

Developing the Language Learner's Mind and Soul with Mindfulness, Movement, and Music

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Summary: This paper surveys the employment of discoveries in neuroscience as the fundamental tools in building a vocabulary acquisition method. Once the neuroscience discoveries are explained, the author shows how they can be applied to help English language learners encode, learn, remember, and use English lexical items. Data to illustrate the effectiveness of the method are offered along with possible limitations of its use.

Keywords: the Ebbinghaus curse, embodied semantics, mirror neurons, mindfulness, movement, music, spaced-intervals of learning

Introduction

The fundamental significance and intrinsic value of learning vocabulary for English language learners (ELLs) can never be overemphasized. Both teachers and students of languages inherently understand the pivotal role of lexical items. The purpose of this paper, then, is to offer a very engaging method that helps ELLs encode, learn, remember, and use lexical items with ease and enthusiasm. This method includes the employment of recent discoveries in neuroscience and the use of mindfulness, movement, and music. First, I will survey and explain six highly important neuroscience- and well-being-based tools that lay the foundation of the method. Second, I will briefly touch on my *Head-to-Toe Method of Associations for Vocabulary Acquisition* that helps set the stage for effective vocabulary learning. I will, then, explain the roles of mindfulness, movement, and music in the featured method. I conclude with a sample of selected data on the method and some possible limitations that teachers may want to consider.

Setting the Stage

In the cult film *The Matrix*, Morpheus, the rebel leader, tells Neo, the young prodigy, "Don't think you are. Know you are." Moments later, Morpheus tells Neo, "I'm trying to free your mind, Neo. I can only show you the door. You're the one who has to walk through it" (Wachowski & Wachowski, 1999, 52:50). These moments in *The Matrix* parallel the English language learning experience. It is the teachers' job to show the students that they must be confident and "know" that they know the lexical items and that they can, in fact, effectively use English vocabulary. The teachers must also equally free the students' minds and help them walk through the door of vocabulary acquisition and use.

How this is done is the real question. Scholars of English vocabulary acquisition such as Krashen (2012) often make troublesome and puzzling claims that marginalize the need and importance of explicitly teaching lexical items. In addition, there is a daunting reality I have termed *the Ebbinghaus Curse* (Randolph, P. T., 2017). According to the work of Ebbinghaus (1885/1913), we forget 90% of what we learn within 30 days. However, what is even more troubling about the Ebbinghaus Curse is that most of the forgetting actually takes place within the first few hours of the initial exposure. Given, then, what the scholars tell us about teaching vocabulary, compounded with the steep forgetting curve, need we even bother teaching vocabulary in our English language programs? With this question in mind, I responded by challenging myself to get my ELLs to retain 90% or more *after* 30 days. The result was my *Head-to-Toe Method of Associations for Vocabulary Acquisition* and the development of my *Mindfulness-Movement-and-Music Method*.

Literature Review & Research

The Neuroscience Components

Before I shed light on these two methods, I would like to briefly touch on the six key components that I consider essential tools for learning vocabulary. These are embodied semantics, mirror neurons, mindfulness, movement, music, and spaced-intervals of learning. These components are paramount in the learning and memory process (i.e., encoding, storage, and retrieval) because they encourage the language learners to genuinely learn the lexical items and gain a stronger sense of sincere ownership of the terms. Let us now survey each one to see how they assist ELLs in the process of vocabulary acquisition.

Embodied Semantics

Embodied semantics plays a crucial role in both physical actions and the corresponding cognitive ideas of those actions. According to Aziz-Zadeh and Damasio (2008), “embodied semantics states that concepts are represented in the brain within the same sensory-motor circuitry in which the enactment of that concept relies” (para. 1). For instance, when one *passes* a volleyball, that same sensory-motor area is being activated as when one simply *thinks* about passing the volleyball. Both thinking and doing are intricately related. This is central in terms of vocabulary acquisition because if we say words and idioms, hear their unique sounds, and then have the students act the terms and their meanings out, they are getting significant reinforcement of the lexical items during the initial encoding process (Randolph, P. T., 2018).

