# A Psychology Web Lab for Education: LABPSI

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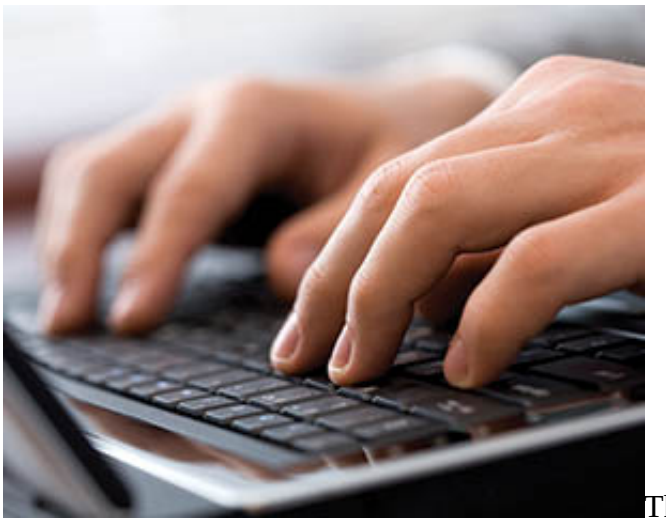 The increasing number of students enrolling in national universities in Argentina has created a challenge for institutions that need to provide appropriate practice spaces for an increasing number of students. This forces institutions to design innovative and technological solutions in learning management. In disciplines such as psychological science, it is extremely expensive to create opportunities for practice (such as in laboratories) where students can apply the theoretical contents covered in class. Difficulties arise because of physical infrastructure, equipment, insurance, wages for technical maintenance, and equipment obsolescence.

As teachers and researchers of the School of Psychology at the National University of Mar del Plata in Argentina, we find it urgent to create spaces for practices that contribute to building more meaningful learning environments for our students. It has been widely shown that active learning is essential for an effective and enduring learning process (Hirsh-Pasek et al., 2015). Therefore, we seek to create a tool that can provide a set of experiments and tasks accessible anytime and anywhere by researchers, teachers, and students. Such a tool would fulfill educational purposes without requiring installation of computer laboratories within the institution, which represents very high initial and maintenance costs. Thus, we worked to develop a Web Laboratory with a grant from the APS Fund for Teaching and Public Understanding of Psychological Science.

The development of an online tool such as the one presented here can provide students with a practice space that can be accessed from different devices (e.g., tablet, smartphone) and even can be used as a complement during class time. This practice then can be built upon, adding more experiments to the original content and creating a comprehensive library in the Web Lab for the future. The platform allows the inclusion of various teaching resources that otherwise might be used separately, such as videos, the glossary, and links of interest. Implementing these experiments as Web applications allows them to be accessed from any location with an Internet connection.

## Web Lab Technical Characteristics

The Web Lab was created as a Java Android app that gives teachers the possibility to create their own applications according to their class needs. Currently, it is part of the official university host, which implies an advantage in terms of availability, space, power, and speed.

The final software was developed following these criteria:

- Device independence;
- Free access and proven sustainability;
- Modular structure to allow growth (e.g., portlet design);
- Task manager for up to 5,000 concurrent tasks per hour to allow the joint use of students from other universities;
- Flexible administration to allow teachers to generate the customer setup for each exercise according to their needs;
- The availability of online apps to take advantage of interaction resources (e.g., chats, wikis, internal blogs);
- User-friendly interface; and
- Multilanguage platform (it currently is being translated into English and Portuguese).

## Web Lab Content

The Lab is organized into the nine categories that are the main cognitive processes usually constituting the chapters of cognitive psychology handbooks, and each category is subdivided into tasks. Each task contains a series of experiments that can be run by the students using the platform. It is important to note that this platform is extremely flexible, so teachers can create new experiments dynamically according to their requirements. For example, if teachers want to show their students the priming task but with another type of semantic relation,
they can generate a new experiment from the back end of the lab. They also can modify the time between stimuli to show how a certain effect appears or disappears according to this parameter. The page will be constantly updated and expanded in accordance with educational demands. The following sketch presents the general outline of the cognitive processes we intend to cover and the tasks already developed:

**1. Attention**

- Direct digit-span task
- Backward digit-span task

**2. Memory**

- Word-list learning
- Deep and superficial learning

**3. Knowledge and Mental Representations**

- Mental rotation
- Semantic representations

**4. Perception**

- Semantic priming
- Phonological priming
- Use of masking

**5. Language**

- Letter-sequence reading

**6. Emotions**

- Emotional priming

**7. Social Cognition**

- Theory of mind

**8. Creativity and Problem Solving**

- Einstellung effect (tendency to solve problems in a stereotyped way)

**9. Judgment, Reasoning, and Decision-Making**

- Probability test œ

## Reference

Hirsh-Pasek, K., Zosh, J. M., Golinkoff, R. M., Gray, J. H., Robb, M. B., & Kaufman, J. (2015). Putting education in “educational” apps: Lessons from the science of learning. *Psychological Science in the Public Interest, 16,* 3–34.