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人脑研究新发现及其在汉语教学上的应用 New Research into the Brain and its Implications For Teaching Chinese as a Foreign/Second Language

Frank Lixing Tang 唐力行, Robin Harvey 何柔彬
(New York University, USA)

Recent brain research has revealed new insights in the understanding of the human brain. Many of these insights – that the human brain is meaningful, curious and emotional, among others -- have strong impact on the teaching and learning of foreign languages, including Chinese. This article will begin with an overview of several brain-based teaching principles, which will be followed by a discussion of the application of these principles in the practice of teaching Chinese as a foreign language.

New Research about the brain

Much new research exists about the human brain (Jensen, 2005, Caine, McClintic & Klimek 2005, Sousa 2006), with strong implications for moving into a form of teaching that more fully utilizes the brain's capacity and capabilities. Some of these findings are listed below:

- The human brain is always growing (人脑在不断地成长) . In the past it was believed that when adulthood was reached brain cells would begin to die, or at least would not continue to grow. Scientists have now found that even in adulthood our brain cells continue to grow and even continue to make new connections. This is why some adults can continue to learn foreign languages even in adulthood.
- The human brain is adaptive (人脑有非常强的适应性) . It is always changing; brain cells are always making new connections, and these changes and new connections are due to ever-changing environmental factors and experiences undergone by the human brain.
- The human brain is emotional (人脑带有强烈的感情) . Thoughts and emotions originate in separate areas of the brain, but their paths cross and they are intimately related. In the face of threat or pressure, the human brain goes into survival mode, and the ability to reason and learn is reduced. Jensen (2001) says: "Survival always overrides pattern-detection and complex problem solving. Students are less able to understand connections or detect larger levels of organization... Learning narrows to the memorization of isolated facts."
- The human brain is meaningful (人脑不断地寻求意义) . To the human brain, the deeper, hidden (inner) meaning is more interesting than pure fact (Caine & Caine, 1994), and the brain seeks deeper meaning and connections from simple information. Information that is meaningful is more easily stored and remembered (Sousa, 2006). The brain searches for meaning through patterning. Patterning allows for the storage

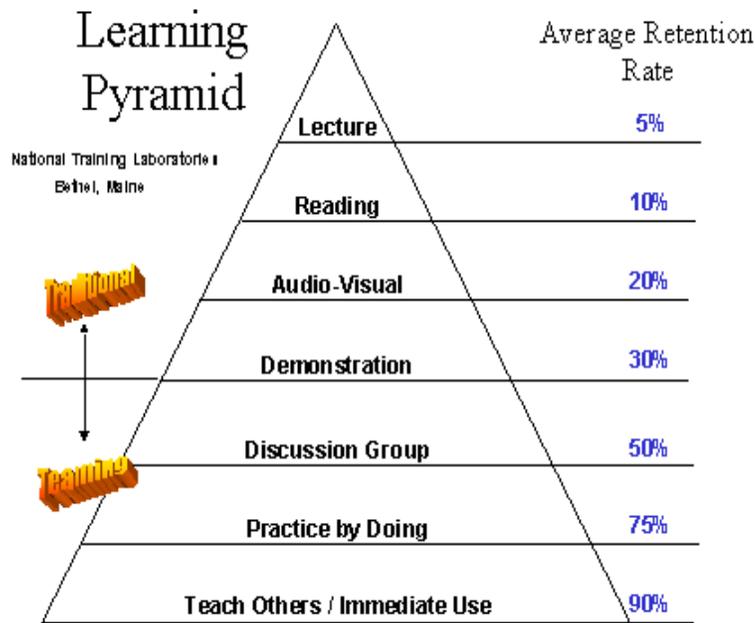
and connection of information into meaningful categories. People learn and remember things in stories as stories are often meaningful.

- The human brain is curious (人脑充满了好奇) . The brain is curious about new experiences and stimulated by new ideas and new challenges, and tends to become more active when exposed to new ideas and challenges.
- The human brain is social (人脑喜欢社交) . The brain enjoys social interaction, especially oral interaction, reaction and response (Caine & Caine 1991). Language learning becomes more effective in a learner friendly setting where scaffolding, cooperative learning, and social interaction take place.
- The human brain uses both conscious and subconscious capabilities (人脑有意识和无意识地学习的能力) . Extended to teaching and learning, this means that knowledge is not just learned in the classroom from a teacher's explicit teaching. Successful language learners extend their learning beyond the textbook and the classroom. This new understanding of the brain's capabilities supports Krashen's theory of learning vs. acquisition of a foreign language (1981).
- The human brain is unique (每个人的大脑都不尽相同) . Every brain is different from every other brain, due to different environments before birth and different experiences after birth (Jensen, 2005, P 113). Because we recognize this, we also recognize that different brains possess different learning styles. Gardner's theory of multiple intelligences (1993) opened the window for better understanding of the brain's powers.

