The Reading Matrix © 2014
Volume 14, Number 2, September 2014

An In-house Prototype for the Implementation of Computer-based Extensive Reading in a Limited-resource School

Carlos A. Mayora
Universidad del Valle

Idami Nieves
Unidad Educativa Nacional José Gregorio Ponce Bello

Victor Ojeda
Universidad Pedagógica Experimental Libertador

ABSTRACT

A variety of computer-based models of Extensive Reading have emerged in the last decade. Different Information and Communication Technologies online usually support these models. However, such innovations are not feasible in contexts where the digital breach limits the access to Internet. The purpose of this paper is to report a project in which the authors developed an in-house software prototype to allow students from a limited resources high school in a developing country to do extensive reading in a computer without Internet connection. Special emphasis is placed on the pedagogical and cognitive aspect of software design. The process was based on the systemic quality approach to educational software design (Díaz-Anton et al., 2002, 2003). Implications for different educational contexts are drawn from the experience. In-house teacher-produced software may be a more adequate alternative for implementing extensive reading since the developers have more control on certain options and are not restricted by issues of Internet access.

INTRODUCTION

Many non-English-speaking countries have included English as part of their curricula in the secondary level (Middle and High school). In many of these curricula, the development of reading comprehension is included as one of the main goals in preparation to the EAP and ESP courses most students are likely to encounter in their college and university studies. Nevertheless, in many of these reading programs failure, rather than success, seems to be the norm (Day & Bamford, 1998; Grabe, 2009).

The situation is not different in Venezuela, where English has been part of the official curriculum for Middle and High school since the mid 1980's. Research shows that

the average Venezuelan high-school graduate is not capable of reading fluently texts in English after five years of formal instruction in the language (Gregson, 2006; López, 2008; Nieves, 2011). This holds true especially, yet not exclusively, in the public sector where material and economic resources are often limited.

Although the reasons for failure in reading instructions are numerous and diverse, researchers and specialists in the field often underscore the little exposure to texts and the few opportunities to read students in many English as a Foreign Language (EFL) contexts have. As a result, Extensive Reading (ER), an approach that emphasizes the reading of large amounts of readable and enjoyable texts, is now considered an innovation worth implementing in such contexts (Day & Bamford, 1998; Grabe, 2009; Krashen, 2003; Renandya, 2007).

In light of the situation described above, and considering the constrains of a specific Venezuelan public high school where one of the authors works as a teacher, we decided to design and pilot an in-house prototype for the implementation of computer-based extensive reading (CBER henceforth). The main objective of this article is not to advertise or promote our prototype, but to describe the design process in the hope that the experience might be of some use to teachers in a context similar to our own, or to those wishing to implement a different model of CBER. While computer aided or supported models of ER have been present in the literature for some time now (Arnold, 2009; Campbell, 2012; Cobb, 2005; Pino-Silva, 2009), some fail to provide a framework of reference or principles for design and implementation. We hope that this article contributes in that direction as well.

The article begins by presenting a justification of the project, explaining why an in-house prototype was the most viable alternative for our specific context. We then describe the instructional software design model that guided the project. From there, the different stages and steps of the model are used to structure and sequence the rest of the article while emphasizing those that have both pedagogical and educational relevance.

PROJECT JUSTIFICATION

At the dawn of Computer Assisted Language Learning (CALL), Biber (1992) predicted that mastering programming languages and software designing skills would become essential and elemental skills for language teachers in the future. That prediction was not fulfilled as the internet boomed. Today, teachers have access to a plethora of online environments that allow them to create lessons, activities, resources, and quizzes without having to use any specific programming language or computer specialized skills (Brandl 2005; Dudeney & Hockly, 2007). CALL is more associated with the use of web-based learning management systems than with the use of educational software. Despite the internet's ubiquitous nature, access to it is still limited in many parts of the world: computer facilities either do not connect or connection is too slow and irregular for internet-based applications to run efficiently. Where software is used as CALL, it is still industrially produced by editorials and educational technology providers. While commercially produced software has many advantages and strengths, there are two important limiting characteristics: software is often expensive and even inadequate to meet the specific characteristics and needs of a given group of learners in a concrete context (Derewianka, 2003). These facts give support to the premise that, despite the internet, in-house teacher-

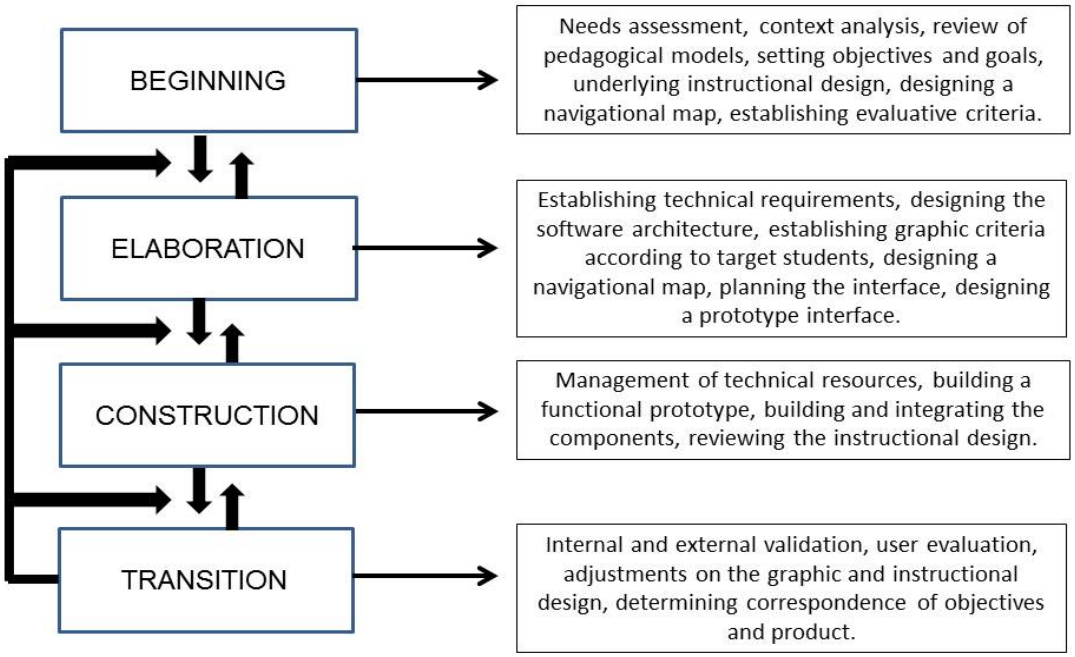
produced software may allow the use of computers without dependence on the internet, while, at the same time, meeting the specific conditions of the context and its audience.

