ON LINE STRATEGIC READING COMPREHENSION COURSE FOR UNIVERSITY STUDENTS

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ABSTRACT

Most universities in Mexico require that students pass requisite examinations in reading comprehension to get their bachelor's degree. Demand for preparation courses in reading comprehension in English is high, so the need to create a reading comprehension course on line was detected. The course design was based on expert readers' performance identified by thinking aloud protocols. This data was organized using a cognitive task analysis that allowed identification of: the evaluation context complexity, type of knowledge to be used and complexity of processes involved during performance. From this information, an instructional design was produced. The materials were built after expert modeling and include 5 parts: a complete description of the strategy to be learned through definitions, explanations and examples, scaffolding using concept maps and organizers, a guided exercise to visualize the process involved, an exercise to practice the strategy learned and a quiz to evaluate learning. The aim of this research was to establish the effectiveness of this on-line strategic reading comprehension course in English. Examples of units and course results will be shown. Implications about technical inconveniences and lack of skills on computer operation that promotes student desertion will be discussed.

INTRODUCTION

Due to the demands of a global World, the ability to understand and interpret information, both in the mother tongue and in other languages -especially in English- has become a main concern, as most academic information necessary for tertiary education is written in English. According to Anderson (1999) reading is an essential skill for students learning English as a foreign language; as the development of good reading abilities will greatly help them progress in the development of their academic areas.

For that reason, most universities in Mexico, both public and private-, request their students to pass reading comprehension exams in foreign languages, in order to obtain their bachelor's degree.

There is plenty of information on reading comprehension in foreign languages related to operational descriptions that promote efficient understanding; this information must be integrated and organized in order to generate interventions to improve readers capacity to understand.

THEORETICAL FRAMEWORK

Reading comprehension can be conceived as the understanding of a text by a reader, it can also be defined as: the understanding of words, phrases, sentences and paragraphs contained in the propositions of a text. Yang (2002) points out that cognitive levels of understanding can be measured from the description of these propositions, because understanding comes at different levels, thus, while a person understands information at a lexical level another does it at syntactic level.

No doubt, reading comprehension is a complex ability, composed of at least three elements: the reader, the text and the context. During the reading process these elements interact and are inseparable.

The reader brings to the act of reading his or her cognitive capabilities (attention, memory, critical analytic ability, inferencing, visualization); motivation (a purpose for reading, interest in the content, self-efficacy as a reader); knowledge (vocabulary and topic knowledge, linguistic and discourse knowledge, knowledge of comprehension strategies); and experiences (Snow, 2002).

While reading, the reader constructs various representations of the text that are important for comprehension. Those representations include the *surface code* (the exact wording of the text), the *text base* (idea units representing the meaning of the text), and the *mental models* (the way in which information is processed for meaning) that are embedded in the text. Electronic text presents particular challenges to comprehension (e.g., dealing with the non-linear nature of hypertext), but it also offers the potential to support comprehension by providing hyperlinks to definitions of difficult words or other supplementary material (Snow, 2002).

When one thinks of the context in which reading is taught, the first thing that comes to mind is the classroom. But the learning process for reading takes place within a context that extends far beyond the classroom. In fact, differences among readers can be traced to some extent to the varying socio-cultural environments in which people live and learn to read. Learning and literacy are viewed partly as cultural and historical activities, not just because they are acquired through social interactions but also because they represent how a specific cultural group or discourse community interprets the world and transmits information.

A way to encourage an appropriate use of the various strategies – both for efficient comprehension of a text and for the application of this information to different tasks, is through expert performance modeling, that explains the steps that lead to the understanding of information. This modeling demonstrates the processes that describe the critical route experts follow to accomplish a given task (Ericsson & Lehmann, 1996, Richman, Gobet, Staszewski &Simon, 1996, Dufresne, Leonard & Gerace,1995). Experts have specialized schemata that allow them to recognize patterns and make representations of the problem they face.Experts' processes are automatic, and therefore, they do not require conscious attention, nor they consume time, they immediately recognize the representation of the problem that will lead to the solution.