Implications for Educators

While traditional grammatical exercises, substitution drills, and pattern practice still have a place of prominence in many foreign language classrooms, research shows that this type of instruction alone does not challenge the brain's full capabilities. Instead, this type of language learning frequently creates a more stressful, competitive environment where language is ultimately disconnected from meaning and from students' interests.

Rather, Chinese teachers must work to create a more stress-free, intellectually challenging environment, where students' anxiety is low and the thinking skills are high level; in which students work together with the teacher in a cooperative social environment where success or failure is due to the effort of the entire group (Johnson and Johnson), and the goal is to discover, create and share meaning, culture, knowledge and their experience through the medium of the Chinese language. In this classroom environment, language exists as the tool for communication of ideas – the same purpose language serves outside the classroom. As Galal Walker (1998) states, "... learners of the language do not learn Chinese; they learn to do things in Chinese. The more things they can do in Chinese, the more expert they are in the language." In addition, language retention rates in this type of classroom are high as compared to the traditional, drill-based classroom, as shown in the learning pyramid below.



These principles can be expressed more succinctly as follows:

- 1) Create an educational environment that is relaxed yet challenging, to suit the emotional brain.
- 2) Create a meaningful and purposeful second language learning environment, to engage the meaningful brain.
- 3) Employ a many-faceted approach to materials and new topics, to suit the curious brain.
- 4) Emphasize both individual and cooperative learning, to engage the social brain.
- 5) Offer opportunities for both conscious and subconscious learning.

Methods and activities for the brain-based foreign language classroom

As described earlier in this article, a brain-based approach to second language teaching creates an ideal environment for language learning and retention. Here we will discuss several classroom activities for activating brain-based learning and creating the vibrant language learning environment described in the previous section. These activities can be adapted to all levels of language learners in age and skill appropriate ways. For example, younger students might dictate their stories to a teacher, rather than write them down, and older students may handwrite or type their own work.

真的/假的

Engages: social brain, curious brain

Learning Goals: Students will build listening comprehension and reasoning skills.

In this brief activity, which can be used as a warm-up or do now at the beginning of class, the teacher (or a student) presents three personal statements to the class. The class must determine if the set of statements is true or false. More experienced students must explain why they believe the statements are true or false. For example, a

teacher may state: “我是美国人。我有两个弟弟。我没有狗。” The students would then determine if the statements are true or false, and point out the reason the statement is false (for example, “老师没有狗。”) These statements can become more and more complex as student language progresses.

This activity can be done with advance preparation, allowing students to prepare their three statements in advance of class, or may be done as an impromptu activity to allow students to use language creatively in a more “real-life” setting, where there is no time for advance preparation.

What should they wear to the party?

Engages: meaningful brain, curious brain

Learning Goals: Students will learn to talk about clothing they like to wear through learning the song/chant “参加派对” (“Going to a Party”). They will be able to discuss what their friends and they wear to parties, and will learn about the choices Robert and Lily are making about what to wear to a party, and will be able to discuss their feelings about Robert and Lily’s choices.

In small groups, students will analyze these song lyrics to discover the verbs used to discuss the wearing of clothing and accessories. They will, through structured study of lyrics, come to conclusions about the usage of the verbs (戴 and 穿) and will be able to categorize wearable items by appropriate verb. They will also be asked to categorize clothing by type (裤、裙、衣), and will be able to discover clothing-associated radicals and categorize characters according to these radicals. (Huang, 2012)



(Pictures from “Rhythms and Tones 2,” © P. Huang, R. Harvey, D. Bellocq)

Who Am I? (information gap activity)

Engages: Social brain, curious brain, meaningful brain

Learning goals: Students will learn to describe their daily lives and those of others and will be able to make connections across cultures. The target language becomes the tool for discovering information about a person.

In this activity, the teacher assigns one student a secret identity which other students will have to guess. The student, taking on the secret identity, must describe to classmates (in character) a typical day or event which gives clues to the secret identity. Classmates must guess the secret identity from the description given.

For example, the secret identity might be “High School student in China.” The student might say “I have so much homework, I have to stay up all night preparing for the test, and go to school on Saturday to do more preparation for the college entrance exam. My parents are pushing me harder to get higher grades and practice the piano as well.”

This activity can be done as an oral presentation to the class, with the secret identity given to the student orally. For literacy skill practice, the identity could be given to the student in writing, students could take notes while the presenter speaks, or students could be asked to write up their presentation at home either before or after the activity is done in class.

Who is the Criminal? (information gap activity)

Engages: social brain, curious brain

Learning Goals: talking about what we were doing at a specific point in time (你昨天晚上在做什么? 我昨天晚上在睡觉, 做功课, 看电影, etc.)

In this activity, one student must discover the identity of the criminal who has committed a crime. Students are broken into groups. One student in each group is the police officer. The rest of the students are given alibis in writing (in secret documents which they may not share with classmates) for the time during which the crime was committed. By asking questions, the police officer must determine which group members have a valid alibi and which one is the criminal.

What do they eat? Cooperative Learning/Jigsaw activity/Expert-home Groups

Engages: social brain, curious brain

Learning Goals: cross-cultural comparisons.