Another reason that justifies the present project is the fact that our needs analysis and situation analysis revealed that a library scheme, the most common and popular paper-based ER model, would not be feasible in our context and that, furthermore, an off-line computer supported option would be more appropriate.

The Systemic Quality Approach to Educational Software Design

The systemic quality approach to educational software design or SQA (Díaz-Anton et al., 2002, 2003) is a method of designing educational and instructional software developed at Universidad Simón Bolívar in Venezuela. This model adapted a well-established software architecture development model (Kruchten's Rational Unified Process) to educational and instructional purposes. The SQA is a cyclical and iterative process composed of four main stages and a number of sub-processes for each stage. In turn, each stage can be seen as a milestone in which the process is evaluated and decisions are made. Each time a milestone is evaluated the process might continue, or return to the previous milestone depending on the results of the evaluation. While this is true for Kruchten's original model, Díaz-Anton et al. added a number of sub-processes that are essential in educational planning. Figure 1 shows the phases of the SQA and some of its sub-processes.

Figure 1. Overview of the SQA (adapted from Díaz-Anton et al. 2002, 2003)



As already stated, the process is iterative and cyclical in that, although its graphic representation is linear, the process itself is not. The transition stage occurs all along the process and the designers might be continually going back to adjustments in any of the stages. At a glance, the SQA looks very familiar for language teachers, since in many ways it resembles well-established models for course design in language teaching (Brown, 1995; Graves, 2001). Upon conducting the needs and situation analyses it was decided to adopt this model given the results obtained by the authors and the intuitive and familiar appeal it had for teachers.

The Beginning Stage: Situation (or Context) Analysis

The context for our project was the school Unidad Educativa Nacional José Gregorio Ponce Bello, a public school located in a low-resource neighborhood in Valencia in the state of Carabobo. As in most schools in Venezuela, students in middle and high school receive three academic hours of English instruction (45 minute each). By mandate of the Ministry of Education, students are not required to purchase commercial textbooks for English classes, and teachers have to design their own instructional materials without expecting to receive support from their school or school district. Class observations and interviews revealed that although the syllabus is notional-functional in orientation, (a) the dominant class methodology is grammar based; (b) classes are taught in Spanish; and (c) reading practice is almost non-existing. To meet the curricular objectives related to reading and interpreting texts in English (See Ministry of Education of Venezuela, 1991), most teachers assign students a text in English and have them translate it to Spanish. This is done as an outside the classroom activity.

Funded by the Ministry of Education and the Ministry of Science and Technology, the school has a computer lab without access to the internet though such connection was promised by the authorities when the lab was first installed six years ago. There are 25 computers with a hard-disc capacity of 160 GB and 1 GB of RAM memory. Space and furniture is appropriate and the room is air-conditioned. All computers have the peripheral hardware (mouse, keyboards, etc.) and USB ports as well as CD-ROM unit. Illumination in the lab is adequate for working on a computer and the overall physical conditions of the room are proper.

Our colleague, who works at the school, interviewed the school's principal regarding the possibility of starting an ER program. The principal showed a positive attitude toward such an initiative, yet she considered that a library scheme would not be possible because of the costs of acquiring a large collection of graded readers in English citing the school's space constrains as a reason.

As seen by this brief account of the situation analysis, neither the paper-based model of ER nor the internet supported one would be possible in our context. Therefore, we thought we could still take advantage of the computer facilities available to us by designing in-house software that could suit our contexts and students' needs. Considering the experience and skills we as a group had, this latter option seemed feasible.

Needs Analysis

We decided the prototype would be intended for use with the senior students in an initial stage. Our next step was to establish the reading competence of our target students.

This was essential because one of the principles of ER is that reading materials be within or just above a learner's actual competence (Day & Bamford, 1998). We decided to assess the students' vocabulary knowledge, reading speed in English, and reading comprehension since these are considered essential components of fluent reading and also because these have been found to benefit from ER interventions (Day & Bamford, 1998; Grabe, 2009; Horst, 2009; Nation, 2009). Additionally, we collected student demographic data and their average scores in English from their previous years of schooling. This information was provided to us by the school's evaluation and admission office.

To assess the students' vocabulary, we used an adaptation of the Vocabulary Knowledge Scale (Wesche & Paribakht, 1996) containing only the first 100 most frequent content words in English from West's General Service List (1953). We used a four point scale from 0 (I have never seen this word) to 3 (I definitely know this word). In case students chose 3 in the scale, they were instructed to write the translation of the word or an English synonym. For scoring purposes, words for which the translation or synonym was incorrect would be scored 1 (I have seen this word, but I am not sure of its meaning). To assess reading speed, students were given a 401-word-long text to read without checking the dictionary or asking meaning-based questions and were asked to record their starting time and finishing time. The text was taken from the online free distributed resources for teachers on the website of Pearson Education and, according to the series' editor, the text (available at http://www.pearsonlongman.com/ae/worldview/reading/WV1_CW_reading_U24.pdf) is appropriate for students at the A2 level of the common European Framework of Reference for Foreign Languages

Following the reading speed task, students were asked to read the text again and do a recall task, writing down all the ideas they could remember from the text (see Fontanini and Tomitch, 2009, on the use of recall tasks to assess reading comprehension). Finally, they were asked to self-assess their comprehension of the text in a Likert-type scale question (my comprehension of the text was 1= poor … 5= excellent) and rate the text in terms of difficulty (in my opinion, this text was 1= too easy … 5= extremely difficult). Both sets of questions were taken and adapted from Pino-Silva (1992) and all instruments and tasks were administered in two English class sessions within the regular class schedule.

