


REVIEW

# Science of reading and bilingualism: establishing a connection with the Brazilian schools

Thales Nascimento BUZAN   
Juiz de Fora Federal University (UFJF)

## ABSTRACT

The aim of this review is to present the round table “Psicolinguística: da mente à escola” broadcasted on June 1st and organized by the event Abralín Ao Vivo. It also highlights interesting points discussed in the chat simultaneously with the presentation. The round table brings together proposals from the science of reading and the science of bilingualism to dialogue with the Brazilian school system. Thus, researcher Janaina Weissheimer addresses translational research in the neuroscience of reading and its application in schools, as well as data on the importance of sleep in consolidating knowledge. Researcher Ingrid Finger, in turn, addresses bilingualism and its impacts in the classroom, as well as discussing evidence from researches in the field and the boom of bilingual schools in Brazil.



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EDITED BY  
Raquel Freitag

REVISED BY  
Janaina Weissheimer

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## RESUMO

O objetivo desta resenha é apresentar a mesa redonda “Psicolinguística: da mente à escola”, transmitida no dia 01/06/2020 e organizada pelo evento Abralín Ao Vivo. Destacam-se também pontos interessantes discutidos no chat simultâneo à apresentação. A mesa reúne propostas da ciência da leitura e da ciência do bilinguismo a fim de dialogarem com a sala de aula. Dessa forma, a pesquisadora Janaina Weissheimer aborda a pesquisa translacional em neurociência da leitura e sua aplicação na escola, bem como dados sobre a importância do sono na consolidação do conhecimento. A pesquisadora Ingrid Finger, por seu turno, aborda o bilinguismo e seus impactos na sala de aula, além de discutir evidências advindas de

pesquisas na área e a epidemia de escolas com currículos bilíngues no Brasil.

KEYWORDS

Learning. Bilingualism. School.

PALAVRAS-CHAVE

Aprendizagem. Bilinguismo. Escola.

Researcher Janaina Weissheimer begins by reporting that she will deal with translational research developed by her in the neuroscience of reading field and its application in the classroom. To address this, professor Weissheimer contextualizes the participants in a remarkable way with the positive and negative legacies of the "decade of the brain", period between 1990 and 2000.

The emergence of the science of learning, issues related to memory retention, with its positive and negative filters, and motivation, a much-studied subject that can be incremented with data from neuroscience, are presented in a clear and precise way. To build the bridge between school and neuroscience, therefore, Weissheimer argues that this process should be one of feedback, that is, that both neuroscience and school should work together in sharing data and information.

Having made this important introduction, the researcher brings forth her presentation's focus: reading. Going through issues of dyslexia and brain changes, she addresses the discussion of the importance of sleep for learning and its fundamental and indisputable role for the consolidation of memory. Through studies that she herself has developed with collaborators, sleep is investigated within the school with very interesting results for the fixation of contents by declarative memories and procedural memories.

Through a more recent study, the researcher exemplifies how neuroscience can contribute to the understanding and approach to reading problems in school, in particular the relationship of letter mirroring during literacy with visual invariance, which, according to the researcher, can also be studied from motor exercises to accelerate the process of breaking this invariance. The explanation made about how our visual perceptual system works, especially about the mechanism of visual invariance, anchored to our prehistoric and evolutionary past, was fundamental for the understanding of this phenomenon of mirroring.

The professor makes a fairly interesting point about the difficulty of standing up for the importance of sleep while being in a capitalist society that sees sleeping time as a waste of money, since there is no production being done. She strives for a somewhat utopian future that embraces a culture of sleep, following the logic that if sleep is appreciated, then learning is appreciated.

Professor Janaina Weissheimer ends her speech by giving bibliographical indications, presenting personal projects and suggesting paths for translational research and holds, once again, the point of

view that the necessity of neuroscience for conscious decision making in the classroom. After a series of compliments in the chat about professor Weissheimer's speech, it is professor Ingrid Finger's (UFRGS) turn.

Finger begins her speech by defining "Psycholinguistics of Bilingualism," in which linguistic and cognitive processing are studied in bilingual speakers and bilingual situations. She explains how this field of knowledge is linked to neurosciences applied to education and highlights that she will contribute to this table not only by discussing bilingual processing, but also by discussing bilingual education within the educational bias of the 21st century. The concept of this current education is presented with regard to its type of teaching view, that is, with a focus on the integral formation of the human being to deal with the adverse situations of the world than simply memorizing content.

The researcher proposes to connect, as her colleague did, neuroscience and education and, to build this bridge, she highlights a fundamental question: if we do not know how human beings learn, how will we think about teaching methods? In this bias, she points out that the bilingualism research she develops follows this thought, but that in the area of language teaching, be it foreign or mother tongue, there is a lot of talk about teaching methodologies and about trying to discover the best way to teach so that all students learn, which is something miraculous and utopian. Finger argues that the discussion, today, must follow another line of reasoning, a line that questions itself and worries more about unveiling and discussing how the human being learns, not only languages, but any kind of content. One must abandon this idea of standardizing teaching, since there is immeasurable diversity from person to person.

In line with the ideas presented by the researcher, the chat manifests itself by informing that, until today, in accord with the time of graduation of professor Finger, the teaching courses of foreign languages are based on teaching methods and little or nothing is said about learning and data from neuroscience.

By presenting matters and examples on globalization, access to information, codeswitching, difficulty on active participation of monolingual individuals in society, and prestigious languages, Finger discusses the panorama of bilingual education in Brazil, where there is currently a worrying explosion of bilingual schools linked to the lack of scientific evidence to support the decisions that teachers make in the classroom of a bilingual school.

Next, the researcher presents some important evidence coming from bilingualism research, such as linguistic co-activation and neuronal activity patterns in bilinguals, emphasizing how bilingual experience affects general cognition, not only linguistic domains, due to brain plasticity. From some examples, Ingrid consolidates the bilingual experience as unique and life-changing, and listeners confirm this point of view through chat, reporting that it would be really difficult to imagine themselves without their second language. Still in the chat, there is an interesting engagement about linguistic co-activation in research within psycholinguistics, since it is fundamental to know if the participants of a certain experiment are bilingual or not, given that this can be significant for the results of a certain experiment.

To end her speech, professor Finger presents the definition of the executive functions and their components, and their direct link to school success, since many of the skills required at the 21st century schools are part of the executive functions. She also discusses data on the transfer of knowledge, concepts and competence among bilingual languages, but points out that it is not yet known to what extent this transfer occurs, being, therefore, a fruitful area for new studies.

The table comes to an end with discussions stemming from questions and compliments made by the participants in the chat and questions such as the fact that the undergraduate curriculum does not address bilingualism, neural bases of learning and reading science, how to engage teachers to participate in research inside schools, sleep effects with younger children, among other subjects. This round table was of extreme importance for being able to connect science to school and, mainly, for intertwining all this with the current Brazilian context.

### REFERENCES

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