Observing and analyzing writing processes with Keystroke Logging

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This session is an introduction to writing process research with keystroke logging. We briefly explain the main characteristics of this research technique, and review its strengths and weaknesses. Empirical examples from recent studies illustrate the wide spectrum of research studies in which keystroke logging has been used so far. During the workshop you will also learn some tips and tricks how to use the keystroke logging program ***Inputlog*** *in your own research.*

www.inputlog.net

Inputlog is a keystroke logging tool developed at the University of Antwerp since 2003. The program is used by more than 300 researchers worldwide. The program architecture has recently been rebuilt and new functionalities have been added. At the moment Inputlog consists of the following modules:

1. Record: This module logs (keyboard, mouse and speech) data in Microsoft Word and other Windows based programs together with a unique time stamp (ms). Moreover, in MS Word this module also logs character position, actual document length and copy/paste/move actions.
2. Pre-process: As it is often necessary to refine logged data prior to analysis, this module allows us to process data from various perspectives: events, time, sources. For example, when additional questions are asked in the beginning of the observation and the logging session has started already, this pausing time (noise) can be excluded from the data analyses.
3. Analyze: This module is the heart of the program and features three process representations (general and linear logging file and the s-notation of the text) and four aggregated levels of analysis (summary, pause, revision and source analyses). Additionally a process graph is produced.
4. Post-process: This module integrates single or multiple log files from Inputlog or other observation tools (Morae, Dragon Naturally Speaking, Eyetracking data). It is also possible to merge multiple output files for further analysis in, for instance, SPSS or MLWin.
5. Play: This module allows researchers to play back the recorded session at various levels (time or revision based). The replay is data based (not video based) and the play speed is adjustable. A logged session can also be reconstructed revision by revision.

Inputlog is used for various types of writing process research: professional writing, developmental writing, L1-L2 writing, translation studies, etc.

This workshop addresses the following questions:

- what is keystroke logging? Introduction to keystroke logging as a research technique in writing process research; overview of programs and types of research;
- how does keystroke logging compare with other writing research methods? Comparison of the possibilities and limitations of other research methods and techniques that are currently used to collect data on writing processes (e.g. think aloud, eyetracking) ;
- what kind of data can you collect? Overview of cognitive indicators that can be derived from logged process data (pauses and revisions);
- how can it be used in research? Examples of recent studies in which keystroke logging was used to analyze writing processes (e.g. illustration of advanced analytical techniques used in recent case

studies on 'writing from multiple digital sources', Tweet composition processes, Document design in professional writing environments);

- what analyzing techniques can be used to study writing processes, i.c. general logging data, pause analysis, revision analysis and source analysis.

References

Leijten, M., & Van Waes, L. (in press, 2013). Keystroke Logging in Writing Research: Using Inputlog to Analyze and Visualize Writing Processes. *Written Communication 30*(3), 358– 392 | DOI: 10.1177/0741088313491692

Leijten, M., Macken, L., Hoste, V., Van Horenbeeck, E., & Van Waes, L. (2012). *From Character to Word Level: Enabling the Linguistic Analyses of Inputlog Process Data.* Paper presented at the European Association for Computational Linguistics, EACL - Computational Linguistics and Writing (CL&W 2012): Linguistic and Cognitive Aspects of Document Creation and Document Engineering, Avignon.

Audience

This session is intended for researchers and teachers who intend to or who are already conducting writing process studies. Other than a strong interest in writing research, no prior knowledge is required. Newcomers to the field will be provided with an overview of state-of-the-art research techniques in writing research, and more experienced researchers will certainly also profit from expanding existing knowledge.

Install Inputlog

If you want to install Inputlog on your computer, please, fill in the website form, and we will send you an installation code.

Presenters

Mariëlle Leijten and Luuk Van Waes are the founders of the keystroke logging tool *Inputlog*.

Mariëlle Leijten is a post-doc researcher for the Flanders Research Foundation and works at the University of Antwerp, Belgium.
Luuk Van Waes is a full professor at the University of Antwerp, Belgium.

Their main research field is Writing and Digital Media (writing from multiple sources, speech recognition, cognitive models, on-line writing centers). They both teach business communication, research methods and digital communication in the Master in Multilingual Professional Communication at the University of Antwerp and the Antwerp Management School. They have published in several international peer reviewed journals (e.g., Written Communication, IEEE Transactions in Professional Communication, Journal of Pragmatics, Journal of Sociolinguistics, Interacting with Computers, Reading and Writing) and have edited two books in the Elsevier's series Studies in Writing: '*Writing and Digital Media*' and '*Writing and Cognition*'. Luuk Van Waes is also founding editor of the *Journal of Writing Research* (www.jowr.org).

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