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Tutorial on using the Psychology Experiment Building Language (PEBL)
in the Laboratory, the Field, and the Classroom
https://sourceforge.net/apps/mediawiki/pebl/index.php?title=CogSci2011_Tutorial
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Background:

Laboratory and field research in cognitive science often uses computer-based tools to design experiments and collect data. Although researchers are typically happy to exchange the data obtained from such studies, sharing the actual software used to collect the data is more difficult. This partly stems from the widespread use of special-purpose proprietary software tools to collect data, which prevents exchange and review of the actual experiment specification (without purchasing costly licenses) and can at times even prevent researchers from accessing their own past experiments. Yet often, without a good understanding of the exact experiment, the data can be difficult to interpret. Furthermore, such systems are typically tied to a particular operating system platform, reducing the ability to exchange, modify, and evaluate details of an experiment. This is an obstacle to scientific progress, where it is critical to be able to share, evaluate, modify, and test the paradigms that we use to develop and test theory.

The Psychology Experiment Building Language (PEBL; Mueller, 2004; 2010) was developed to overcome these obstacles. It is a cross-platform Free (GPL) software tool for designing and running computer-based laboratory research. PEBL has been used in research laboratories around the world as the basis for approximately 40 published articles and reports.[1] PEBL also incorporates a set of approximately 50 laboratory and clinical tests which are increasingly becoming the standard non-commercial versions of classic neuropsychology tests (including, for example, tests such as the Wisconsin Card Sort, Iowa Gambling Task, Tower of London task, and pursuit rotor task). The goal of PEBL is to help researchers share their experiments as easily as they share data.

Objectives:

This half-day tutorial will provide experiential training for using PEBL in laboratory and field research, and in the classroom. It will begin with the basics of using PEBL and its standardized tests, with a discussion of the growing body of published literature using PEBL. Basics of the language will be covered to enable attendees to understand the workings of existing experiments and to modify them. Following this, we will develop one or more experiments 'from scratch' to highlight the important basic steps in experimental design. We will conclude with discussions and examples using PEBL outside the laboratory, in field research, questionnaires, and classroom settings.

As an outcome of this tutorial, attendees will have the ability to incorporate a powerful tool into their teaching and research repertoire, which both makes research easier to conduct and enables improved and open scientific exchange and standardization.

Need/Justification for Tutorial:

Developing new experiments in PEBL is fairly simple, but can require guidance and direct feedback to understand its operation, which is best handled in a tutorial setting. PEBL has the potential to be broadly useful for laboratory researchers and instructors within the cognitive science community. These especially include empirical laboratory research psychologists and linguists, which constitute a large proportion of the membership of the cognitive science society, and the attendees of the conference.

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1 https://sourceforge.net/apps/mediawiki/pebl/index.php?title=Publications_citing_PEBL

Audience:
The target audience is primarily researchers in psychology and related disciplines who are involved in empirical work doing laboratory data collection. It will be targeted to two main groups: (1) graduate students, post-doctoral researchers, and faculty researchers who design and conduct laboratory experiments; and (2) instructors who wish to enhance classroom instruction using experiment demonstrations.

Special Requirements:
Participants will need to bring a laptop (Windows, Linux, or OSX), and should download/install the PEBL software and PEBL User Manual at http://pebl.sourceforge.net prior to the tutorial.

About PEBL
- PEBL is Free psychology software for creating experiments
- PEBL allows researchers to design their own experiments or use ready-made ones
- PEBL enables the exchange of experiments without license or fee

PEBL offers a simple programming language tailor-made for creating and conducting many standard experiments. It is Free software, licensed under the GPL, with both the compiled executables and source code available without charge. PEBL is designed to be easily used on multiple computing platforms, and compiles natively under Win32, Linux, and Macintosh Operating Systems. PEBL is used by researchers around the world, and its most recent version (PEBL 0.11, released in August 2010) has been downloaded more than 5,000 times.

Qualifications:
Dr. Mueller is the originator and developer of the PEBL, and has implemented each of the tests in the PEBL Test Battery. He is a cognitive scientist studying human performance and decision making in the field and laboratory, and created PEBL to reduce the complexity of developing experiments in these settings. He is a Senior Research Scientist at Applied Research Associates, Inc., in Dayton, OH.

References

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PEBL Website:
http://pebl.sourceforge.net

Tutorial Website:
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