Thinking aloud protocols indicate that experts solve in a single step many of the heuristic searches that subtasks require (Dufresne, Leonard y Gerace, 1995). This speed is attributed to the conceptual knowledge that is stored in form of clusters, which obviates the need of extensive heuristic searches. Schoenfeld & Herrmann (1982) observed that experts privileged the analysis of a problem, to understand it and plan its solution; in addition, they reflected continuously about the array of the solution. Moreover, they found that expert programmers spend much more effort and time in metacognitive actions, like planning the problem solution, before codifying a program.

Cano and Justicia (1996) explored academic factors (high and low achievement) and learning strategies and styles in college students during initial and final courses in the University of Granada. They found that expert students showed high achievement goal orientation used deep processing strategies and fact memory. Expert readers plan their reading and predict results; they monitor their performance and are able to detect inconsistencies while reading, they usually reread or remember these inconsistencies (Yang, 2002).

So far, thinking aloud protocols have been the means to determine the type of tasks that organize expert performance. This procedure requires complex research that takes several

years to be accomplished. Such research is already available on reading in English as a foreign language where the tasks needed to read efficiently have been established.

Feng & Mokhtari (1998) carried out a study using thinking aloud protocols, where they asked Chinese students to make comments while reading texts in English between 150 to 200 words. They found that efficient readers use strategies while reading difficult texts, whereas bad readers are not conscious of how and when to use strategies. good readers are more flexible in the use of strategies and they adapt them to the type of text and reading intention. the use of a reading strategy depends on the type of text they read. It is essential to note that strategies must be learned in formal instruction, since they are not acquired independently. Palincsar & Brown (1984) made an analysis based on studies about human expertise, where they identified four strategies: summarize, question, clarify and predict.

According to these researchers, a reader who summarizes and questions information in a text, activates his previous knowledge, integrates read information, pays attention to main ideas, makes a critical appraisal and evaluates the consistency of the information. He also makes predictions, confirms his inferences and activates his previous knowledge, which in the end will lead to the construction of meaning. Graves & Frederiksen (1991) organized the representation of the speech structure in three aspects: the linguistic, the propositional and the conceptual one.

In this study, the findings of thinking aloud protocols for reading comprehension were organized by means of a Cognitive task analysis. (CTA) has been used for instructional design in various domains; such as aviation (see Redding 1989, 1992); mathematics (see Resnick, 1983); computer networks (see Mullins y Treu,1993) cognitive simulations (see Roth, Woods, & Pople, 1992). cognitive task analysis identifies three gradients: evaluation context (if the information to evaluate must be remembered or recognized); complexity of knowledge (factual, conceptual, procedural) and complexity of processes involved in performance (discrimination, generalization, categorization, structuring, problem solving, among others.

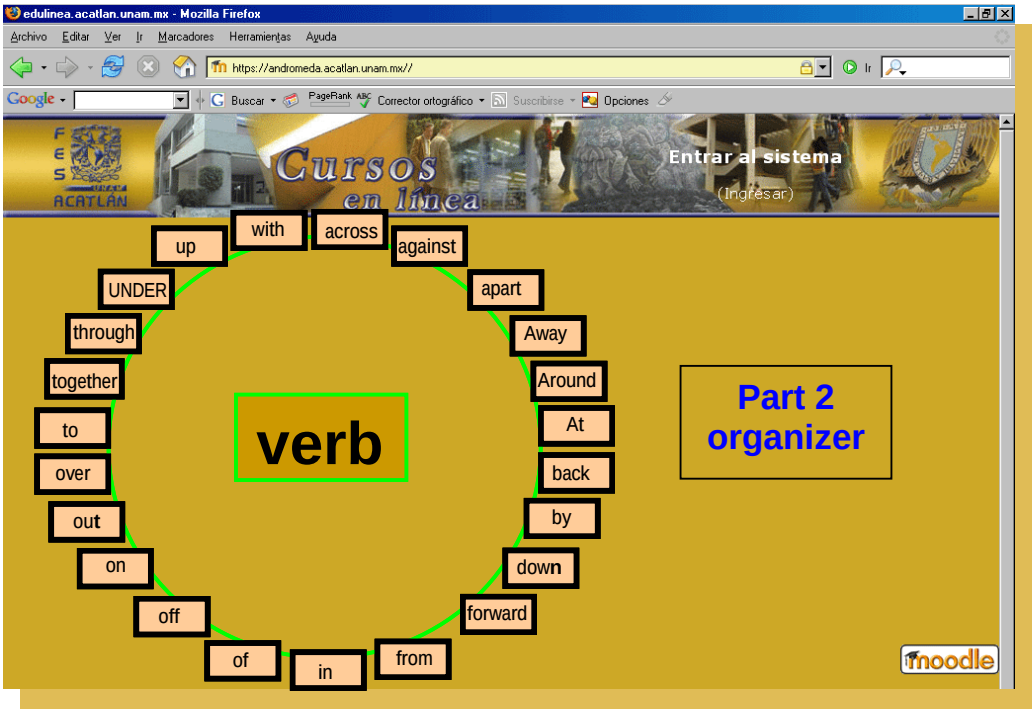
Obtained data from thinking aloud protocols on reading comprehension in English as a foreign language was organized in four components

