The Analysis and Research on the Root-Based and Chunking Approach—Based on the Theory of Multiple Intelligences

Chunyu Miao[*]

Department of ESL Research, Ksing Continuation School, Yangpu District, Shanghai, China
Email: 328212958@qq.com
*Corresponding author: Chunyu Miao

Abstract: *The root-based and chunking approach is not a newly invented ESL (English as a Second Language) teaching approach. Technically, it has been widely used by a majority of ESL teachers ever since TESOL (Teaching English to Speakers of Other Languages) courses were acknowledged and adopted by the bulk of non-English speaking countries to train their own ESL teachers. While an increasing number of ESL teachers are aware of the value of learning roots and chunks, the misuse of root-based and chunking approach emerges and lead to some adverse effects. Before this paper was written, a comparative study had been done in one of my courses, during which I noticed that their reactions towards the words' affixes, roots and synonyms are obviously different. Hence this paper was written mainly to analyse the causes of these differences, trying to improve the traditional root-based and chunking approach using the theory of multiple intelligence.*

Keywords: *Root-Based and Chunking Approach, TESOL (Teaching English to Speakers of Other Languages), Theory of Multiple Intelligences, English Learning, ESL Teaching.*

1. Introduction to the root-based and chunking approach.

1.1 Definition of the root-based approach

The root-based approach requires the teachers to help students have a great grasp of some frequently used word roots and affixes, knowing the origins and meanings of the roots and affixes and analysing how they affect the words' meanings. The root-based approach is literally originated from etymology, which is a special study of the origin and history of words and their meanings, whereas the students do not have to learn those obscure theories of etymology. Here are two examples of the use of root-based approach:

(1) "com-" "co-" "con-"

These three affixes all stem from "come", hence they refer to the act of "come together" "gather". Therefore, the words starting with "com-" "co-" or "con-", such as "commemorate" "compatible" "collaborate" "correspond" and "constrain", usually describe some acts or things that are analogous to "come together".

(2) "dis-" "des-" "de-" "di-"

On the one hand, these four affixes all stem from the word "do", hence some words starting with them, such as "dispose" "discipline" usually mean "do something".

On the other, "dis" is an informal word of American English, which means to disrespect, insult and humiliate someone. This is thought to be the reason why some of the words with "dis-" such as "dispute" "disease" "disincentive" are negative and describe something unpleasant.

To memorize the vocabulary using the roots and affixes, students do not need to know what their etymologies are and how those ancient Latin and Old English words evolved themselves into simplified roots or affixes of modern English. As long as the teacher has a great grasp of the underlying etymology knowledge and condense them into a sentence that explains what their meanings are, the students would automatically figure out a way to grasp the connections between the words and its roots/affixes. This process is undoubtedly less time-consuming than spelling letter by letter. More importantly, by using the

root-based approach, students are allowed to categorize the words according to the different varieties of the roots and affixes, which enables students to remember the words efficiently.

1.2 Definition of chunking.

Chunking is a learning approach of "learning a chunk at a time". It integrates pieces of individual information with each other and extracts the overall meanings. Technically, in ESL classroom, not only does chunk refer to a phrase or a frequently-used collocation involving more than one word, such as "the smoking gun" "it is unanimously acknowledged that…" "the bulk of", but also it includes the "word groups" categorized according to roots, affixes and even synonyms, such as "rebuke" "reprimand" "revoke" and "refute" could be reckoned as a word group, in that they all start with the root "re-" that means repeating something and they are all apt to deny something. This kind of word group are also thought to be a chunk. Literally, memorizing a whole chunk is always more useful for writing and speaking (especially in an examination such as IELTS) than only memorizing a single word. Typically, the word "bulk" is hardly used singly either in daily conversation or writing. Instead, "the bulk of" is more frequently used to express "the main part of something" during communication. In addition, the students in ESL classroom are not advised to only memorize "rebuke", in that they would not infer the meaning of "re-" and would possibly confuse "rebuke" with "revoke" or "refute" during an examination, since they are identical to each other.

