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## *El Espía 2.0: A visual resource for exploring the psycholinguistic text production processes of children*

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### **Abstract**

There are few possibilities to look on the way schoolchildren write. Researchers - and other practitioners - can embark on trying to deconstruct the writing processes of a text by inferring why the child erased or marked some words, or by means of other - all subjective - techniques. They could stick to the child while writing, and play an - exhaustive and very time consuming - over the shoulder coaching approach. More technology-driven approaches could be adopted as well, but the current technology at reach, such as a conventional word-processor-tracking-changes option or the use of video devices to record a writing session, do not allow researchers to explore the writing process with the detail or time efficiency desired.

The Digital Tool "*El Espía 2.0*" is a web-based word-processor-like tool that allows researchers to "spy" on a child's writing session, facilitating the visual reconstruction of the text production process.

Keywords: Psycholinguistics, Visual reconstruction of writing, writing, text,

### **Summary**

#### **Background and context**

In the context of research on the evolution of the reading and writing processes on children between 7 and 12 years old (Vaca, 1997) and after having researched some aspects of the processes involved in the interpretation of texts and the conceptualizations of children about the graphic system of orthography in Spanish (word segmentation, polygraphism, accentuation and intonation), engaging in the research of evolution of the processes of original text production and the development of a corresponding visual reconstruction of such a process seemed imminent.

Previous research (Ferreiro, et. al, 1996) has focused either on the final products obtained after the writing processes allowing little to be inferred from the decisions and revisions young writers make; or on some temporal aspects of text production - such as

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pauses and writing fluency indexes - observed on video recordings of young children while writing (Foulin and Fayol, 1988).

*El Espía 2.0* is a research tool - at ongoing process - that will allow researchers to access the text production traces, that is, to access the text microgenesis - its changes, revisions, deletion, re-locations and other editorial decisions, writers usually make during or after the text production. This raw material is a valuable source of information about the cognitive processes of text production and about the working cycles the writer falls into, and its temporal distribution. It is worthwhile to clarify that we are facing the problem from a perspective oriented by the development of cognitive pragmatics in its two routes: Inhelder's view (2007) and Pierre Gréco's models of cognitive functioning which studied real time writing processes on children between 7 and 8 years old.

### **Description of the development**

*El Espía 2.0* is a digital tool with the looks and operation of a conventional word processor. Its main objective is to explore the psycholinguistic processes of text construction by recording the position and time associated to each character introduced via keyboard.

By means of this record – character position and key stroke time – the system will be able to generate two reports: 1) a log of the characters entered on the piece of text, their position, timing and how it was entered (either added, inserted or substituted); and 2) a video-like reconstruction of the writer's produced text aiming to facilitate the researchers' interpretation of the written report.

The system detects five basic operations on text: adding, deleting, inserting, substituting, and pausing, and applies them to four linguistic units: character, word, sentence, paragraph.