- English language code (see Graves & Frederiksen, 1991) formed by: Word comprehension, Word inference, sentence syntax, verb tenses, contextual reference.
- Text structure recognition (see Graves & Frederiksen, 1991) formed by text coherence, mean idea recognition.
- The conceptual component (see Graves & Frederiksen, 1991), formed by narrative, descriptive, expositive and argumentative texts.
- Text organization (Palincsar & Brown, 1986; Feng & Mokhtari, 1998) formed by text coherence, paragraph correspondence, hypothesis and inference elaboration and relevant information differentiation.
- Cognitive processing (see Feng & Mokhtari, 1998), took into account reading comprehension strategies such as cause-effect relationships in a text, ability to distinguish between a fact and an opinion.

From the theoretical framework of the study, an instructional design was generated with the aim of teaching reading comprehension through expert performance modeling. The model included five parts: modeling, scaffolding, observation exercise, open-ended questions, and a quiz.

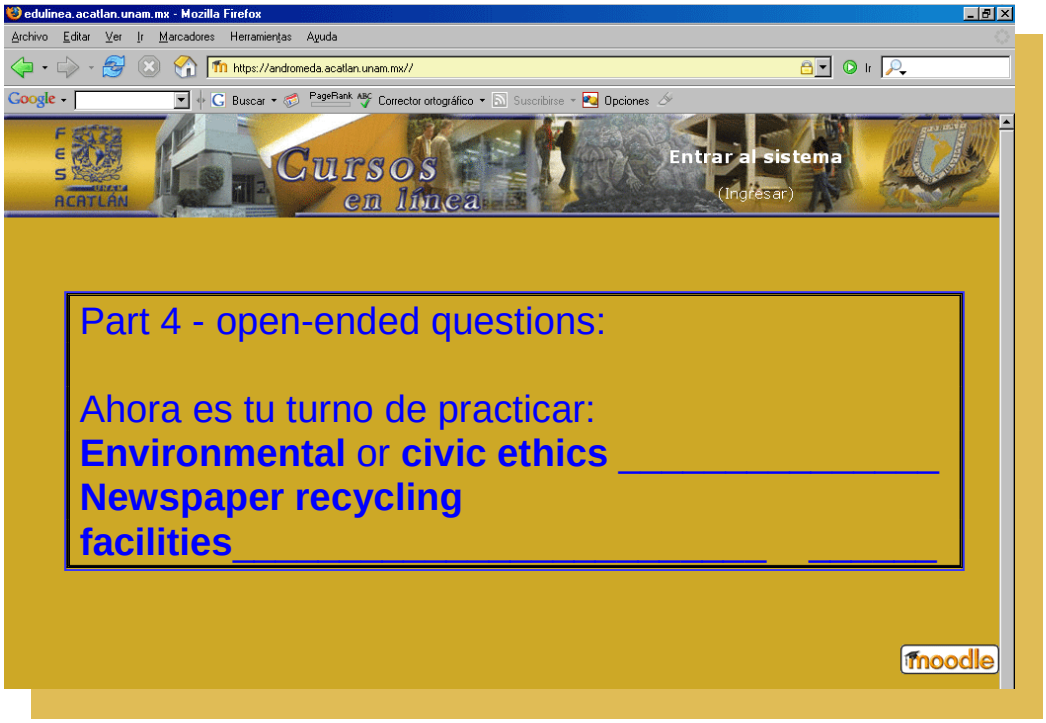
Part 1: Model: presents the reading strategy by means of definitions, purpose of strategy description and operational procedure.

