REVIEW OF *IMPLEMENTING LIBRA FOR THE DESIGN OF EXPERIMENTAL RESEARCH IN SECOND LANGUAGE ACQUISITION*

Title:	LIBRA
Author:	Robert Fischer
Distributor:	Division of Media Services Southwest Texas University
Contact information:	www.libra.swt.edu
Program information:	Version reviewed here is 1.2.9
System requirements:	Macintosh System 7.1 or later
Additional requirements:	8 MB RAM
Price:	$50 for a single authoring station plus a reference manual $250 for twenty authoring stations and reference manuals
Support:	Michael Farris, MF03@swt.edu
Target audience:	Language educators

Reviewed by Cristina Sanz, Georgetown University

In cognitive psychology, laboratory studies that utilize computer technology in the administration of treatments and in data collection are the norm rather than the exception. Delivering treatments and testing components of experimental studies via computer allows for tighter control of individual and environmental variables as well as finer measures of the effects of treatment. For example, the use of computer technology permits precise measurement of response time, in addition to accuracy scores. The tight control of variables possible with computers also makes studies easier to replicate.

Current instructional research is intimately connected with advances in cognitive psychology, but it is less advanced on the methodological side. For example, instructional research has largely been limited to the use of accuracy data, and is only now incorporating think aloud data. Even fewer studies have based their conclusions on latency data. An example of the application to classroom research of the type of research conducted in cognitive psychology is Sanz & Fernández (1992), which focused on the use of lexical versus morphological cues for tense assignment during on-line input processing.

A study now in progress[1] on the effects of specific pedagogical variables is used here to exemplify the advantages of a computer-based design over a paper-and-pencil design both in terms of strength and convenience. This study manipulates various degrees of explicitness in instruction (grammatical explanation and feedback) to investigate their effects on the acquisition of Spanish word order and attempts to enhance the design of instructional research through the use of computer technology. Both the treatment and the testing components are modifications of materials used in earlier study on the effects of specific instructional procedures on the input procesing strategies of L2 learners of Spanish (Sanz, 1994; VanPatten & Sanz,1995). In that study, treatment and testing were delivered in paper-and-pencil format, in combination with VCRs and overhead projectors. In the current study treatment and tests are delivered by means of a LIBRA application created specifically for this reserach. LIBRA, a Mac-based authoring tool designed for language educators wishing to create their own interactive lessons, was chosen because of its ease of use for creating multiple choice questions incoporating audio, still images and video. The original materials were successful for changing input processing strategies in the second language and for documenting those changes. Why, then, the incorporation of LIBRA into the design of the current study?

The original design required that treatment be delivered by an instructor to a group of learners who recorded their answers on paper. The application of technology to the design allows for individual testing and exposure to the treatment, with important benefits. First, individual administration allows for random assignment of *participants* to the different experimental treatments (rather than random asignment of *groups* to treatments), which makes the study truly experimental. Second, it allows for control over key variables in the treatment. For example, it is possible to control the amount and type of feedback to which each participant is exposed, something that is impossible in a group situation. Third, the amount and type of data allow for a fine-grained analysis of the effects of the treatment. In the study, think-aloud dataÊa window into mental processesÊis gathered hand in hand with accuracy data, which is only possible when learners are exposed to treatments individually. Ideally, latency (reaction time in milliseconds) should also be included.

Incorporating LIBRA into the design of the study also made the administration of treatment more convenient: while the paper-and-pencil format required simultaneous use of an overhead projector, a VCR, and TV sets, and multiple copies of the testing and treatment materials, all that is needed with LIBRA is a computer. No need to rewind, no paper shuffling, and no waste! Once the application is loaded onto the network, data gathering is possible in multiple sites on campus, or at multiple institutions, provided Macintosh computers are available. Data gathering can be carried out with groups gathered in a lab or individually in offices.

Other advantages, not strictly related to the individual versus group administrative procedure, are also important. First and foremost, multimedia capabilities make the lesson far more attractive to the user compared to the xeroxed black-and-white booklet. The LIBRA-based lesson provides video and audio input simultaneously, as well as both still and video full color images. Also, glossary and grammar notes sections were readily available at the click of the mouse. The lesson in the present study is based on Processing Instruction principles (VanPatten 1996), and therefore offers practice in input processing without requiring production. Computer technology is especially appropriate for this type of lesson, as learners simply use the mouse to select among options, avoiding typing errors.

