getjava/index.html>

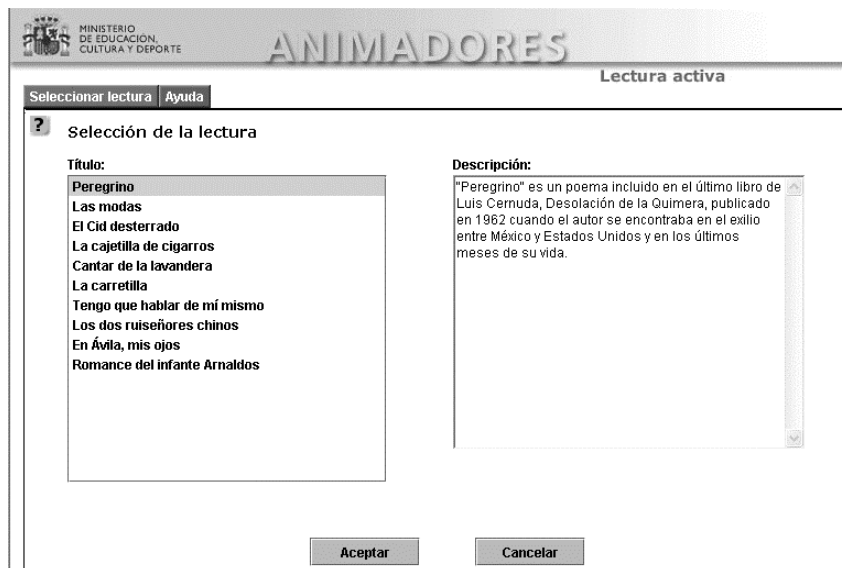


Figure 3. Text Selection menu. Available texts are placed on the left, while a brief description appears on the right

Reading presentation

The first tab presents a brief description of the text to be studied, plus some information about the author and its biography (Figure 4).

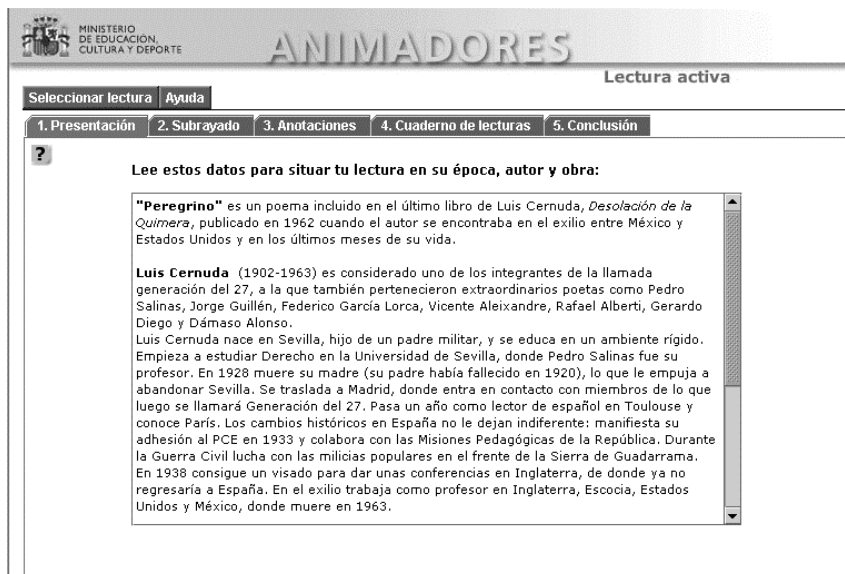


Figure 4. Presentation tab. A brief description of the text, plus some notes on the authors' biography and works

Underline

This tab drives us to a group of exercises that ask the student to select different parts of the text. This usually consists of finding the main ideas of the text. Once the choice is made, if the student's guess is correct the selection is highlighted. If it contains part of the correct answer, the student is encouraged by a text message (editable by the teacher, figure 8) to complete its choice. Different error messages can be defined to allow the student to get to the correct answer. In addition some multiple choice questions can be defined to complete this section (figure 5).