Part 2. Scaffolding through conceptual map or organizers, that synthesize the information to generate an integrated understanding of the use of the strategy.

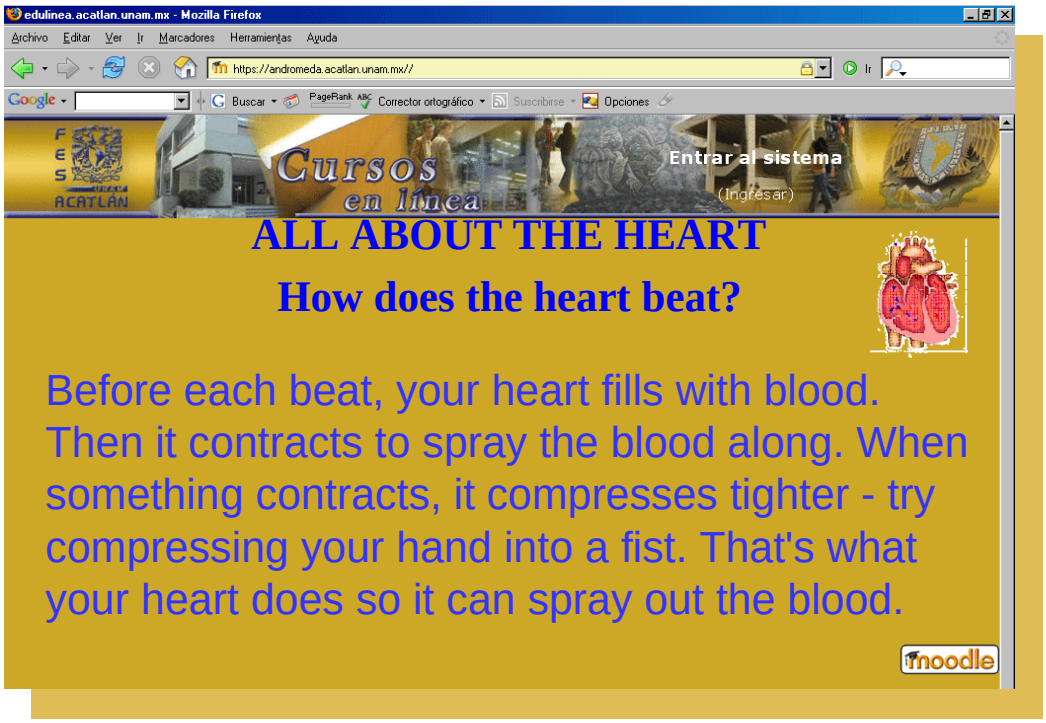


Part 3. Observation of the exercises, which shows the solving procedure.