Results from the needs analysis showed that the reading skills and vocabulary of the students were poor. Table 1 below shows a summary of the results.

Table 1. Results from the Needs Analysis

Component Assessed	Scale/Measure	Mean	Standard Deviation	Highest and Lowest Score
Vocabulary	0-300 points	74.5	39.6	14-216
Reading Speed	Words per minute	53.7	25.7	26.8-133.7
Reading Recall*	0-10 point (1 point each central idea recalled)	2.14	0.9	6-1
Self-assessment of Comprehension	1 (poor) -5 (excellent)	2.12	0.7	---
Perceived Text Difficulty	1 (too easy) -5 (extremely difficult)	3.14	0.3	----

N = 155 students
*N = 108

Table 1 clearly shows that our target students had limited knowledge of some of the most frequent words in English, were slow readers, and had difficulties understanding a short text in English. Indeed, only 108 students completed the recall task while the remaining 47 simply did not do it even when they were given the option of writing in their native language. As for the self-assessment, one would have expected a lower mean in light of the actual results. This, however, might actually indicate students' lack of metacognitive awareness, who were not aware of their reading difficulties. Another possibility is that students might have deliberately overrated their own comprehension believing this question might have had a positive or negative impact on the final result (even when they were explicitly told this was not the case). Results on perceived difficulty of the text might be interpreted in a similar way. Although these results deserve more detailed commentary, we will refrain from doing so because doing so would take us beyond the paper's present scope. Given the positive results in those areas of reading in a foreign language, it is important to note that the results reported here do suggest that ER would be appropriate in our school context.

REVIEW OF PEDAGOGICAL MODELS

The pedagogical model that guided the design of our prototype was of course ER. In spite of ER's popularity in different contexts, the authors acknowledge that different definitions and practices exist within the approach. For instance, some authors and practitioners include graded readers or simplified books in their definitions of ER, which seem to suggest that ER can only be done with these materials. Such a definition would be impractical for us since graded readers could not be integrated into our prototype. Another aspect, which often differs across definitions of ER, is the use (or not) of follow-up after reading tasks. Our first step therefore was to establish a working definition that would underlie our instructional design.

By reviewing some of the most important publications in the ER literature (Day & Bamford, 1998, 2002; Grabe, 2009; Horst, 2009; Renandya & Jacobs, 2002; Krashen, 2003; Pino-Silva, 1992; Renandya, 2007), we produced a working definition of ER that would consists of the five pillars below:

1. ***Quantity***: Students should read large amounts of target language texts.
2. ***Comprehensibility***: Texts (books, short articles, etc.) should be easy to read for the students (or just above their current reading and linguistic level).
3. ***Learner-centeredness***: Students should read at their own pace, texts of their own choice with no intervention from the teacher other than giving guidance or help when and if students need it.
4. ***Meaning-orientation***: Students read for meaning, not form, and texts should be pre-selected on the basis of relevance, interest and enjoyment for the students, not on the linguistic forms they contain.
5. ***Accountability***: Students are required some kind of accountability for what they read, mostly in the form of comprehension-oriented, non-intrusive tasks such as filling-in "reading cards," writing or telling an appreciation, the main idea or a summary in their native language of the material read.

This definition enabled us to establish the main pedagogical guidelines for the instructional design, which, in turn, would lead the functional and usability aspects of the software. It is important to highlight that this definition was essential to select the guiding procedure for the software. Pino-Silva's (1992, 2009) scheme seemed the most appropriate here.

In this author's procedural description of ER, the teacher brings to the classroom a collection of 100 one-page long articles from newspapers and magazines on the major of the students (the procedure was originally designed for ESP students at the college level). Each student would come to the teacher's desk to select a text from the collection, read it, and complete the ER worksheet—a one-page set of activities in which students record their reading times, experience reading the text, and write in their own words the main idea of the text in English or Spanish. Once a student completes a text and a worksheet, he or she selects another text and the process starts over as many times as possible during a one hour class. In a special grid the students record the texts they have selected. In this way, students' views on the text selected and the report from their experience becomes intake for the teacher to make decisions on which text to keep and which to exclude from the list. As the term progresses, students are invited to bring in their own texts, adding flexibility and variety to the initial teacher pre-selection to include articles of the students' interest. Years later, the procedure was adapted to include Online extensive reading using a Yahoo Group (Pino-Silva, 2009) and allowing students to read outside class and keep a more efficient computer-based record of their progress. It must be noted that this ER class procedure was consistent with our working definition and seemed more compatible with computer-based applications.

