

Digital Language Learning (DLL): Technology, Data, and the Brain

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Human behavior is situated in the environment in which the real-world experience impacts the process of evolution. In an era of rapid developments in digital technology, we have an opportunity to connect human learning experience with digital applications and mind-brain-evolution studies. In this talk, I outline an approach that combines emerging technologies with current neurocognitive theories, with a particular reference to embodied language learning through virtual interactive realities. I highlight the differences in the context of learning between children (learning native language, L1) and adults (learning a foreign language, L2), and suggest ‘social learning of L2’ (SL2) as a new framework for thinking about L1-L2 differences and the corresponding neural correlates. If social and affective cues can be made available through digital tools and platforms to the L2-learning adults, as they are naturally available to L1-learning children, the success of L2 learning may be enhanced. The neural evidence from our work shows that SL2-based learning, as compared with traditional classroom-based learning, can lead to brain network patterns in L2 that are more similar to those underlying L1. Theoretically, this approach can also help us to gain a deeper understanding of embodied learning and its neural mechanisms. More broadly, our studies suggest that different patterns of neurocognitive representations can result as a function of different approaches towards learning. Combined with the power of big data and machine learning, this approach also sheds light into personalized education, thereby informing pedagogical designs and instructional innovations.