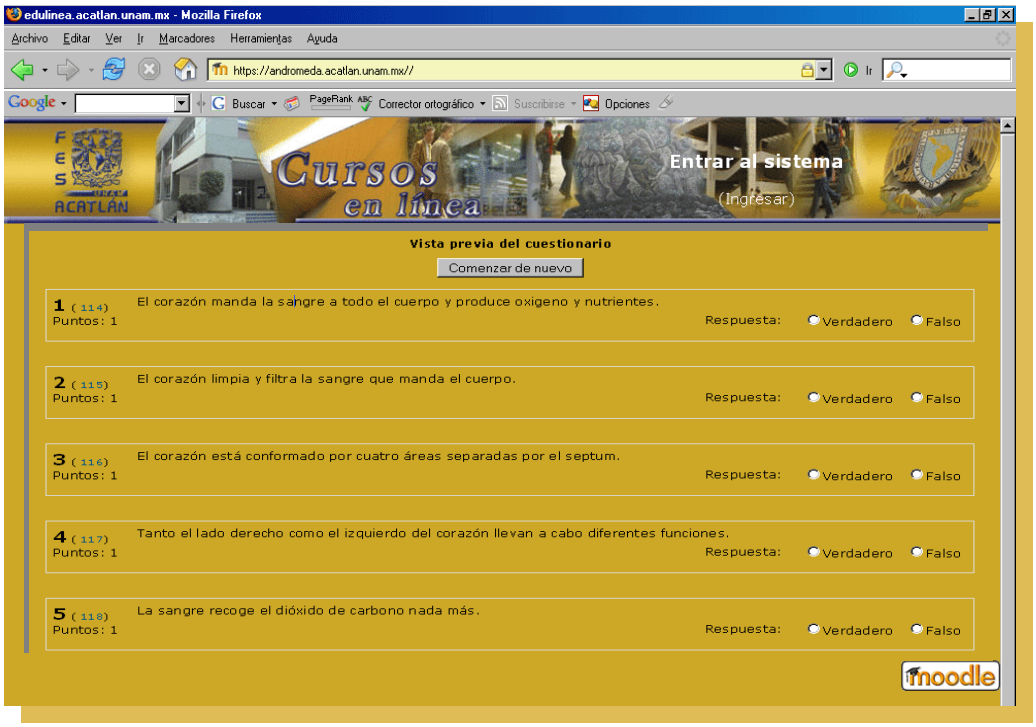
Part 4. Gap filling and open ended questions (to practice the strategy) and



Part 5. Quiz: consists of a text to read



The text is followed by a set of questions.



METHOD

The objective of this study was to design an instructional strategy based on expert performance modeling of reading comprehension to provide to university students with the necessary tools in order to understand texts written in English.

Participants

From 213 examinees, a sample of 120 students: 76 men and 136 women, from 20 to 23 years that failed a reading comprehension examination was taken.

Setting

Materials were placed on line, in Moodle management platform.

Materials

- A diagnostic reading comprehension in English exam was given at the beginning of the course.
- A reading comprehension in English exam was given at the end of the course.
- The learning style and motivational orientation inventory that measured the use of self-regulation strategies was given at the beginning and end of the course.
- We used the instructional model consisting on 12 working sessions, based on an interactive reading model that takes into account learning strategies (rehearsal, elaboration, organization) self-regulation strategies such as self efficacy; aim setting, planning, monitoring, evaluation, note taking, problem solving, time administration and exam anticipation.
- Three types of reading styles: skimming (locating general theme), deep study reading (to find the relevant) and search reading (to locate information to accomplish a reading objective),
- Four text types: *descriptive* (objective characterization of an object or a process); *narrative* (reference to facts in a certain place and time); expositive (topic organization following a clear sequence) and *argumentative* (principles or ideas confronted by comparison and opposition).

DESIGN

A Three independent group design with random allocation of participants and multiple measures was used, where the experimental group received the instructional strategy, the second group received an alternative material that lacked learning and self-regulation strategies and the control group only received evaluations and the learning styles and motivational orientation inventory.

PROCEDURE

A sample of 120 students that fail a diagnostic reading comprehension examination in English was randomly arranged into 3 groups; group “A” formed by 43 students was the experimental group, group "B" with 40 students, received an alternative material; group "C" with 37 students was the control group. "A" and "B" groups received the diagnostic exams, inventory and materials consisting of 12 units , group “A” used the instructional design, group “B” the ordinary material for Reading comprehension courses (texts and multiple choice questions) and group “C” had only evaluations and the inventory. Electronic mails and forums were the means of communication with students of the three groups.

RESULTS

Of the 43 students in group “A”, 21 never accessed the page, eight students deserted, and eleven finished and passed the course. Of the 40 students in group "B" 20 never accessed the page, 16 deserted, 4 finished. Of the 37 students in group "C" 19 never accessed the page and 18 deserted.

The statistical data presented come from groups "A" and "B", since all students from group "C" (control) dropped out,. This desertion could be due to the time that elapsed from the time students took the diagnostic examination to the date the course ended.

Comparing, group "A" to group "B", it is possible to see that at the beginning of the study the samples were statistically equal with respect to the pre-examination of English.