Instructional Design

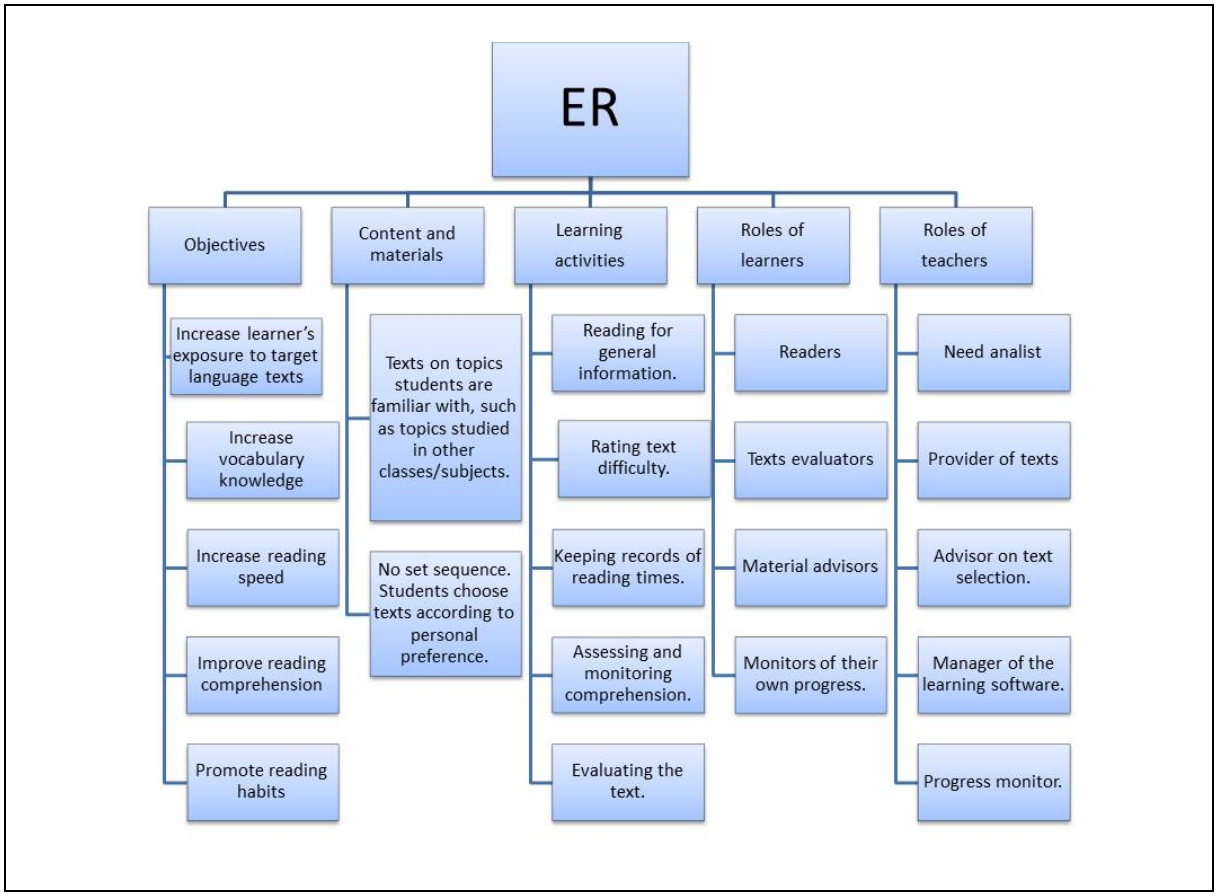
Design is the level at which the objectives, content and sequence, learning activities, and roles of learners and teachers are specified (Richards & Rodgers, 2001). For our purposes, the instructional design would underlie the choices made available for learners and teachers in the prototype for CBER. Our design would derive from our working definition of ER and would take into account the shortcomings the students identified in the needs analysis process. Figure 2 shows the design graphically.

With a clear specification of the design elements, the planning of the software could now start. A last consideration to be taken involved the text selection, which we did not include in Figure 2 for reasons of space and will be elaborated on in the following section.

Materials Selection

According to our working definition of ER, texts needed to be readable and comprehensible for our target learners. Our needs analysis revealed that the students' vocabulary and reading level was considerably low. Under other circumstances, graded readers would have been the most appropriate choice, but the school budget could not afford that option. In response to these limitations, and considering Pino-Silva's (2009) suggestion for using short interesting articles, the following criteria were adopted for text selection: length, intended audience, topic familiarity, and percentage of high-frequency words.

Figure 2. Extensive Reading as Design



The length of text criterion was set in between 500 and 600 words. Initially, a smaller range of words was considered but it turned out to be unrealistic. Some texts that were longer could be divided and presented to learners as three different texts. Another attempt to find "readable texts" was to consider the intended audience of the text. Thus, we decided to select texts that were intended for children and teenagers. In the ER literature, some authors advocate for the use of children's and teenagers' literature as an alternative to graded or simplified readers (Krashen, 2003). Additionally, using online free tools we estimated the readability of the each selected text using the Flesch-Kincaid readability index. Although there are valid arguments that establish the inadequacy of native-readers readability scales (see, for example, Shokrpour, 2005) this index was considered not as the main parameter but for referential purposes.

Familiarity of the topic is considered to have an important incidence in comprehension of the input (Ellis, 2003; Pulido, 2009). However, individual differences in knowledge of the world and even personal interests may deem this a difficult variable to establish a priori. Two strategies in text selection were adapted to attempt to warrant some homogeneity in familiarity with the topics of the reading. First, since 2007 a project-based curriculum is being piloted in Venezuela. This curriculum proposes negotiation and a cross-subject implementation of projects. This means that when a topic for a project is agreed upon, teachers of all subjects should adapt their contents and teaching to the same project. If, for instance, the project is ecology and conservation of natural resources, this would be

the thematic axis for all subjects. Therefore, selecting the topic of the project as the topic of the texts would imply that students would be reading texts in English about topics they are studying in Spanish in science, literature, and all other subjects. Another advantage of this strategy is that, given that students agreed upon and negotiated this topic with the teachers of other subjects, one could assume a priori interest about it.

The second strategy involved taking a "narrow reading" approach. Narrow reading implies that students read many texts about one theme. The more texts a student reads, the more familiar he or she becomes with the vocabulary, the content, and the discursive convention of the genre (Hwang & Nation, 1989; Krashen, 2003; Schmitt & Carter, 2000). By providing many texts in a single topic, familiarity of topic could be increased gradually.

For the last criteria, percentage of high frequency words, we used Cobb's vocab profiler on line (http://www.lextutor.ca/vp/eng/) to establish that a high percentage of the words in the texts were within the first 1000 most frequent words in English. A percentage of 70% or higher was established as a discrimination cutting point. In some cases, we also took into account the percentage of English-Spanish cognates as a referent for texts with percentage slightly below the cutting point.

For the purpose of piloting the prototype, our first selection included sixty texts that matched all of the above criteria. The topic was ecology and conservation of natural resources. We requested permission from the authors and copyright holders to use the texts, but not all have replied thus far. For piloting purposes, all texts were included with either of the two phrases at the end of the text according to the case.

> From [Author(s)] (year or n/d). ***Text title***. Retrieved from [text URL] used with permission.
>
> From [Author(s)] (year or n/d). ***Text title***. Retrieved from [text URL]. This text is used here for non-commercial educational purposes only.

Apart from the criteria described above, it was decided that since texts were going to be presented to the students in electronic format, it was appropriate to take advantage of this fact and add some features that could make the texts even more comprehensible. Such presentation features will be explained in the elaboration stage.