1.3 Integrating the root-based approach and chunking.

Few of the professional ESL teacher would use these two approaches separately. Literally accumulating adequate chunks is the "ultimate requirement" of ESL class and the roots are only a tool of helping students remember them. A variety of chunks are usually connected with each other via the roots or affixes. For instance, here are three words:

"restrain" "constrain" "refrain"

These words all have the root "-ain", which stems from the word "strain", hence they are all related to "stretching, pushing or pulling something". Meanwhile, since the affix "re-" originates from "repeat", referring to an act that goes back and forth, it could be used to describe an act that affects or turning back to oneself. By analysing these roots and affixes, this indicates that "restrain" "refrain" are usually used to stop "yourself" rather than anyone else. Instead, "con-" means exerting power from the outside to get others (rather than "yourself") together. Therefore, "constrain" can only be used with personal pronouns such as "I" "they", instead of reflexives such as "myself" "himself".

However, these three words can only be used intransitively, which indicates that their corresponding collocations are more crucial than the words themselves. In this regard, it would be preferable to require the students to remember the chunks such as "restrain oneself from (doing) sth" "refrain from (doing) sth" and "sb feel constrained to do", not just remember the words.

In summary, the root-based approach can only help students find these words. Only by learning chunks can they apply them to verbalizing.

2. The study on the limitations of traditional root-based and chunking approach: based on the teaching experience from my own ESL class.

2.1 The introduction to my ESL class.

I am now teaching English to the students preparing for the Chinese college entrance examination for junior college graduates. There are two subjects in this examination: Public English and one of their own major-related subjects. The former requires students to remember about 5000 basic English words as what CET-4(College English Test Band 4) asked them. Plus, The Public English is the most vital and complicated subject in which not only does it measure student's English ability to listening, speaking, reading and writing, but also it examines student's logical reasoning via synonyms and antonyms, roots and affixes. Thus, they are inevitably more apt to learn some test skills such as "synonyms and cognate discrimination", a frequently used tactic based on root-based and chunking approach of reading comprehension test in which students are allowed to locate the sentence that a synonym or a cognate of a key word in the question is hidden in and hereby infer the right option directly.

There are 116 students in my class, of whom 55 are male students and 61 are female. The number of

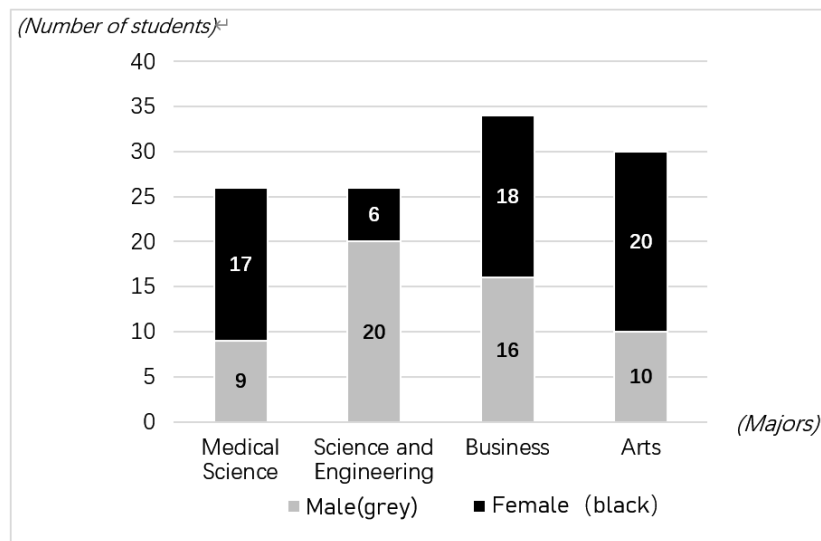students in each major is shown as *Figure 1*.

Figure 1: The number of male and female students in each major.

According to *Figure 1*, None of these students majors in English language. Yet they have to do the listening comprehension and cloze for their dream schools. Thus I have an access to their detailed learning status and teach them using the root-based and chunking approach, during which I naturally find some flaws of it, likewise.

2.2 How the limitations of root-based and chunking approach were found in my class.

I started to notice that there must be some limitations and flaws of root-base and chunking approach by teaching them how to do a reading comprehension paper. Here is an excerpt of the Reading text and its corresponding question:

(*Beware of those who use the truth to cheat. When someone tells you something that is true, but leaves out important information that should be included, he can create a false impression.*

For example, someone might say, "I just won a hundred dollars on the lottery. It was great. I took that dollar ticket back to the store and changed it for one hundred dollars!"

This guy's a winner, right? Maybe, maybe not. We then discover that he bought two hundred tickets, and only one was a winner. He's really a big loser!