Mirror Neurons

The discovery of mirror neurons highlights the importance of modeling activities in class and also using gestures and facial expressions when teaching vocabulary (Randolph, P. T., 2013a). According to Acharya and Shukla (2012), “[m]irror neurons are one of the most important discoveries in the last decade of neuroscience” (para. 1). For these unique neurons fire when we *do* a particular activity (e.g., pick up an apple and eat it) as well as when we *watch* someone doing the same or a different action (i.e., picking up an apple and eating it or singing and dancing). Mirror neurons are the reason we can live vicariously through characters in a novel or feel sympathetic or empathetic when we watch a film (Iacoboni, 2009). These neurons help us “feel” what “the other” is going through. It is important to note that there are a number of different kinds of mirror neurons that help with everything from developing skills in sports to acquiring lexical items. For a survey on these, see McPherron and Randolph (2014).

What makes these neurons so salient is that their location overlaps with the sensory-motor areas, so the pedagogical tools of using gestures, facial expressions, and acting out the terms to help explain the meanings become highly significant. The tools are very beneficial for the teacher’s growth as an educator and the students’ growth as learners. The teacher guides the students through “seeing” and “understanding” the meaning of the terms via gestures and facial expressions while the students “mirror” or “mimic” this with their mirror neuron systems. Their brains are essentially mirroring what the teacher is doing and conveying. That is, this method encourages the teacher to become better at using gestures and facial expressions as learning tools, and that helps the students learn the vocabulary at a deeper level.

If one, for instance, is introducing the tri-part phrasal verb *come up with*, he or she might create a gesture by moving the hands and fingers about as though they were discover-

ing something of great import while simultaneously making a facial expression that represents a moment of fantastic insight. This initial phase is vital, and it is reinforced even more by having the students mimic the gestures and facial expressions. In doing so, the ELLs will activate both the embodied semantics and their mirror neuron systems, and they will also employ mindfulness and develop acute observation skills, our next tool of interest.

Mindfulness

Mindfulness, according to Kabat-Zinn, is based on three important factors. It requires one to focus and pay attention “on purpose, in the present moment, and nonjudgmentally” (Kabat-Zinn, 1994, p. 4). Kabat-Zinn explains that this kind of attention allows us to become more aware of the present while nurturing a sense of mental clarity and calmness. Being both mindful and an acute observer of a language’s lexical items’ use and meaning helps develop an intrinsic understanding of how they function in both spoken and written English. That is, by being mindful as we study a language, we can become more engaged in the moment and make life itself our 24/7 language classroom. By using and practicing mindfulness, learning a language can become a very spiritual as well as a very profound educational experience.

Mindfulness practices also reinforce the above brain tools of mirror neurons and embodied semantics by using observation skills and incorporating the linguistic moves we see and make in various language settings. For example, an ELL might be mindful of an English language user’s proxemics (i.e., the personal space given in spoken conversation) or how a certain word like *apparently* is used in daily interactions, or even perhaps how a fabricated word like *disconcerting* is misused. In short, the more mindful our ELLs are, the more they will understand how daily interactions are accomplished, and the more they will acquire new terms and start to understand how to employ these terms in a natural and effective way.

Movement

From what the neuroscience community currently knows and understands, there is no better tool for brain development and learning than physical exercise (Randolph, J., 2020; Ratey & Hagerman, 2008). Whether it be learning a language or understanding math, creating a poem or observing a social habit in one’s immediate environment, physical exercise is the most effective tool for the learning process (Randolph, J., 2020; Randolph, P. T., 2016b; Ratey & Hagerman, 2008). In fact, exercise, even in modest doses, can help the brain focus and learn at impressive rates (Randolph, P. T., 2020).

What makes physical exercise so significant is that it has numerous specific benefits for the brain that help with learning and memory. For example, it promotes clarity of thought, enhanced problem-solving abilities, and better

focus and attention (Randolph, J., 2020). In addition, exercise stimulates the release of important neurotransmitters (e.g., acetylcholine, dopamine, epinephrine, norepinephrine, and serotonin) and the all-important brain-derived neurotrophic factor (BDNF). The reason these neurotransmitters and BDNF are so essential is that they, as above, enhance all the necessary components of learning and memory. Physical exercise also increases the size of the hippocampus, which is one of our major learning and memory centers; and, perhaps even more important, exercise promotes neurogenesis—that is, the creation of new neurons (Randolph, J., 2020; Ratey & Hagerman, 2008). These new neurons, of course, make us better learners and more creative thinkers.

Music

Music is another highly significant pedagogical tool for vocabulary acquisition. Music, as is the case for physical exercise, has been a very rich and profound part of our cerebral and evolutionary development. In fact, Levitin (2006) claims that “[w]e can say, conservatively, that there is no tangible evidence that language preceded music” (p. 256). To be sure, music and musical instruments date back thousands of years. In a certain way, mindfulness, movement, and music have been in our DNA and acted as our intimate survival tools for centuries: We needed to be *mindful* to escape wild predators; we needed to *move* to find food; and we needed *music* as a spiritual and inspirational element for our cognitive and social well-being.