Elaboration and Construction Stage

In this section we report the stages of elaboration and construction of the prototype. Although these are two different stages, reporting them together is more practical. First, our emphasis is on the educational elements rather than the technical. Second, because the very nature of the SQA model, when implemented, the distinction between the stages is hard to maintain.

The beginning stage of the SQA involves the pedagogic and instructional decisions whereas the elaboration stage involves the technical and functional decisions. The starting point was to establish a match between our working definition of ER and computational elements and functions (which here are presented as computer features for simplicity) to warrant the pedagogical foundation of the computer application. This match is shown in Table 2.

Next, a similar match was needed between the elements of the instructional design and the computer features, especially at the levels of activities and teacher-students' roles. These matches guided the process of decision making at the level of navigation and usability of the software. This also pointed that the prototype needed a dual interface, one for the students and one for the teacher. Both interfaces had to be consistent, in functional terms, with our principled view of ER.

Table 2. Matching the Pillars of ER with Computational Features

ER pillars	Computer Features
Quantity	The prototype needs a large database of texts for students to choose from.
Comprehensibility	Texts selection criteria (discussed above) in an attempt to establish comprehensibility. Graphic presentation of texts to make them more readable.
Learner-centeredness	Freedom to choose texts from the database in any order and without imposition. Freedom to abandon a text once it started. Freedom to return to a text if necessary. Freedom to save progress and return later.
Meaning-orientation	Emphasis on general information of the text. No structural selection or sequencing of texts. Non-intrusive meaning oriented follow-up task.
Accountability	A database for storing information on student's text selection and work done. Access to the database for teachers and students.

Graphic Considerations

The functional and operative structure of the prototype defined, the next step was to set designing principles at the graphic level of the interface. This step is of great importance since the graphic elements of an interface have an impact on users' interaction with it (Plass, 1998; Tidwell, 2005). Review of the extensive literature on material and electronic material design (Derewianka, 2003; Dudeney & Hockly, 2007; Plass, 1998; Tidwell, 2005; Tseng, 2010) was consulted to establish essential parameters for the most appropriate graphic design:

- Simplicity in lay-out, color selection.
- Uniformity in the placing of graphic elements.
- Uniformity in text features (size, color, fonts) selection and use.
- Readability.

Poor choices in any of these parameters could result in eye strain, distraction from task, and exhaustion of attentional resources and overall demotivation. A light blue color was selected for the frame and used consistently. Texts for reading were displayed in black color over a white background, using blue only for hyperlinks. Navigation buttons were always located in the bottom of the frame.

The selected format for presenting the texts in the interface was html. This format was selected for two reasons: (1) to provide students with the feeling of being reading a text online, under the assumption this could provide a sense of authenticity to the experience, and (2) an html format permits the inclusion of hyperlinks within the text. Although the texts were taken from the Internet, these were downloaded as text only, then formatted in a

word processor, and finally converted to html. This was done in order to ensure uniformity in the graphic display of the texts. Another way to enhance comprehensibility is to add images that can help support the text's meaning. For this reason, the original images in the text were downloaded and added to the text (using only one image per text). The images were selected based on their consistency with the text information. In some cases, the original images in the text were not truly consistent with the text's meaning, thus having to replace some images with others that could better serve this purpose. We downloaded only those images that were royalty free or public on the Internet under a creative commons license.

Another intervention to the original texts was removing the original hyperlinks in them. The words that belonged to lists of lower frequency (beyond the 2000 word list or from the academic list) were added at the end of the text with their Spanish equivalent as a glossary. In the text presented to the students, these low frequency words were hyperlinked to the entry in the glossary. This was another strategy in an effort to provide text comprehensibility. The use of electronic glosses has also been reported to aid reading comprehension (Derewianka, 2003; Lomicka, 1998).

Following the selection and integration of key pedagogical, technical, and graphic elements, these elements were then built into the software. A pre-functional prototype had been assembled, and each choice was tried in this prototype and evaluated by the three authors. We purchased and used an authoring system and lines of programming code were written in accordance with the planning at the beginning and elaboration stages. We would especially like to credit here the contributions made by Victor Ojeda, our colleague and co-author, a self-taught computer programmer, who carried most of the technical labor in this stage.

Transition or Evaluation

The transition stage runs parallel to the other three stages discused heretofore. It involves a different form of evaluating and assessing the milestones of each stage. For that purpose, we designed different checklists to evaluate different aspects of the prototype. Teachers from our target context, as well as colleagues from the language departments of Universidad Simon Bolívar and Universidad Pedagógica Experimental Libertador acted as external evaluators of the texts selected, the different instruments used and ultimately, tested the different versions of the interface. Comments and suggestions were incorporated. Part of the transition stage also involves installing the software in different computers and operation systems for testing its operability. Errors were frequent which sent the prototype back to programming and refining.

Once the prototype met the standards of the transition stage, it was deemed ready to be piloted with the end users—the students. As this manuscript was being prepared, two sections of senior high school students at the Unidad Educativa Nacional José Gregorio Ponce Bello were attending the school computer lab once a week and worked on CBER. We are implementing a quasi experimental research design in which we used the measures of the needs analysis as pre-tests, have the students work on the prototype, and administer the same procedures as a post-test. In parallel, we have been collecting data on students and teachers' perceptions on the prototype through individual structure interviews and questionnaires. Once we have finished collecting the relevant data, and such data is processed, the results will be presented in a future publication.