He didn't say anything that was false, but he deliberately left out some important information. That's called a half-truth. Half-truths are not technically lies, but they are just as not honest.)

(*Question: In which of the following situations is a person telling a half-truth?*

A. When somebody is telling a white lie.

B. When somebody is making up information.

C. When somebody is saying something that is wrong.

D. When somebody is intentionally leaving out important information.

This text and its question are chosen from previous CET-4, which could guarantee the tests reliable and valid. The question entails a frequently used and crucial test tactic: synonym discrimination. The author of the test replaces a key word that suggests the answers with its synonym and hereby make a right answer. Since the key word of the text has been replaced with its synonym that has never been found in the text, the students can only infer the right answer via synonyms comparison, rather than finding a direct evidence such as a key word that can easily found in both the text and the option. This indicates that those who are poor performers at vocabulary will surely choose the false option.

The answer of this question is D and it could be proved to be true by the underlined sentence in the text (Line 1, Para 4), in which the word "deliberately" is obviously the synonym for "intentionally" in option D.

Primarily, I asked students of my class to choose the best answer within 5 minutes. I thought that the bulk of them would notice the connection between "deliberately" and "intentionally" and hereby choose option D, whereas, when I asked them "who chose the option D? Raise your hand!" only about 40% raised their hands and the bulk of them was female and majored in business and arts. Literally, few of them chose the wrong answer because of not knowing the word "deliberately" or "intentionally", in that they have been asked to expand their vocabulary size to 6500 and have a good grasp of those words due to the use of root-based and chunking approach before. The bulk of the students choosing the wrong answer claimed that they did not even perceive that "deliberately" and "intentionally" are synonyms. Likewise, they are still unaware of the meanings of the roots hiding in these two words:

(1) The word "deliberately" consists of three parts: "de-" "-liber-" "-ately". Primarily, "de-" is a root to give extra force to a word of phrase, hence it means "to think or do something thoroughly". Then "-liber-" is a root that stems from a Latin word "libera", which is a unit of weight in Ancient Rome just like "pound" in the UK. Hence "-liber-" means to weigh, measure something. As for "-ate", it is a verb suffix, and "-ly" is an adverb suffix. They are all unable to change the basic meaning of a word. Thus, "deliberately" means to "do something thoroughly". Moreover, it means to do something slowly, carefully and with a thorough plan, rather than by chance or accidentally.

(2) The word "intentionally" comes from "intention", which means "what you intend or plan to do". In this regard, it shares the same meaning with "deliberate".

Although they had been taught how to split these words according to the roots and affixes and trace the origins of them, there are still about 50% students who did not notice these underlying connections of roots and affixes between words. Yet, most of them are still female majoring in social science.

I suddenly noticed that gender and major may affect students' reaction to the cognate words and synonyms. To test this conjecture, I asked them to do the following test that is shown as follows. This test requires students to fill out the blanks in which the example words are listed and their corresponding synonyms' initials are given to help them write those synonyms:

(Fill out the blanks with the corresponding synonyms:

(1) neglect   o_____   i_____

(2) annoying   o_____

(3) boring   t_____

(4) resuscitation   r_____

(5) burdensome   o_____   d_____   t_____

(6) stir up   ___voke   ____cite

(7) recollect   ____voke   _____call

(8) cancel   ____voke

(9) invert   re_____   in_____

(10) harmful   _____verse

(Answer:

(1) overlook   ignore

(2) obnoxious

(3) tedious

(4) resurrection

(5) onerous   demanding   taxing

(6) provoke   incite

(7) evoke   recall

(8) revoke

(9) reverse   inverse

(10) adverse)

This test involves both synonyms, such as "annoying" and "obnoxious", and words with the identical root or affix, such as "evoke" "revoke". Hence this test could fully assess students' ability to deal with both synonyms and cognate words.