Music has been found to employ and enhance numerous parts of the brain from the amygdala and the hippocampus (the centers of emotion, learning, and memory) to the frontal and temporal lobes (the centers of language growth and learning). Each of these regions is paramount for the specifics of language development, as they assist in learning and memory and establish the neural connections necessary for brain growth and plasticity. Music can also calm the heart rate or speed it up; the result of either the former or the latter will elicit various neurotransmitters that can help secure the learning and retention of the lexical items. In addition, music provides an inspirational element via the personal links to favorite artists, genres, and songs. Furthermore, the associations created by the memories of those songs add to a more profound level of in-depth processing and elaborate encoding. These personal links are specific to each student, and they help the students make crucial associations with the music and the vocabulary terms. So, by employing music to learn vocabulary, ELLs develop more personal connections with the process and truly encode, learn, and remember the lexical items and their subtle nuances.

Spaced-Intervals of Learning

The last tool for our current purposes that I would like to touch on is what I call *spaced-intervals of learning*. This is

also referred to as *distributive practice* or *spaced practice*. Spaced-intervals of learning is really modeled after what naturally takes place when we learn new information or skills. Often, we do not necessarily grasp something the first time we are exposed to it. However, after multiple reexposures and spaced-intervals of learning, it is learned, developed, and transferred to our long-term memory, and it becomes acquired knowledge. This is what spaced-intervals of learning is all about. We are exposed to certain kinds of information or skills at different times until they are learned. This can be done either in an ordered way or randomly. Much research (Noraini et al., 2021) has been done on this method, and it is a surefire way to help students encode the lexical items, store them in their working memories, and then permanently learn the vocabulary by securing it in the students’ long-term memories. So, after initially teaching a lexical item like *meticulous*, it is best to reinforce that with multiple reexposures. This can be done with daily review sessions or by having the students use the terms in their weekly assignments as a way to use what they learn.

Methods Used

The Head-to-Toe Method of Associations for Vocabulary Acquisition

I typically introduce my students to new vocabulary by using a method I have been developing for the past 25 years called the *Head-to-Toe Method of Associations for Vocabulary Acquisition*, hereafter referred to as the *Head-to-Toe Method of Associations*. This method is highly effective because it helps students own the new terms by making personal connections or tangible associations with the terms and link them to their unique personhood (Randolph, P. T., 2013b). There are over 40 components in the method, but I usually use the six basic ones that set the foundational knowledge and understanding of the terms. These six include:

1. eliciting the definitions from the students,
2. selecting the lexical item’s part of speech,
3. choosing the term’s *verbpathy*, (i.e., *the intuitive and visceral feeling that a term elicits*)
4. associating a color with the lexical item,
5. associating an emotion with the term, and
6. associating a body part/region/organ with the lexical item.

For an overview of this method, see P. T. Randolph (2016b).

I use the Head-to-Toe Method of Associations to initially teach my students the new vocabulary, as it helps reinforce the intuitive feeling, meaning, and use of the terms. Then, at the end of the week or at the beginning of the following week, I review these terms by using the *Mindfulness-Movement-and-Music Method*. This latter method could be used

to introduce the terms as well. I usually employ it, however, as a tool to review and reinforce the meanings and uses of the terms.

I suggest that teachers employ it in a way that is most beneficial for their own teaching style and the manner in which their students learn best.

The Mindfulness-Movement-and-Music Method

Let us now turn to how I use the Mindfulness-Movement-and-Music Method. As I explain each part, the reader will see how the above components from the neuroscience and mindfulness communities play pivotal parts in the way ELLs encode and learn the lexical items. For the purpose of this paper, I will use the adjective *blissful* as our working example.

1. Pronunciation—Feeling the Term Through Sound
2. Pronunciation and Action—Acting Out the Understanding
3. Pronunciation, Gesturing, and Showing—Reinforcing the Understanding
4. Creating Examples in the Mind’s Eye—Conceptualizing & Visualizing the Term
5. Conveying the Examples—Sharing the Concepts
6. Writing Examples—Putting the Action and Concept into Writing
7. Culminating the Experience Through Music—Enhancing the Understanding Through Emotion

MINDFULNESS-FOCUSED

Pronunciation—Feeling the Term Through Sound

Before we start the pronunciation practice, I ask the students to take two to three relaxing breaths while focusing on the moment. Next, I ask them to close their eyes as they slowly and mindfully pronounce the term three to four times. When the students slowly pronounce a word like *blissful*, they develop a visceral experience and claim they “feel the word’s meaning through its pronunciation and texture.” This is a very effective way of having the students make a word their own and understand it on a very personal level (Jensen, 2008).