THE PROTOTYPE

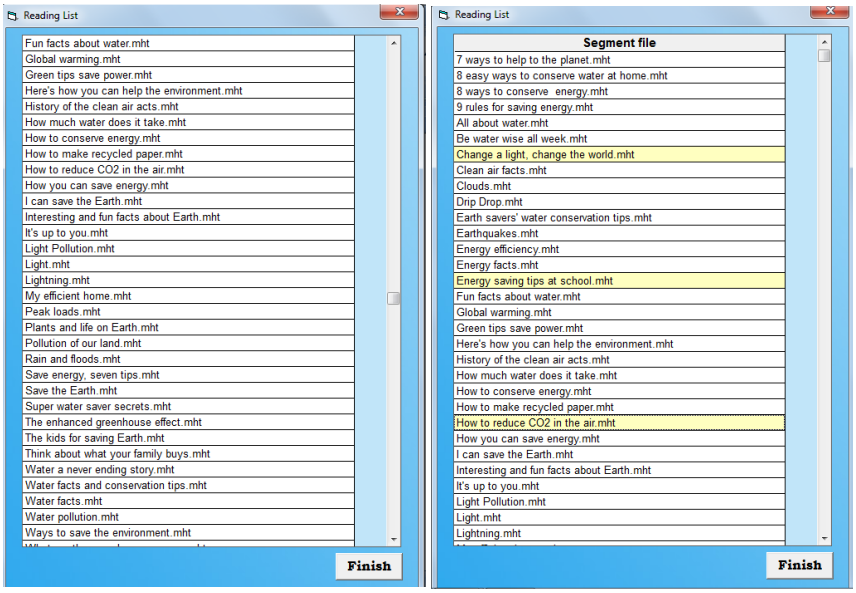
As stated in the introduction, our purpose is not to advertise or promote a commercial product. The prototype is to be used at the school for non-commercial purposes. Nevertheless, this article cannot be complete without a description of how the principles and the process described here materialized in the end product.

The students' interface consists of a number of frames most of them with a central panel. For clarity purposes we will refer to the frame and panel combination as screens. The first is a *starting screen* welcoming the students. Here, students register and then log-in to the software. The registration creates an entry with the students' name into the software database which allows the storing and record-keeping of students' work. After logging in, the students are taken to the *instructions* screen, with explanations given in English and Spanish about the rationale for ER and the session procedure. Students have access to two buttons, one permitting exiting the prototype and another enabling the continuation.

The next screen is the *text list* screen, which, listed alphabetically, contains all the available texts. To select a text, students would double-click on it. This screen also offers students the option to exit the software.

The *text* screen shows the text the students are to read in the central panel. A hidden timer was programmed into this screen to record the time the text is open, under the assumption this would be indicative of the time spent by the student reading the text. The bottom portion of the frame offers students three button alternatives: "back to list" (allowing students to select a different text at any time), "finish later" (in case the session time runs out while students are still reading) and "go to worksheet" (to proceed to the next step of the process).

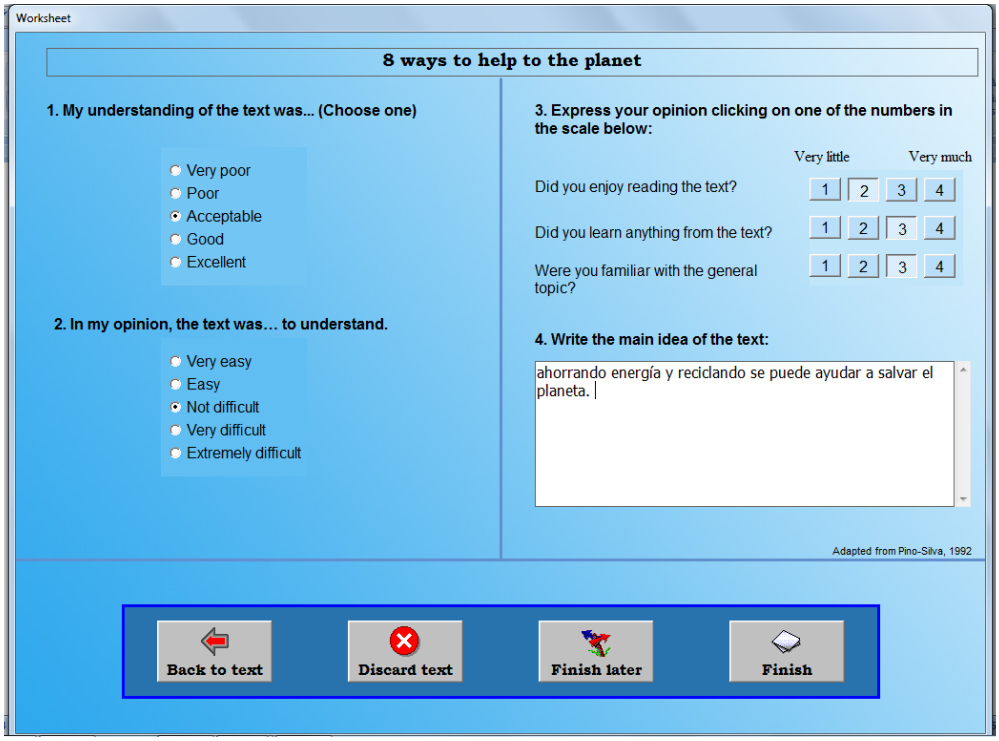
Figure 3. View of the Text List Before and After Students Choose a Text



In the *worksheet* screen, students find a form resembling the questions and structure of Pino-Silva's (2009) paper-based ER worksheet. As in the original worksheet, students rate their comprehension of the text, their perception on how difficult it was, enjoyment, if

anything was learned from the reading, and familiarity. Finally, students are required to write the main idea of the text, having been informed in the initial instructions they could use Spanish. In the bottom portion of the frame, students have four options: "back to text" (which allows students to go back to the "text" screen and re-read the text), "discard text" (for those students who at the last moment decide not to submit a worksheet for the selected text), and "finish later" (in case the session time runs out while students are still working: this option allows student to save and continue exactly from the worksheet the following session or "finish" when the worksheet has been completed).

Figure 4. View of the Worksheet Screen



The last option, "finish" takes the student back to the list of texts, where he or she can make another text selection. This time around, the text read, for which the worksheet has been completed, will be highlighted in yellow and the student will not be able to select or access this text again.

The form used in the interface of the worksheet screen was linked to a Microsoft access database which would keep records of all texts read by the students, readability, number of words of the text, time spent on the text, and the answers to the questions in the worksheet. With simple computers skills, the information from this database could be processed for grading and research purposes. Questions such as "how many texts does a student read in a session? How fast/slow are students reading? Which texts do most students enjoy?", "Which texts are the most enjoyable?" and the like, can be easily answered by checking this information. Such answers may not only inform teachers and administrators on students' progress in different aspects of reading, but also provide data on text selection from different perspectives such as perceived difficulty or enjoyment for students.