The bulk of students was able to fill out all the blanks correctly, in that they had early been asked to expand the vocabulary size to at least 6500, which is even bigger than that of CET-4. Therefore, I only needed to let them record their own time that they spent on filling out the blanks and then calculated the average time of students in each major. The statistical results are shown as *Figure 2* (the results will be rounded up to 1 decimal place).
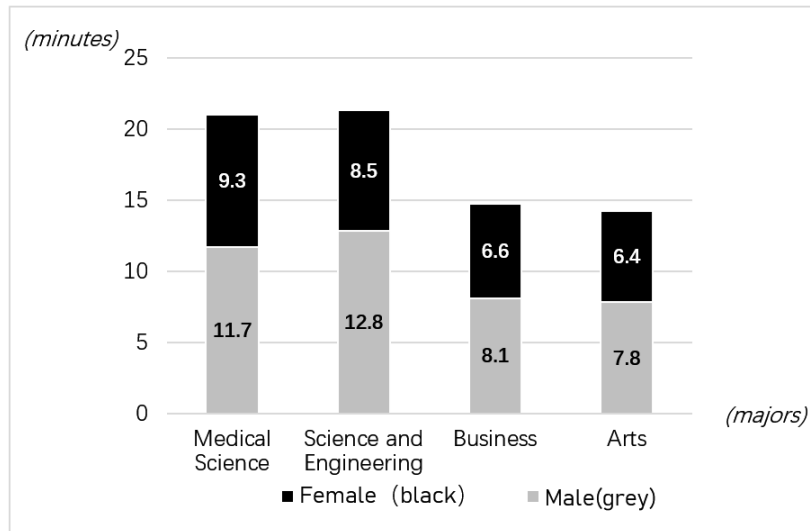

Figure 2: The average time spent on filling out blanks by the students of each major.

According to *Figure 2*, the results could be summarized as follows:

(1) The female students, whatever their majors are, are better at discerning the synonyms and cognate words than the male students;

(2) The students learning social science are better at discerning the synonyms and cognate words than the students learning natural science.

When I asked the students spending more than 7 minutes that "why is it so time-consuming for you?", they all told me that they just cannot recall the word that was on the tip of their tongues, although they did know that word and had learned it for too many times. However, hardly had those spending less than 6 minutes spell the bulk of synonyms when they saw them.

Therefore, it turns out that sometimes the traditional root-based and chunking approach does not work to the male students, especially the male students majoring in natural science.

3. Analysing the limitations of root-based and chunking approach—based on the theory of multiple intelligences.

3.1 The introduction to the theory of multiple intelligences.

The theory of multiple intelligences was firstly introduced by Howard Gardner, an educationalist and psychologist of Harvard University. He advanced the notion that human intelligences are different. Technically, the basic tenet of this theory is that individuals have unique cognitive learning modes that are embedded in the development of brain. Based on a host of psychological experiments in 1980s practiced by his team, Howard Gardner proposed that there are eight traditional intelligences and has suggested that there may be the nineth intelligence: "existentialist intelligence" [1]. These intelligences and their definitions are shown as *Figure 3*.
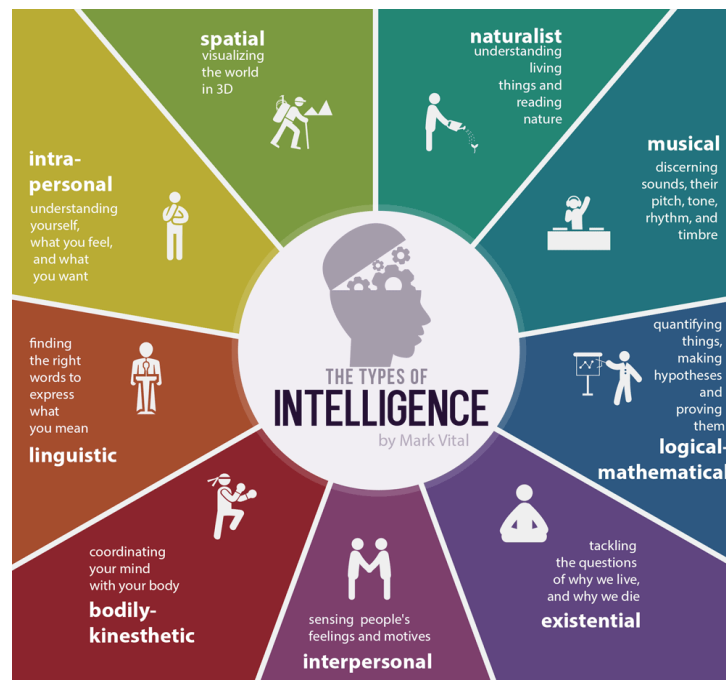
Figure 3: Frames of mind: the theory of multiple intelligences by Howard Gardner.