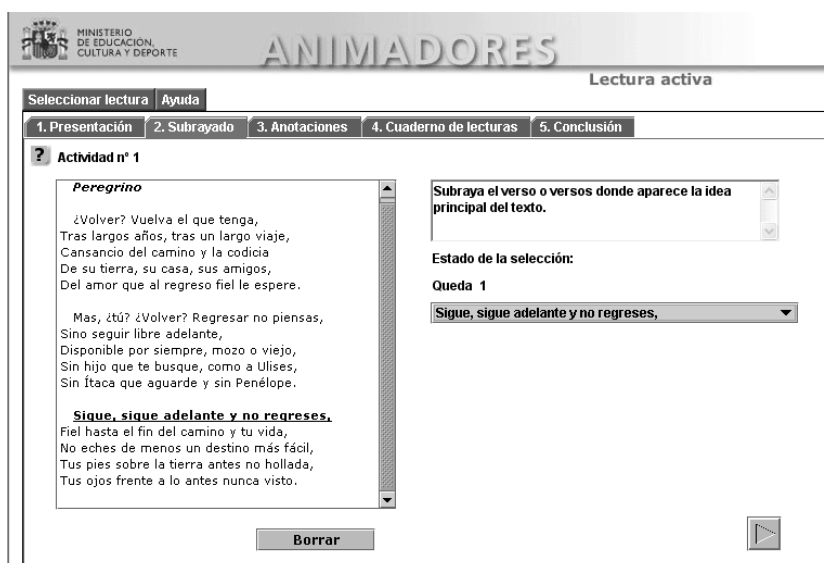


Figure 5. Underline menu

Notes

In this section the teacher proposes morphological and semantic exercises. More tabs can be created to allow more flexibility, and a wide range of exercises (figure 6).

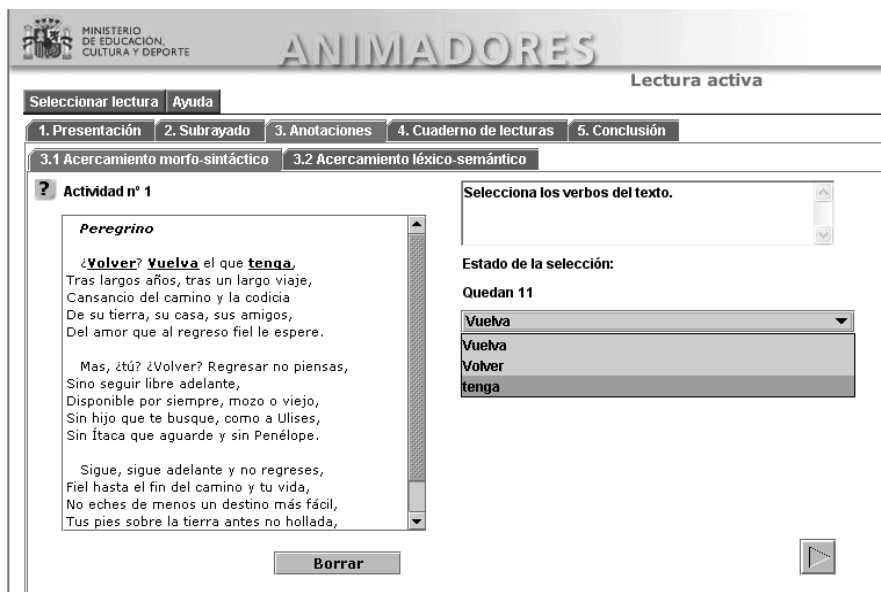


Figure 6. Notes menu. This figure shows a morphologic exercise

Notebook

In this section some important or difficult words and expressions selected, commented or interpreted by the teacher will appear highlighted to the students (figure 7).

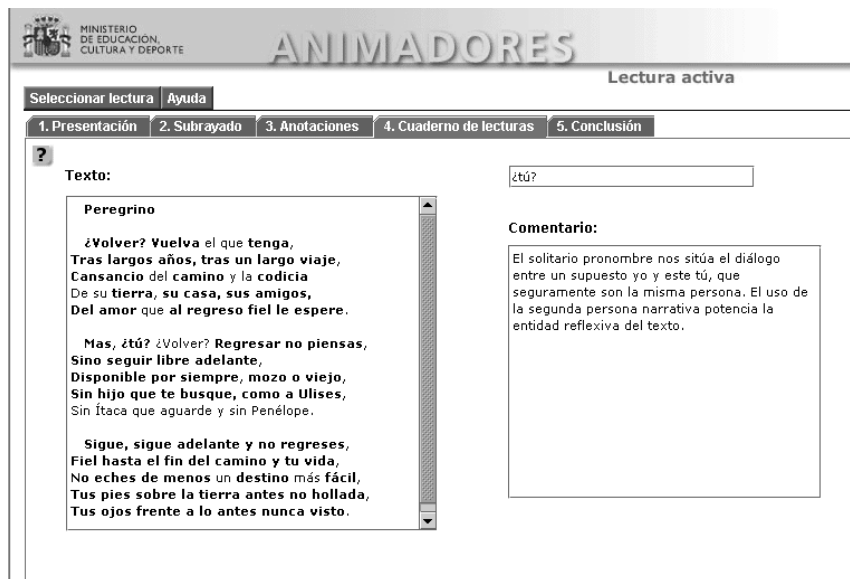


Figure 7. Notebook menu. This section allows teachers to provide information on certain words or expressions

Semantic field

This is our semantic field game. There are some semantic fields that are assigned a color. The student is asked to add a number of words from the text to the semantic field lists. When a word is correctly added, it is highlighted with its semantic field color (figure 8).