In contrast to the above, the teacher's interface is much simpler. The teacher logs in with a password set in advance. This activates a screen showing the summary of the database. This enables the teacher to have a visual and printable report of the work done in a session or a month. However, for more detailed analyses teachers would need to access the database through Microsoft Access and not on the interface.

IMPLICATIONS AND CONCLUSIONS

We present next the implications derived from our experience to date. Foreign language educators interested in ER or CBER may want to take advantage of our proposal presented in Table 3, wherein we propose different classes of potential contexts for ER.

Table 3. Potential ER Contexts and Their Characteristics

Case (School or University)	Access to Physical Resources and Materials	Access to Computer Facilities	Access to Electronic (Online) Materials Resources
1	X	X	X
2	X		X
3	X		
4		X	X
5		X	

In Table 3, Case 1 refers to institutions (schools or universities) in which there is access to physical resources and materials, computer facilities or equipment, and the internet. This would be the ideal context. Case 2 refers to institutions that have access to physical resources and materials but where computer facilities and equipment are restricted or not available for the students. It might seem at odds that such a context has access to the internet, but this is possible due to the spread of mobile technologies to which students might have access. In Case 3, the institution would have access to physical resources and materials such a collection of books, but no computer equipment or internet access. Case 4 would refer to institutions where computer labs and internet connections are available, but budget for other physical and material resources is limited. Finally, Case 5 refers to an institution which has a few computers but no internet access; access to physical resources or materials is nonexistent.

The context of the present study best fits the description of Case 5. These are the contexts for which the experience described here might have the more direct implications. In-house teacher-produced software might provide an answer that would be defensible from both a resources point of view as well as a pedagogical one, as long as the design and implementation framework is sound with theoretical models and instructional principles. The application created does not need to be technologically complex to be effective, and indeed, depending on its objectives, the simpler might be sometimes the better. Teachers in such contexts should bear in mind that they need not develop advanced computer programming skills. Interdisciplinary collaboration with teachers and students from computer programming is herein proposed as a viable path for achieving the said objectives in this line.

For Case 4, some of the applications developed to support ER online such as those suggested in Cobb (2005) and Campbell (2012) might be the more convenient. However, in

similar contexts some educators have preferred to resource to their own web-based designs (Arnold, 2009; Pino-Silva, 2009; Rogers, 2012). In the latter situation, teachers might consider applying and adapting the SQA as a guiding model. This model proved to be very effective for our purposes and its method might easily adapt to online applications as well.

Contexts surrounding Cases 1-3 might decide to select a more traditional paper-based reading materials ER model. Here, it is important to point out that we do not disagree with the use of graded readers, but they simply were not the most appropriate option for our particular circumstances. Nevertheless, if teachers in institutions that match Cases 1-3 are interested in exploring the use of reading materials different from graded readers, some of the procedures and criteria described in the present paper (such as needs analysis or the criteria for the selection of texts) could bear interesting implications.

Models and options for implementing ER with support of computer applications have existed for some time now and are becoming more common. In contexts where ER could be a plausible and beneficial innovation for learners of a foreign language but a library of graded readers is not an option (either because of limited resources or students' needs), some of the processes herein described might be applicable and productive. Teachers and institutions interested in adopting computer-based or computer-aided ER could take the experience described here and the SQA as a framework for the design and implementation process even when a different authoring tool or a web-based application be used. Understanding the context, the needs and wants of students, the alignment of ER with the curriculum, and the impact of graphic aspects on reading and cognitive resources are all important criteria for text selection and, even more importantly, are viable considerations to make for each and every context.

Carlos A. Mayora *is a doctoral student at the Social Science and Humanities Doctorate Program at Universidad Simón Bolívar (Caracas, Venezuela). He holds a B.A. in TESOL from Universidad Pedagógica Experimental Libertador (Caracas, 2000) and a M.A. in Applied Linguistics from Universidad Simón Bolívar (Caracas, 2008). He taught both graduate (language course design) and undergraduate courses (ESP) at Universidad Simón Bolívar (Caracas). He is currently a lecturer at Universidad del Valle, Cali, Colombia*

Email: carlos.mayora@correounivalle.edu.co

Idami Nieves *holds a B.A. in TESOL from Universidad Pedagógica Experimental Libertador (Maracay, 2004) and an advanced graduate diploma in TESOL from Universidad Simón Bolívar (Caracas, 2011). She teaches English as a Foreign Language at elementary and high school.*

Email: idamisumoza@yahoo.com

Victor Ojeda *holds a B.A. in TESOL from Universidad Pedagógica Experimental Libertador (Caracas, 2003) and is a student at the M.A. in English as a Foreign Language from Universidad Central de Venezuela. He works at the Modern Language Department in from Universidad Pedagógica Experimental Libertador.*

Email: ojedacorro@yahoo.com

REFERENCES

Arnold, N. (2009). Online extensive reading for advance foreign language learners: An evaluation study. *Foreign Language Annals*, *42*(2), 340-362.

Biber, D. (1992). Applied linguistics and computer applications. In W. Grabe & R. B. Kaplan (Eds.), *Introduction to applied linguistics* (pp. 257-278). Reading, MA: Addison-Wesley Publishing Company.

Brandl, K. (2005). Are you ready to Moodle? *Language Learning & Technology*, *9*(2), 16-23. Retrieved December 12, 2009, from http://llt.msu.edu/vol9num2/review1/

Brown, J. D. (1995). *The elements of language curriculum: A systematic approach to program development*. Boston, MA: Heinle & Heinle Publishers.

Campbell, A. P. (2012). Implementing the MoodleReader module. *Extensive Reading World Congress Proceedings*, 1, 101-104.

Cobb, T. (2005). The case for computer-assisted extensive reading. *Contact*, *31*(2), pp. 55-85.

Day, R., & Bamford, J. (1998). *Extensive reading in the second language classroom*. Cambridge: Cambridge University Press.