In addition, Howard Gardner indicated that the type of human intelligences determines whether a man or woman excels in a particular work and hereby determine which kind of jobs they are good at. Typically, those with linguistic intelligence excel in debating and are more talkative and confident in front of anyone else, hence they are adequate to be a teacher, lawyer or an MP. In the meantime, those with logical-mathematical or spatial intelligence are more apt to think and deal with problems independently, not excelling in work with others, which makes them reluctant to build a too intimate connection with anyone else. Thus, they would probably fail to be a qualified teacher, lawyer or politician, whereas the bulk of them could be an excellent scientist, engineer or designer, which allows them to think independently and creatively, offering them more chance to meditate on logical issue [2].

3.2 How students' types of intelligences affected their reactions to root-based and chunking approach.

The theory of multiple intelligences involves the notion that an individual's type of intelligence mainly stems from the environment they grew up and, meanwhile, their gender also plays a vital role in building up this environment and determining the type of intelligence. Therefore, the influence of students' intelligence type on the results of root-based and chunking approach could be summarized as follows:

(1) Primarily, students' methods of thinking and reasoning determine whether they excel in the analysis of synonyms and cognate words, and these thinking and reasoning methods are usually given by their living and learning surroundings [3]. Typically, a parent as a mathematical teacher or an engineer is more prone to pass on his professional knowledge and methods of thinking that they acquired in their own fields to their kids and hence the kids will possibly have a logical and mathematical intelligence at an early age. Literally, this suggests that those college students' majors will affect and reshape their type of intelligence, in that each major's requirements for students' thinking and reasoning methods vary. To complicate matters further, these thinking and reasoning methods sometimes go against that of SLA (Second Language Acquisition). More specifically, for instance the bulk of majors of natural science, such as computer science and engineering, requires students to have strong logistical reasoning ability and draw a conclusion by deductive reasoning that starts with a general case, law or theory and then deduces a specific instance. Instead, learning a second language, especially the root-based and chunking approach, requires the learners to excel in inductive reasoning. It derives a general rule from observations of a host of specific cases. This could explain why those majoring in social science in my class usually spent less time identifying synonyms and cognate words than those majoring in natural science. After all, the bulk of subjects of social science involves the thinking method of empiricism and inductive reasoning. According to Howard Gardner, those majoring in social science usually have the existential, intrapersonal, interpersonal and musical intelligences, since these intelligences all requires individuals to figure out a problem and infer a theory using inductive reasoning.

(2) To another certain extent, gender does play a vital role in the formation of one's thinking and reasoning methods and hereby shape their type of intelligence. According to a study of Zuk Jennifer and others [4], the white matter of human brain in infancy anticipates long-term language abilities. They analysed the results of some kids' brain MRI exam and found that those showed more talent in language learning and communication have a higher neuron density in their white matter and hereby more sensitive to language stimuli. Meanwhile, the bulk of them is girls. These researchers believed that since the white matter's neuron density has been determined in infancy, and girls are undoubtedly better language learners and more adaptable to multilingual society from birth than kids. This could explain why the bulk of ESL teachers in Asia is female. In addition, Howard Gardner also advanced the notion that the bulk of women had linguistic intelligence type, which was mainly driven by the social division: it has always been the mother who mainly takes on the duty of raising children, during which a mother must try to understand the meanings of children's screaming, crying and moaning, observing their movements and expressions so they can get what information their children want to convey to them. However, those mothers who are not able to understand their children's voices are unable to distinguish whether their children are starving or in danger. Thus, the bulk of them could not bring their kids up and is inevitably incapable of maintaining their genes. After experiencing thousands of years of evolution, women are genetically better at discerning or building a particular connection between two words that convey the identical information than men. Moreover, they even excel in combining a word with a particular movement or voice and hereby carve it into their brains. This suggests that women's gift for learning language and their linguistic intelligence is mainly the results of natural selection.

4. Improvements to the root-based and chunking approach.

4.1 Discarding the concept of collocations and changing teaching philosophy.

Primarily, the limitation of root-based and chunking approach is mainly from some teachers' practical experience and misunderstanding. These teachers do know the importance of learning roots, affixes and synonyms and they are also aware of how efficient memorizing chunks is to enlarge students' vocabulary. However, the bulk of them rarely mentioned the underlying principle of the chunks. Rather, they perceived all the phrases and chunks as "collocations". Typically, the students are usually faced with the problem that why these chunks' meanings are totally different:

(1) forget to do something   forget doing something

(2) stop to do something   stop doing something

(3) remember to do something   remember doing something

According to Oxford Advanced Learner's Dictionary (OALD), "to" means "before the start of something" or "to show the purpose or intention". This is why "to do" suggests that "something has not happened". The verbs ended with "-ing", such as "changing" "waiting", are called "participle", in that these words all have more than one parts. Typically, not only is "changing" a verb that is equal to "change", but also it is a noun, referring to "the thing that makes something different".

