

# **Exploring Neuro-educational Knowledge and English Education for EFL Students**

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## **ABSTRACT**

For EFL students, classrooms might be the only space to receive language input, use learned language expressions, and practice to improve their English skills. Human language learning process is so mysterious that Chomsky used the concept of UG to explain the language development. However, recent research data from neuro-science, neuro-linguistics, and neuro-education gradually began to reveal relevant information on how to scientifically and systematically help language learners to improve communication skills in their foreign language. Sharing database on language learning and linguistic development can lead teachers and learners to a creative educational practice and a new group of professionals interested in connecting scientific research results with educational practice might be able to suggest viable educational solutions to the existing problems in the expanding circle countries.

**Keywords:** Neuro-education, Neuro-science, EFL, Brain

## **I. INTRODUCTION**

Language learning takes place in many countries around the world and English is one of the most widely treated languages. In the midst of such diverse learning settings, students in the classrooms in the expanding circles where English is learned as a foreign language (Kachru, 1985) by and large face harsh learning environments with less educational support and lower intrinsic motivation. Not to mention the level of learners' motivation, language input, including linguistic exposure, and opportunities to use and practice are much rare or minimally given to the students in the expanding circle countries. This is especially true when compared with the educational situations for those in the inner and outer circle countries. Classrooms are the only space for EFL learners to receive language input, in the medium of instructional transmission rather than in the authentic and interactional mode, and to use and practice received language input. Considering such limited environmental

factors, educators in EFL countries should be able to provide learners in their own struggle with educational alternatives that are effective and learner-friendly.

Educationalists in EFL countries have been trying various alternatives to improve the learning outcomes in the classroom and some of those informed decision makings gave positive influence on educational policy making process. Recently, educational science emerges as an academic branch that can help educationalists produce advanced learning outcomes. Rapid progress in computer imaging technologies enables educators to look into the process of our language learning taking place within our brain. Science in theory and practice in classrooms together can construct creative and potentially powerful tools to improve educational reality. Neuro-science, equipped with knowledge regarding second language learning process in our brain, can make possible “analysis of the black box of biological processes that underpin learning” (Fisher, 2009).

Language learning is considered to be from abstract processes but recent research data from neuro-linguistics and neuro-education might shed a meaningful light on where to treat and revise to help EFL learners to improve communication skills in their foreign language. Sharing database on language learning and linguistic development can lead to a creative educational practice and “a new profession of educational engineers or translators to facilitate connecting research with practice and policy” (Fisher, 2009) might also come into being to suggest viable educational solutions to the existing problems in the expanding circle countries.

## **II. NEURO-SCIENCE AND EDUCATION**

Human beings learn and remember diverse sets of knowledge necessary for our survival and the brain is the main tool of learning and remembering. Therefore, a deeper understanding of the brain and its relevant mechanism of learning is highly relevant to educational development. Modern science is gradually uncovering the significant role of biology “in every aspect of human experience and performance” (Goswami, 2008) and the science of language learning brain is one of those revealing mysteries of human cognitive processes. Learning a second language can be accomplished through a complex mix between physical/mental changes and environmental interactions. The knowledge about how brain works can help EFL scholars to delve deeply and practically into the effective solutions that can overcome shortcomings from the educational situations in the

expanding circle. Knowledge from neuro science can offer relevant information regarding critical period hypothesis, universal grammar, rote learning and related sort of concepts that are controversially discussed. Principles of neuro-education may shed light, for example, on the following educational issues (Goswami, 2008).

- a. Learning is incremental and experience based activity.
- b. Learning is multi-sensory.
- c. Brain mechanism of learning extract structure from input.
- d. Learning is social.
- e. Cortical learning can be modulated by phylogenetically older system.
- f. Learning shows life-long plasticity and compensation

Not many educationalists and practitioners in the field of EFL education are interested in the use of neuro-science knowledge. Even some educational neuro-scientists mention that the bridge between neuro-science and educational practice is too far to be crossed by teachers and students. Such skepticism might have been originated from the inadequate assumption regarding the role of the application of neuro-science research in education. The translation of neuro-science research results into direct classroom applications is still in its initial phase so it is not easy to find tangible educational outcomes derived from neuro-science research results. However, as revealed in the research with London taxi drivers, human brain, when dealing with a vast amount of tiny facts like The Knowledge, can be developed long after the puberty period especially in the section that is closely related with memory function. The posterior hippocampus of taxi drivers turned out to be bigger than that of the control group who didn't participate in the learning process of The Knowledge. The structure of The Knowledge is quite similar to the English vocabulary system that include more than several thousands of words and the period of adult taxi drivers' learning, mostly two years, can be successfully compared with that of second language learning processes. Well-designed efforts to connect the neuro-science knowledge regarding language learning brain for a second language and EFL educational practices regarding learning and teaching methods, might increase the possibility to find a better solutions for EFL learners who are remaining at their chronic beginning level.

### III. CONCLUSION

Language learning in EFL countries in general begins with written words in English opaque orthography. Difficulties in reading a given written text partly comes from the systematic organization with which the target language are equipped from its linguistic nature. English and Korean languages do not belong to the same or close linguistic family (Odlin, 1994). The speech-sound mapping of the English language is much more complex than that of Korean. Korean language belongs to the transparent language families and thus shows simpler and clearer speech-sound mapping system than English. Therefore, Korean EFL learners might undergo bigger difficulties in understanding English orthography system than the learners of other native languages. In addition, those who are not familiar with the pronunciation of their learned vocabulary might undergo bigger difficulties in processing printed words because processing of a printed word is influenced by information concerning its pronunciation, especially when processed in the left hemisphere of the brain (Peleg & Eviatar, 2012).

The discussions just mentioned above are from knowledge acquired from the study of human brain. The knowledge of neuro-science and the educational application of such knowledge might be located far away from each other. However, the human endeavor that tries to fill in the gap between two somewhat different-looking knowledge sets might build a new field of academic interest in the time of fusion and multi-disciplinary study. Modern society and modern students brings into our classrooms a wide range of differences, learning styles, social attitudes, preferences, and etc. Teachers, though not with much resource, need to properly treat such pluralities that are explicitly extant in the reality of our teaching and learning situations. In search for the brand-new educational alternatives that can successfully improve existing educational settings, educators and relevant stakeholders need to pay enough attention to the field of other academic interest to create the synergy effect for the learners.

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## BIODATA

Daekweon Bae earned his first undergraduate degree in Business Administration at Seong Kyun Kwan University in Seoul in 1994 and worked at CJ for 6 years. His lifelong interest in English led him to the continual study of English education and he received two master's degrees, first in English Education at Kyungnam University, Korea and second in TESOL at Macquarie University, Australia. He earned two doctoral degrees in Korea, first at Andong National University and second at Kyungnam University. He continued his doctoral study at the University of Phoenix, USA in the field of Educational Leadership in the Curriculum and Instruction and now his prior academic interest lies in how brain works in the process of language learning. Brain knowledge is being explored through another doctoral study at the University of Brain Education, Korea to find a creative educational alternative for Korean EFL learners. He currently works at the Department of English at Gyeongnam National University of Science and Technology as an Assistant Professor.