MINDFULNESS & MOVEMENT-FOCUSED

Pronunciation and Action—Acting Out the Understanding

The second step of this method links the power of mindfulness with the activation of embodied semantics. Here, I have the students pronounce the term in question three more times while simultaneously making a gesture or facial expression that replicates the meaning of the term. This gesture or facial expression can be the same one that I used to introduce the term when I initially taught it, or they can create their own. So, for instance, with our working example in mind, a student might close his or her eyes while raising his or her arms in the air and smile to show the state

of being *blissful*. As he or she does this, the student slowly pronounces the word three times. By combining these actions, the sensory-motor area is activated along with the temporal lobe, the prefrontal cortex, the hippocampus, the motor cortex, and the cerebellum (McPherron & Randolph, 2014; Ratey & Hagerman, 2008; Willis, 2006).

Pronunciation, Gesturing, and Showing—Reinforcing the Understanding

Next, the students pair up and share their pronunciation and gestures with one another. I usually have the pairs face each other and then take turns sharing their pronunciation and performing their gestures. What makes this part so effective is that now the students’ mirror neuron systems are being activated, and so there is *double reinforcement* in terms of learning the vocabulary terms. That is, one student performs the pronunciation and gesture segment and then gets to watch his or her partner do it (Randolph, P. T., 2016a).

MINDFULNESS-FOCUSED

Creating Examples in the Mind’s Eye—Conceptualizing & Visualizing the Term

Before we begin the next step, I once again ask my students to close their eyes and take three relaxing and slow breaths. After they find their focus, I ask that they create a scene in their mind’s eye that represents the lexical item we are studying. For instance, a student might see her parents dancing in a *blissful* manner in a field of spring flowers. Not only does she “see” the word in action here, but she also summons positive and loving emotions about her family. In doing so, she will release a number of the learning and memory neurotransmitters, which will help in solidifying the term (Immordino-Yang, 2016; Willis, 2006).

Conveying the Examples—Sharing the Concepts

After the students have created a visual example of the term, I ask them to pair up and share their work with a classmate. This part is also highly beneficial for the students because they get to share their ideas by speaking and get new ideas by listening. Here, the embodied semantics and mirror neuron systems are at full tilt, as the students will hear the terms being spoken around the room while their brains absorb the terms, their meanings, and uses. Moreover, the students hear the terms both consciously and subconsciously, so they get optimal exposure to a lexical item’s sound, meaning, and use.

Writing Examples—Putting the Action and Concept into Writing

Once the students have completed the first five steps of the method, I ask them to write down their example sentences on a designated worksheet. I prefer this to be done in class for three reasons. First, when everyone writes at the same time, it promotes and inspires a classroom community of writers. The students feed off of each other, and it creates a

special creative and productive environment. Second, the students will write original sentences and not use the internet or any online sources. This experience thus becomes a very natural and mindful writing session whereby they are employing what is currently in their minds. Third, the students are more likely to use themselves, their classmates, and their teacher in their examples. This, in turn, will help make the terms more tangible and concrete (Immordino-Yang, 2016), and it allows the students to take immediate ownership of the terms.

MUSIC-FOCUSED

Culminating the Experience Through Music—Enhancing the Understanding Through Emotion
(Randolph, P. T., 2018, 2019)

Just as mindfulness and movement are a part of our DNA, music is also a component that has kept us spiritually alive and added so much joy and satisfaction to our daily lives. In fact, “[t]he archaeological record shows an uninterrupted record of music making everywhere we find humans, and in every era” (Levitin, 2006, p. 256). The neuroscience and education communities have also found a number of benefits that music offers the body and the brain (Jensen, 2008; Randolph, P. T., 2021). For example, as mentioned above, with respect to the body, music can positively affect the heart rate. That is, the faster the tempo of the music, the faster the heart beats. This, in turn, promotes more blood to the brain for better learning (Jensen, 2008). Moreover, another key area of the brain that is enhanced during the “music experience” is the frontal lobe (Levitin, 2006). This lobe is highly important because it deals with planning, problem solving, critical thinking, and working memory, all of which are paramount for the language learner. In short, as music is such a significant part of our cognitive and spiritual well-being, I feel it is a natural tool for language learning (Randolph, P. T., 2019).