In expert groups, students learn about the favorite foods of a country or region they are studying. Students then travel to their home groups to share their country's foods with members of that group. In home groups, the students categorize the various countries' foods by ingredients, when they are eaten, or other factors.

Songs and Chants

Engages: emotional brain, subconscious brain

Learning goals: Listening to music in class creates a state of relaxed alertness among students. Music and lyrics create emotion in students. The repetitive, natural language in songs allows for subconscious learning, or acquisition, of those patterns. Chants (raps), properly executed, offer the added benefit of emphasizing natural speech patterns and the tonal system of Mandarin.

Popular songs from the Chinese-speaking world, with catchy music and natural lyrics, are ideal for use in the classroom as they are of high-interest to students. The song “完美的一天” by artist 孙燕姿 (<http://www.youtube.com/watch?v=5qDJRirgzbY>) is about a young woman's life and interests, and is an ideal addition to a unit on the home. Several types of activities scaffold upon each other in a project based on song:

- Students listen to the song, watch the video, and discuss what it is about
- Students listen to the song again, this time with a copy of the lyrics from which certain strategic vocabulary words have been deleted (cloze exercise)
- Students work in small groups to discuss their dream houses and/or perfect day
- Students draw pictures of their own dream houses and/or perfect day (individually or in small groups), and write lyrics based on the original song lyrics
- Students scan their pictures and record their song to create a video record

Following are some illustrations from an early middle school program, wherein students completed this project. The students were inspired and emotionally involved in this project, as it gave them an opportunity to express their values. For example, the student with a small house wanted a house with lots of rooms, while another student wanted many cats!



Story-Telling

Engages: emotional brain, social brain, subconscious brain, meaningful brain

Learning goals: students will be more comfortable communicating personal information, feelings about events and story-telling sequences. The telling of personal stories helps to break down barriers between teacher and student and create more relaxed classroom environment. In a real-life example, Teacher Zhu, who teaches at the Chinese American International School in San Francisco, tells a personal story about her family having Japanese food on the weekend. Her hope is that she will engage students in her personal story, lower their affective filters and encourage them to share their own personal stories. Even the “typically shy and quiet” child Peter is so excited by the activity that he attempts to share a story about his family (Shyu, 2008).

Children’s books often follow predictable linguistic patterns, with a surprise on each page to keep children engaged. As young children read these stories, often over and over again, the linguistic patterns are stored in the memory. In fact, young children frequently repeat the lines aloud along with a teacher or parent.

Young adult stories often contain complex emotional ideas closely connected to our student’s daily lives, conveyed in simple language. The simple linguistic patterns and emotional connections of these stories make them ideal for use in the second language classroom or for at-home reading. Technology makes it easier to record stories for

students to listen to or respond to at home (voicethread, youtube, photostory 3, etc.); as in the song project students can create their own stories based on the originals.

Movies/videos

Engages: meaningful brain, curious brain, social brain, emotional brain

Learning goals: Listening comprehension skills and creative communication skills will be enhanced by this activity.

A movie-based activity made possible by new technologies is movie dubbing. Students dub scenes from their favorite movies into Chinese, either following the original script or to an imagined script. Dubbed movies can then be judged according to a rubric including points for creativity and for language use. To add additional excitement to this project, two high schools in New York this year created the “Rock that Movie” competition. Students from these two schools competed in this movie-dubbing competition, and exhibited great creativity and emotional engagement in their project.

Projects / Theme Unit

Engages: meaningful brain, curious brain, social brain

Content-based and theme-based units offer a wide variety of activities to challenge the brain’s full capabilities and provide a deeper processing of knowledge and language. A unit based on the song “完美的一天” could be extended beyond the video activity discussed above to call on more complex thinking skills. For example, once students decide on their perfect day or dream home, they would research and make a presentation about how much it would cost. Extending across cultures, students would then research what that perfect day/dream home might look like to a student in China, either in current day (perhaps through a Skype exchange program) or in a historical time, as well as its cost. Through these activities, students would work across disciplines (social studies, history, math and economics) and across cultures. Ideally, this project would culminate in a fair or poster day where students celebrate and share their findings with the class, parents, and other members of the school community.

As Jensen (2001) explains: “Complex projects present more opportunities for curiosity, mystery, social interaction, frustration, excitement, challenge, fulfillment, and celebration than shorter, simpler ones.” This engagement with a project creates opportunities for extended learning and retention.

Conclusion

While there is a place for explicit teaching in the second language classroom, much can and should be taught through inquiry-based activities where students learn for themselves and teach others. As the learning pyramid shows, activities in which students learn by doing, teaching others, and immediately using their new knowledge result in the highest retention rates. These types of activities serve to more fully activate the brain’s capabilities. As Chinese language teachers, we must work to create a positive social environment in which communication in the target language (Chinese) is expected and valued, where students support each other, and rote learning takes a backseat to learning which engages the students’ whole brain: the creative, curious, meaningful, emotional, social, and quite amazing brain.

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