Day, R., & Bamford, J. (2002). Top ten principles for teaching extensive reading. *Reading in a Foreign Language*, *14*(2), 136-141. Retrieved May 20, 2005, from http://www.nflrc.hawaii.edu/rfl/October2002/discussion/prowse.pdf.

Derewianka, B. (2003). Developing electronic materials for language teaching. In B. Tomlinson (Ed.), *Developing materials for language teaching* (pp. 199-220). London: Continuum.

Díaz-Anton, M., Pérez, M, Grimán, A., & Mendoza, L. (2002). Instrumento de evaluación de software educativo bajo un enfoque sistémico. Paper presented at the 6th Congreso Iberoamericano de informática educativa y 7mo. taller internacional de software educativo. Vigo 2002. Spain. Retrieved December 12, 2009, from http://www.lisi.usb.ve/publicaciones\mosca.pdf

Díaz-Anton, M., Pérez, M., Grimán, A., & Mendoza, L. (2003) *Propuesta de una Metodología de Desarrollo de Software Educativo bajo un Enfoque de Calidad Sistémica*. Paper presented at the IV Congreso de Multimedia Educativo: El aprendizaje en entornos virtuales. Barcelona, Spain.

Dudeney, G., & Hockly, N. (2007). *How to teach English with technology*. Edinburg: Pearson Education Limited.

Ellis, R. (2003). *Task-based language learning and teaching*. Oxford: Oxford University Press.

Fontanini, I., & Tomitch, L. M. (2009). Working memory capacity and L2 university students' comprehension of linear texts and hypertexts. *International Journal of English Studies, 9*(2), 1-18.

Grabe, W. (2009). *Reading in a second language. Moving from theory to practice*. Cambridge: Cambridge University Press.

Graves, K. (2001). A framework of course development processes. In D. R. Hall & A. Hewings (Eds.), *Innovation in English language teaching: A reader* (pp. 178-196). London: Routledge.

Gregson, M. (2006) English Next: ¿el fin del inglés como idioma extranjero? *Núcleo*, *18*(23), 227-232.

Horst, M. (2009). Developing definitional vocabulary knowledge and lexical access speed through extensive reading. In Z. Han & N. J. Anderson (Eds.), *Second language reading research and instruction: Crossing the boundaries* (pp. 40-63). Ann Arbor, MI: University of Michigan Press.

Hwang, K., & Nation, I. S. P. (1989). Reducing the vocabulary load and encouraging vocabulary learning through reading newspapers. *Reading in a Foreign Language*, *6*(1), 323–335.

Krashen, S.D. (2003). *Explorations in language acquisition and use.* Portsmouth, NH: Heinemann.

Lomicka, L. (1998). To gloss or not to gloss: An investigation of reading comprehension online. *Language Learning & Technology*, *1*(2),41-50. Retrieved January, 10, 2010 from http://llt.msu.edu/vol1num2/pdf/article2.pdf

López, R. (2008, November). *La enseñanza del inglés en Venezuela*. Paper presented at Congreso de Investigación en Educación UPEL 2008. Innovaciones en Educación: Retos y Acciones. Caracas, Venezuela.

Ministerio de Educación. (1991). *Programa de estudio de educación media diversificada y profesional*. Caracas: División de Currículo.

Nation, P. (2009). Reading faster. *International Journal of English Studies*, *9*(2), 131-144.

Nieves, I. (2011) Prototipo de software para la lectura extensiva en inglés como lengua extranjera en educación media. Unpublished thesis manuscript. Universidad Simón Bolívar, Sartenejas.

Pino-Silva, J. (1992). Extensive reading: No pain, no gain? *English Teaching Forum, 30*(2), 48- 49.

Pino-Silva, J. (2009). Extensive reading through the Internet: Is it worth the while? *International Journal of English Studies, 9*(2), 81-96.

Plass, J. (1998). Design and evaluation of the user interface of foreign language multimedia software: A cognitive approach. *Language Learning & Technology*, *2*(1), 40-53. Retrieved January, 10, 2010 from http://llt.msu.edu/vol2num1/pdf/article2.pdf

Pulido, D. (2009).Vocabulary processing and acquisition through reading: Evidence for the rich getting richer. In Z. Han & N. J. Anderson (Eds.), *Second language reading research and instruction: Crossing the boundaries* (pp. 65-82). Ann Arbor, MI: University of Michigan Press.

Renandya, W. A. (2007). The power of extensive reading. *RELC Journal*, *38*(2), 133-149.

Renandya, W. A., & Jacobs, G. (2002). Extensive reading: Why aren't we all doing it? In J. Richards & W. A. Renandya (Eds.), *Methodology in language teaching. An anthology of current practice* (pp. 295-302). Cambridge: Cambridge University Press.

Richards, J. C., & Rodgers, T. (2001). *Approaches and methods in language teaching* (2nd ed.). Cambridge: Cambridge University Press.

Rogers, I. (2012). *Extensive reading through guided web-based book clubs*. Paper presented at 46 IATEFL Annual International Conference and Book Exhibit. Glasgow, UK.

Schmitt, N., & Carter, R. (2000). The lexical advantages of narrow reading for second language learners. *TESOL Journal*, *9*(1), 4-9.

Shokrpour, N. (2005). Comparison of three methods of assessing difficulty. In P. Robertson & J. Jung (Eds.), *The Asian EFL Journal Quarterly: Professional Teaching Articles Collection 2005* (pp. 159-167). Tokyo: Asian EFL Journal Press.

Tidwell, J. (2005). *Designing interfaces*. New York, NY: O'Reilly.
Tseng, M. (2010). Factors that influence online reading: An investigation into EFL students' perceptions. T*he Reading Matrix*, *10*(1), 96-105. Retrieved December 20, 2010, from http://www.readingmatrix.com/articles/april_2010/tseng.pdf
Wesche, M., & Paribakht, T. S. (1996). Assessing second language vocabulary knowledge: Depth versus breadth. *Canadian Modern Language Review*, *53,* 13-40.
West, M. (1953). *A general service list of English words*. London: Longman, Green & Co.