Once the students have completed steps one through six, I have them find a piece of music or even part of a song that they feel best represents each vocabulary term studied during the week. In order to give the students time for this part of the activity, I assign it either as homework due at the end of the week or as a weekend homework assignment. I want to give them time to reflect on the best piece of music for each term. It should be noted that ELLs may use a musical piece from their own language. The importance here lies

in the music-lexical item connection and not solely in the use of an English song.

This activity concludes the worksheet I give the students each week. The part reserved for this is very simple. I have the students write down the lexical item and draw an arrow to the song or musical piece they have selected. They include the song title, the artist, year, and a time stamp for a video if possible. They, then, write a two- to three-sentence justification as to why they chose that particular piece of music. Below is an example of this activity.

Term:
blissful “Introspection” by Estas Tonne (2018); Time Stamp: 0:30–0:45

This song epitomizes the term *blissful*. As Tonne plays, he shows how happy he is. This emotion, then, inspires his playing and the musical piece is soaked in blissfulness. I focused on 0:30 to 0:45 to show a specific moment of “bliss.”

Findings

Data on the Method

I have had the opportunity to collect data from a wide range of students from various proficiency levels. From 2023 to 2024, I taught a small group of elementary ELLs from Kobe, Japan (*N* = 7). The results of the pop quizzes and scheduled tests given to each student showed that the method was effective, as it promoted solid vocabulary acquisition and helped develop their other language skills (see Tables 1 and 2). The children scored between 96% and 98% on their vocabulary evaluation opportunities.

A class of international university students who took my freshman composition course (*N* = 18) scored between 92% and 98% on eight pop quizzes and one scheduled quiz (see Table 3). A very significant point to bring to my reader’s attention is that these ELLs scored 100% on the definitions and the original student-generated example sentences in the written or spoken parts of the quizzes. The only points deducted were due to spelling or grammar mistakes. The actual retention of the vocabulary definitions and how the terms were used in both spoken and written situations were exemplary.

Table 1
Fall 2023 and Winter 2024 Terms

Number of Pop Quizzes	Average Score
14	96.6%
Number of Scheduled Tests	Average Score
6	98%

Note. *N* = 7

Table 2
Spring and Summer 2024 Terms

Number of Pop Quizzes	Average Score
7	97.8%
Number of Scheduled Tests	Average Score
3	98%

Note. N = 7

Table 3
Fall 2018 Term

Number of Pop Quizzes	Average Class Scores
8	92% 94% 95% 94% 96% 98% 97% 96%
Number of Scheduled Quizzes	Average Class Score
1	96%

Note. N = 18

Populations, Limitations, and Uses

Due to the flexibility of my method, I have found it works for a wide variety of ELLs; that is, from elementary ELLs to university students in intensive English programs. Colleagues whom I have demonstrated this method to at various conferences and workshops have reported that it also works for ELLs at community colleges. However, if a student's spoken and/or written English has yet to be developed, steps four through six can be omitted until they enhance those language skills. Step seven, implementing the music as a representation of the vocabulary item, can still be used by writing its name next to the vocabulary term. In terms of the most effective time to use this method, as mentioned above, I use it to review the vocabulary once the students have had an initial exposure to the terms. That said, as I previously mentioned, I believe that one could use this method to introduce the lexical items, as all seven components will help reinforce the meaning and use of the terms.

tive method that helps the students acquire the lexical items is of equal importance. Students ought to discover a method that nurtures a joy for learning as well as one that inspires them to discover a passion and desire to learn inside and outside the classroom. Based on years of developing and implementing my method, I can truly claim that it both helps students learn and inspires their curiosity regarding the learning process. I have observed my students and found that the use of mindfulness, movement, and music is motivating, intriguing, helpful, and memorable. In fact, many students who have taken my classes and continued on to pursue graduate degrees in their respective fields have continued to use my method to help them acquire lexical items specific to their subject matter. By employing the various parts of the brain discussed above, and by using mindfulness, movement, and music, students not only acquire vocabulary, but they also find a method that motivates them to learn on their own and retain the terms they study in a robust and effective manner.

Concluding Remarks

Learning vocabulary is perhaps one of the most important experiences for our language learners, and finding an effective

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