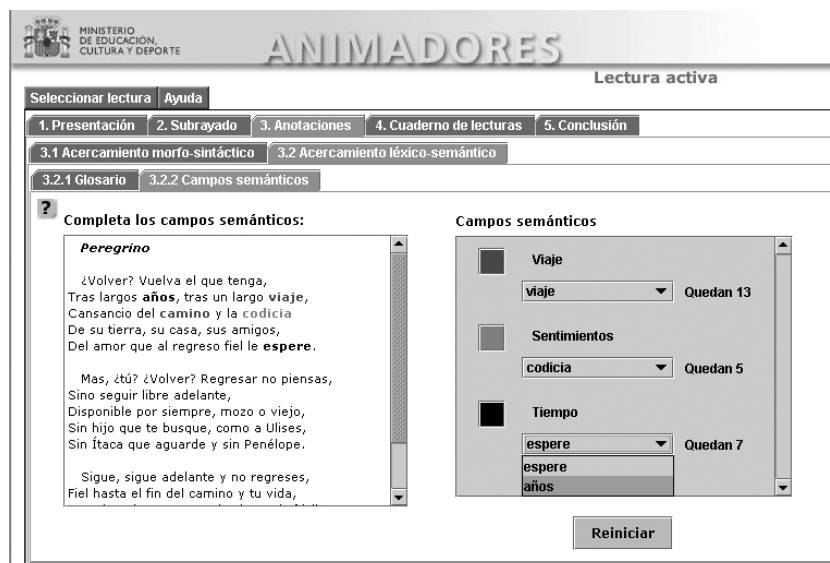


Figure 8. Sematic fields game.

Report

Once the student has finished the exercises, he is encouraged to write a little report on the reading. Once finished, and after clicking on "Accept", he will have the possibility to compare his own conclusions with the teachers'.

2.2.1 Teachers' and experts' applets

These applets are similar to the student's, but allow editable and validation options for teachers and experts. Figure 9 shows an example of the teacher's applet. An important feature is that the teacher can define feedback actions such as hints or clues in order to guide the student towards the correct answers.

The screenshot shows a web application window titled "Seleccionar lectura". It has a menu bar with "Crear selección", "Anotaciones", "Cuaderno de lecturas", "Conclusión", and "Portapapeles". Below the menu bar are tabs for "General", "Texto", "Presentación", and "Subrayado". The "Subrayado" tab is active. On the left, there are buttons for "SELECCIÓN" and "OPCIONES". In the center, there is a large empty text box. To the right, there is a field for "Actividad nº:" with the value "1" and navigation arrows. Below this is a dropdown menu for "Selección asignada" with the value "(Ninguna)". There are five text input fields for feedback messages, each with a label: "Mensaje de acierto del subrayado", "Mensaje de error en la selección", "Mensaje de primer error de subrayado", "Mensaje de segundo error de subrayado", and "Mensaje de tercer error de subrayado". At the bottom, there are "Guardar" and "Borrar" buttons.

Figure 9. Teacher's applet. This section allows teachers to edit underlining exercises.

2.3 Related work

Some other work has been done before to encourage reader comprehension. Jack Mostow (Carnegie Mellon University) [Mostow-94] and others, have implemented a reading coach that listens the reader and detects mistakes to correct him. It is based on the idea that students must learn to read, before reading to learn. Spire & Estes [Spire-02] propose a system called WebQuests. Here, the student reads a text in order to solve a problem. This tool allows the reader to be involved in a construction of meaning. Another system called Accelerated Reader [AR-93] tests the students' comprehension about a previously read book and scores them. The points awarded are calculated using the number of correct answers and the difficulty of the text. Simic [Simic-93] has written a complete guide for computer-assisted reading instruction.

3. CONCLUSION

We have presented a web application to facilitate reading comprehension. It consists of three sections based on java applets dedicated to three different kinds of users. The edit tool, used by teachers, allows to create new "active readings". The experts' tool permits a new text to be included among the available readings. Any teacher in the country can thus create a text that after being validated by an expert, will become part of the available ones. This makes it possible for the list of texts to increase rapidly.

This tool is accessible via web, thus it can be very easily reached by the students or teachers. In addition updates can be easily activated. The increase in the rate of Internet accesses in Spain is obviously a great advantage for this application. The use of Java language makes it accessible for any kind of platform.

Future actions could be taken in the way of creating different levels of reading with special itineraries from some exercises to the others, allowing scores, etc. Also a speaker independent recognizer could be used to make it a voice guided applet, thus making it accessible for handicapped users.

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