Figure 1.

Figure 2.

What do users have to say about the lesson? A postexposure questionnaire elicited highly positive reactions. Most of them emphasized the advantages of focused, immediate feedback: "If I could choose between this [computer lesson] and completing the same exercises in a book, I'd go for the computer. It's more attractive, more fun, you don't have to wait to find out how you've done . . ." Others highlighted its convenience: "I'm too lazy to check for the answer at the back of the book. I liked the images and that I could listen to the same sentence again and again immediately, just clicking." Finally, others commented on the attractiveness of lessons incorporating graphics, and on the ease of use: "I'm a visual learner, I need to see things . . . but at the same time I often repeat sentences out loud (referring to the aural input she had beed exposed to) because they stick that way. The computer gave me both: it was very useful. I had used computer programs to learn Spanish before, in high school and at home, but I didn't like them: no images and you had to type and any little mistake would mess it up--this is different."

Although LIBRA shares all these advantagesÊenhanced, more convenient research design for the researcher, more attractive lessons for the userÊwith other authoring packages, such as Hypercard, LIBRA makes development and implementation much easier for the average user. As for programming ability, at least seven faculty and graduate students have created lessons with LIBRA at Georgetownçs Language and Technology Lab. Most of them were average computer users: six could handle MS Office and Netscape with ease but not to their fullest extent. One of them could hardly use WordPerfect. Yet all were able to easily create materials in LIBRA.

In conclusion, LIBRA is an authoring tool designed for educators which enables creation of interactive applications for the classroom. It is extremely user-friendly (friendlier than Hypercard, for example) and empowers teachers by allowing them to develop lessons that provide practice on specific aspects identified as problematic and free valuable class time for teacher-learner and learner-learner interaction. Equally important, LIBRA also empowers researchers by allowing them to develop tightly controlled experiments on key aspects of language teaching and learning. To make it even more attractive for researchers, LIBRA should facilitate collection of reaction time data, a classic in psycholinguistic research. It would also be advisable to incorporate a device that kept track of the user's performance. The latter has been incorporated to the latest version (2.0), which is still a bit buggy.

NOTE

1 Pilot versions of this study have been presented at IALL'99 (Univeristy of Maryland at College Park) and the 1999 Conference on the Acquisition of Spanish as a First and Second Language (Georgetown University) by Cristina Sanz and Gorky Cruz. The study was made possible by funding secured by Edward Dixon, Faculty Support Coordinator for Languages and Linguistics at Georgetown University through a FIPSE grant, and with the collaboration of Gorky Cruz, who developed the LIBRA application based on an older Hypercard application.

ABOUT THE REVIEWER

Cristina Sanz is Assistant Professor of Applied Linguistics and Director of the Spanish Intensive Program at Georgetown University. Her research on input processing and the L2/L3 interface has been published in *Applied Psycholinguistics,* the *Canadian Modern Language Review,* and the *MIT Working Papers.* She is currently editing a special issue of *Spanish Applied Linguistics* on cognition and Spanish bilinguals, and working on two volumes on psycholinguistics and pedagogy.

E-mail: sanzc@gusun.georgetown.edu

REFERENCES

Sanz, C. (1994). *Multiple assessment of an input-based approach to explicit instruction in grammar.* Unpublished Doctoral Dissertation, University of Illinois at Urbana-Champaign.

Sanz, C., & Fernández, M. (1992). L2 learners' processing of temporal cues in Spanish. *MIT Working Papers in Linguistics, 16*, 155-169.

VanPatten, B. (1996). Input processing and grammar instruction in second language acquisition. Norwood, NJ: Ablex.

VanPatten, B., & Sanz, C. (1995). From input to output: Processing instruction and communicative tasks. In F. Eckman, D. Highland, P. Lee, J. Mileham, & R. Weber (Eds.), *Second Language Theory and Pedagogy* (pp. 169-186). Philadelphia: Lawrence Earlbaum.