Table 1. Descriptive analysis and *t* tests for pre and post examinations, groups “A” (experimental) and “B” (alternative material).

Diagnostic tests	N	M	ED	*t*	df
English Pre-exam group “A”	11	5	.816	1.298	8.61
English Pre-exam group “B”	4	4.27	1.272	1.053	13
English Post-examgroup “A”	11	6.91	.944	-3.476**	9.089
English Post-exam group “B”	4	5.5	.577	-2.764*	13

***p <.016 **p <.007**

Regarding the learning style inventory ***t*** test showed a non significant difference between the first and second measurements for group “B” while group “A” shows a highly significant difference both intra-group and compared to group “B”.

Table 2. *t* Test for Learning styles and motivational orientation self reports for groups “A” y “B”.

Learning styles self reports	N	*t*	df
Learning styles Pre-report group “A”	11	1.038	11.89
Learning styles Pre-report group “B”	4	.741	13
Learning styles Post-report group “A”	11	-2.909**	12.12
Learning styles Post-report group “B”	4	-2.057*	13

***p <.060 **p <.013**

DISCUSSION

This research contributed with some developments in the field of education about reading comprehension in English as a foreign language. One of them was the design of an instructional model based on expert performance. The model, derived from a cognitive task analysis, included the study of the English code, reading, learning and self-regulation strategies that helped students to improve their study habits and to understand information deeply and critically.

One result not expected in the study was the desertion rate, caused either because students did not or could not access the course page or because they abandoned the course. Desertion rates reported in various studies differ a lot, Forrester report accounts for 70 to 80 percent (Forrester, 2000,), Meister (2002), Flood (2002) and Frankole (2001) place it from 50 to 60% while Diaz (2000) and Carr (2000) place it between 20 to 60%. Regarding our study, the experimental group suffered a drop out rate of 75%, 50% did not start the course and 25%

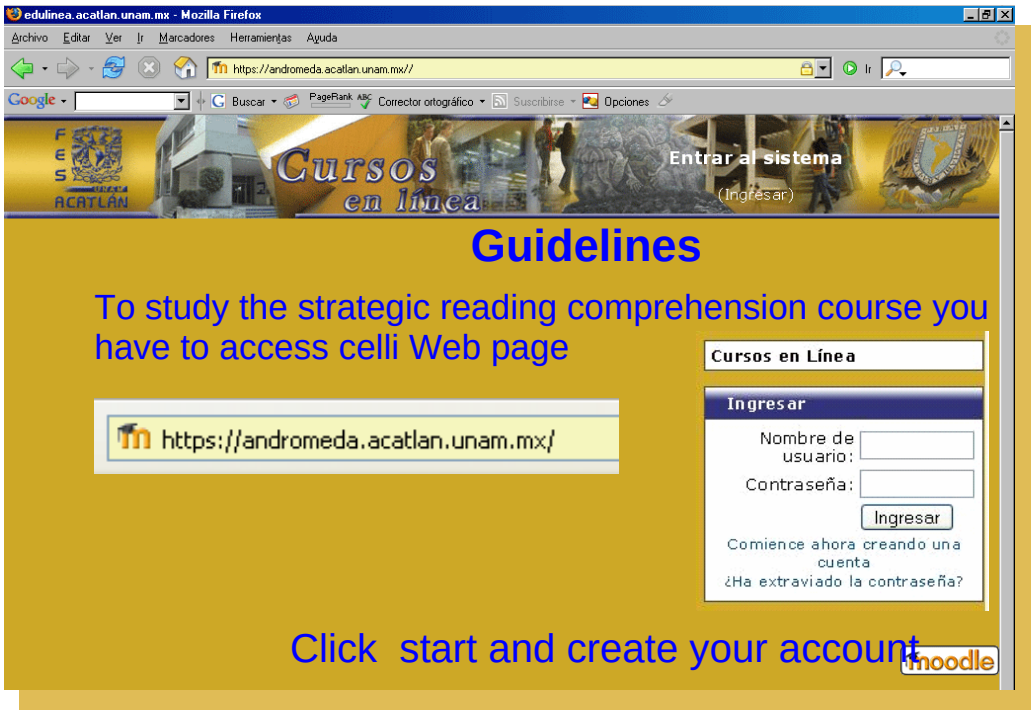
abandoned it. In Group “B” also50% of the students did not start the course and 40% abandoned the course. In Group “C” the desertion rate was 100%.

