

Educating to Build Bridges

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ABSTRACT— In March 2012, 30 faculty and 49 students from all over the world met in El Calafate, Argentina, during two intense weeks. It was the second Latin American School for Education, Cognitive, and Neural Sciences (LASchool), sponsored by the James S. McDonnell Foundation. The LA School seeks to critically examine research findings potentially relevant to the development, design, and implementation of effective educational practices, and to foster a new generation of researchers able to operate at the interface between education and science. Here we introduce a special issue which brings together theory, experiments, and educational interventions which emerged from ideas presented and discussed during the 2012 LASchool.

The Latin American School for Educational, Cognitive and Neural Sciences (LASchool),¹ funded by the James S. McDonnell Foundation, was conceived in 2007 with the hope of fostering a new generation of researchers, nourished with a broad knowledge in neuroscience, able to operate at the interface between education and science and willing to create bridges linking these disciplines.

For the past three years a group of 50 students and 30 faculty members have met in South America for the yearly summer school with the aim of critically examining the latest findings that, potentially, could be relevant to educational practice.

To date, three LASchools have been held: 2011 in San Pedro de Atacama, Chile; 2012 in El Calafate, Patagonia, Argentina; and 2013 in Ilha de Comandatuba, Bahia, Brazil. The consequence of this experiment is already visible only two years after the first LASchool. Books have been published in Latin America and adopted by the ministry of education to inform teachers about findings in cognitive neuroscience

(e.g., Lipina & Sigman, 2012); in 2012, a meeting between the organizers of the LASchool and the Uruguayan Ministry of Education was organized to discuss perspectives on improving education; and collaborations among different fields and countries are growing, and many ideas are being sculpted (e.g., Holper et al., 2013). Here we summarize a series of original articles—all presented in this issue of *Mind, Brain, and Education*—which emerged from ideas presented and discussed during the 2nd LASchool, held in El Calafate in March 2012.

CHANGING THE IDEA OF WHAT PLAYING MEANS

In any preschool classroom one rapidly notices that what works for some children does not work for others. On the basis of this intuitive observation, Weisberg and colleagues (2013) argue against the settled idea that the preschool classroom should present content directly, and instead propose guided play as a pedagogical method combining direct instruction and free play. They suggest that this allows children to be active recipients, constructing their knowledge following the guidance of adult instructions. Guided play is presented as a powerful, complete, and effective pedagogical and teaching method which incorporates adult-scaffolded learning objectives but remains child-directed. The authors offer as an analogy the term *mise en place*, from the French “to put in place”; the educational process is started and driven by the teacher but adjusted by the child, who becomes the performer and creator, more than just a receptor of knowledge. The authors provide evidence on the transfer possibilities of guided play to various educational goals, from strictly academic to creative thinking and flexibility enhancement.

This article serves to remind us about the importance of play during the process of learning. Although it is centered on very young children, it encourages us to think about possible scenarios which might happen when play is incorporated into the education of older children.

GAMES AS EDUCATIONAL TOOLS

Play is a motivating and engaging way of learning things. Goldin and colleagues (2013) present a growing set of scientifically tested games—named *Mate Marote*—designed

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to entrain some executive functions (planning and working memory in particular) in school-age children.

The authors show that the games produced long-term memory (children learned to play and the learning persisted for almost a month), and suggest the existence of neural plastic changes. They also found that training in *Mate Marote* games transferred (compared to an active control group which played less cognitively demanding games) to fluid intelligence and to one aspect of attention (resolution of conflict). The games' design allows to reconstruct individual trials and hence infer some reasoning and problem-solving strategies used by children.

Games can motivate learners lacking interest or confidence, enhancing their self-esteem (Din & Calao, 2001). Goldin and collaborators (2013) created software publicly available for educational and research purposes, and propose a platform of games as a useful tool to promote educational research.²

THE MUSIC OF READING

Bhide and colleagues (2013) explored the educational efficacy of a rhythmic musical intervention for poorer school-age readers. They trained children's rhythmic abilities, since there is broad support for a link between musical rhythm perception, phonological processing, and progress in written language development.

The musical intervention consisted of numerous tasks performed in a playing manner, including taping at different rates, analyzing and mimicking rhythms, clapping, etc. Authors found that the musical intervention, based on rhythm, had benefits for the development of literacy and phonological awareness. Interestingly, the musical training was as effective as the direct intervention on literacy acquisition and on phonological skills. The results tentatively convey a direct relation between rhythmic practice and literacy. However, the number of participants was small, and further evidence requires future confirmation by a larger-scale study.

UNLEARNING TO LEARN?

Duñabeitia and colleagues (2013) address a rather mysterious aspect of reading, our extremely easy recognition of mirror-letter pairs such as d and b (which in a non-reading context would likely be perceived as the same object) as distinct. They use gaze as a marker to investigate the differences between beginner (children) and expert (adult) readers on mirror-letter identification. They found that expert readers are less confused by mirror-letters (i.e., presenting the word forst instead of forest) than novel readers, for whom differentiating between two words that only differed in the mirror reversal of two of their internal letters took longer.

They build on the idea that letter reversal has to be unlearned to become a proficient reader (Dehaene, Cohen, Sigman, & Vinckier, 2005). The authors show that reading expertise modulates letter identification but demonstrate a limit in this reversal, showing that this orientation insensitivity cannot be completely inhibited when proficiency is achieved.

EDUCATING EDUCATION

Nora Newcombe (2013) argues that there is still a huge gap between the educational community and educational neuroscience community, between research and application. Her main argument is that there is a systematic resistance to use evidence to guide education. In the article she explains the reasons that may lead to this fact. This is reminiscent of the well known inability of humans to use evidence in day-to-day decisions, which has been a guiding principle of behavioral economics (Kahneman, 2011).

Although this message may seem pessimistic, the article proposes concrete strategies to pursue the ambitious goal of applying cognitive and neural sciences to education. Newcombe argues that education should include well-chosen strategies for educating students to be critical thinkers, presents the arguments of why this is not currently the case, and thoughts on how this can be improved.

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NOTES

- 1 <http://www.laschool4education.com>
- 2 The software, always under construction, is available at <http://www.matemarote.com.ar>

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