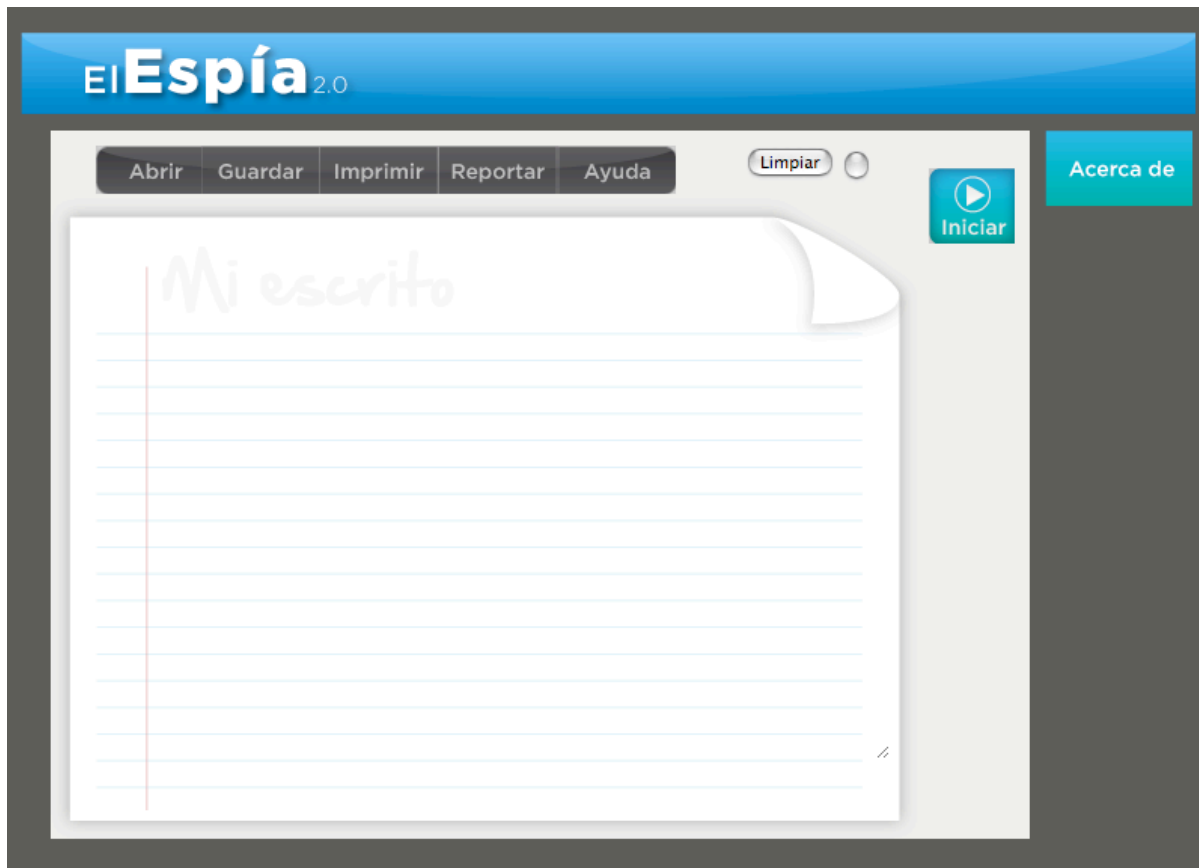
*El Espía 2.0* is an improved version of two previous developments *El Espía 0.96* and *El Espía 1.0* versions developed in the Institute of Research in Education in 1996. These versions were developed in Lingo, a scripting programming language used in Adobe Director. Newer developments (from version 1.5 to 2.0) are being coded with more widely compatible and portable technologies such as HTML, CSS and Javascript.

The development of the tool is based on agile processes proper from the extreme programming practices such as customer on-site (e.g. researcher, linguists) and iterative style programming.

### **Visual Description of the system developed**

*El Espía 2.0* is a web-based tool with the functionality and looks of a conventional word processor. It has a menu bar with basic operative options and a workspace where text shall be typed.

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A working prototype of current development version (1.6) could be found in the following link <http://www.internetl.net/elespia/elespia16/espia.html>

The basic functioning of the tool is triggered by 1) pressing the start button (iniciar) then 2) writing a piece of text into the Workspace and 3) by pressing the Report button (Reportar) once the writing session is finished.

The Report will display a log of actions and characters. Each character and its corresponding metadata (the time character was typed; its absolute linear position; the operation by means the character was added, deleted, substituted or inserted into the text; the character itself; and its value in context) will be presented in a row.

The visual feature called Reconstruction can be triggered by a similar method, that is: 1) pressing the start button (iniciar); 2) committing text to the workspace; and 3) pressing the reconstruct button (now located to the right of the “Limpiar” button).

The visual reconstruction of the writing process will show how each operation affected each character entered into the workspace, giving a meaningful touch to the interpretation of the report of the log.

At the moment of writing this summary (March 2010) the Reconstruct feature is limited in playback controls, but it is projected to provide the tool user a wider set of playback controls such as play, stop, speed options, range analysis and others.

### **Significant work for others**

*El Espía 2.0* is a research tool, and it could, of course, be used for other purposes, but in essence it should attend the researchers' needs. Practitioners, educators, linguists,

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language instructors and researchers on the field of Psycholinguistics are the main beneficiaries of this research.

### **Further work**

*El Espía 2.0* is a 12-month research funded by the Mexican Council of Science and Technology (CONACyT) which will reach its end in February 2012. By then, it is projected to achieve the following:

- Release of full working version of the Tool: *El Espía 2.0*
- Documentation of the Tool
- Implementation of the Tool in at least two research contexts
- Publication of results and impact of the Tool in its development and implementation in research contexts
- Play a relevant role as a research tool in the doctoral studies of a colleague

Once the project is finished - at the latest - in February 2012, the code of tool, its documentation, and the contents of its development blog (<http://www.uv.mx/blogs/elespia/>) will be released under the Creative Commons and General Public Licences, linking the length of its useful life to the needs and expectations of the community of researchers interested on this topic.

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