Desertion rate was smaller in the experimental group, and from statistical data it can be seen that achievement was higher, also the inventory statistics showed a significant improvement in motivation. We suppose the results are due to the learning and self-regulation strategy modeling, that allowed students to organize their time and improve their study skills.

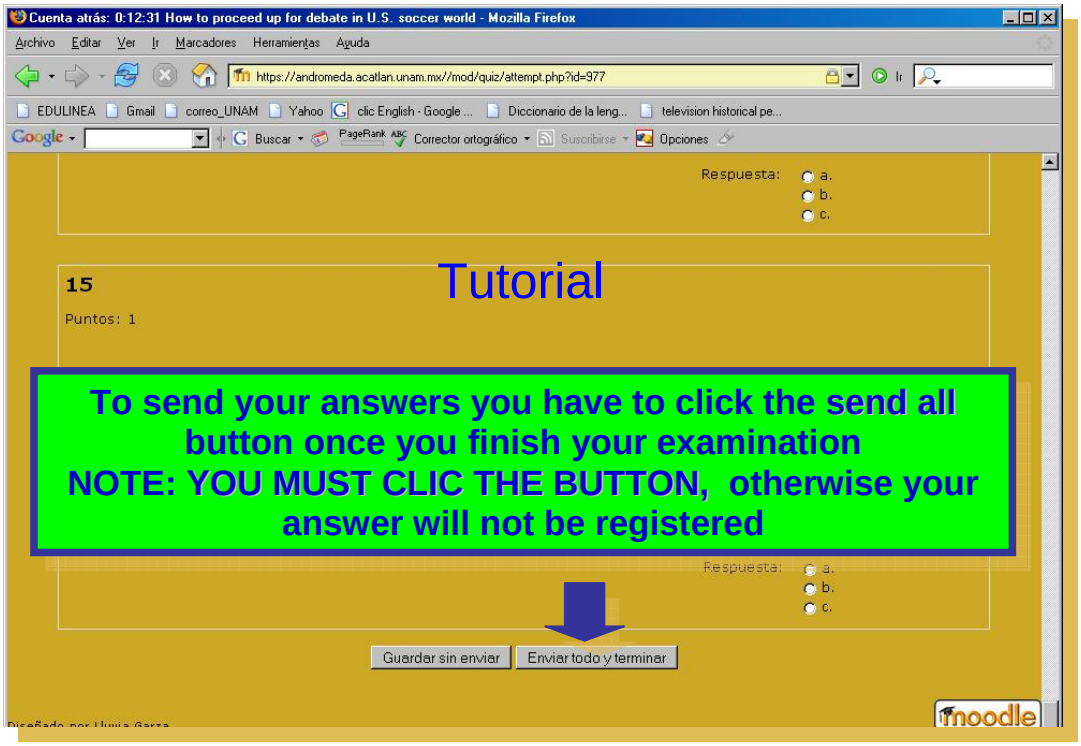
One more factor that can be mentioned is the degree of interaction between tutor and students; this interaction has to be very active, otherwise a feeling of abandonment can be generated that move students to desert courses.

This study showed that materials should be correctly design, they should not be very long, as they have to be studied on a computer screen; they should model the point to be learned and should be attractive and interesting for the student. Although some people may think that people’s experience playing games and visiting web sites is an advantage to study an online course. The truth is that such web communications do not develop the necessary abilities to interact with an on line course, such as read and understand instructions, organize time for studying and produce essays and research.

Taking into consideration, the results obtained in this research,we implemented some prevention measures, to attack desertion, such as the use of tutorials to guide students on processes such as registration to the course, interaction with materials, get in contact with tutors, and other necessary actions so they could interact with the course requirements.



These tutorials are now placed in the site and students have to see them before registering to the course.



Further research is needed to find out the effectiveness of these tutorials to increase motivation and stop drop out rates.

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