The bulk of professional ESL teachers probably knows these underlying reasons, whereas few would explain these tenets to students with patience. I investigated 50 ESL teachers of the school that I worked for and only 3 of them claimed that they would explain the definition of "to do" and "doing" to students. The rest of the 47 teachers would all casually tell the students that these are all "collocations" and ask them to recite these words as if by prior agreement. They refuse to mention the meanings of an infinitive mark or a participle just because they think it is unnecessary.

In summarize, the only reason why these chunks above are different is that infinitive marks and present participles have totally different meanings, rather than so called "collocations". Literally, collocation is completely a false concept that should never be mentioned in language teaching: there is no a phrase that is designed to be a "collocation", each phrase derives from the native speaker's habitual expression. ESL teachers are bound to reflect on the use of professional dictionaries such as OALD and Collins. Plus, they need to pay more attention to helping students understand a chunk and hereby build conditional connections between the meanings and the use of a chunk, rather than simply remembering it. Some male students and the students majoring in natural science may lack linguistic intelligence and need more time and energy to build these connections, but once the connections are built, they would not be handicapped by their intelligence types.

4.2 Building corresponding word connections according to students' intelligence types.

Traditional root-based and chunking approach simply introduced the roots, affixes and chunks to the students and failed to adapt to students' various intelligence types but neglected the fact that students' tolerance for rigid and general definitions varies due to the gender and type of intelligence. Although the male students and the students learning natural science mostly lack linguistic intelligence, the bulk of them still excels in analysing visualizing the natural world, advancing a hypothesis and even proving them using mathematical and logical methods. Meanwhile, according to a research of W. L. Quint Oga-Baldwin and Luke K. Fryer (2020) [5], the male students, especially those who showed more interests in natural science are more apt to "demonstrate low quality, externally controlled motives". This suggests that the students with logical-mathematical intelligence can also infer the grammatical rules and an affix or root's meaning using inductive reasoning and hereby remember the cognate words. In brief, they are more likely to know a word from the "outside" and better at defining a word or a chunk via another corresponding word or chunk. In this regard, the ESL teachers should focus more on introducing the origins of a word and never emphasize their meanings too much. Typically, when introducing the word "flourish" to the male students and those majoring in natural science, a teacher could not simply interpret it as "to develop quickly and be successful or common" like what OALD did. Rather, he or she are constrained to combine it with "flour", which is an old type of "flower", hence the real meaning of "flourish" is "to develop quickly and widespread just like the flowers in full bloom". Furthermore, the teacher also needs to explain the origin of "flower" —— Flora, which is the name of the goddess of flower in ancient Rome.

Literally, by explaining the origins and historical backgrounds of a word, the teacher can help students build a specific connection between a concept and a real event, discovering the logical connections between a chunk and its original words. Next time when they see the chunk or the word again, they will naturally shift their gaze from a series of tedious letters to a concrete and underlying background information. As a consequence, this word would not be easily forgotten even if they did not review it.

5. Conclusion

Although the root-based and chunking approach was not designed to help students pass an English examination—it was aimed at helping students understand the rules of word formation and the logical connections between cognate words and synonyms, it still plays a vital role in an examination-oriented ESL classroom. Primarily, the students are allowed to discard the words that have hardly or even never appeared in the papers of previous years using the roots and affixes, in that the bulk of words that are frequently used to test students are likewise all with a frequently used root or an affix, such as "coordinate" "correlate" "discharge" and "invert" "inverse" "divert" "diverse", whereas the words useless to test students usually have no frequently used roots or affixes and are unable to be deconstructed according to the roots or affixes, such as "methane" and "famine".

In the meantime, the chunking approach motivates students to keep an eye on the value of a chunk, rather than a single word. Thus, this approach undoubtedly does good to the practice of expression and writing. The integration of the root-based and chunking approach with the theory of multiple intelligences would undoubtedly make this approach more applicable to the practice of teaching English to the male students majoring in natural science and without linguistic intelligence, allow them to enlarge their own vocabulary in a relatively short time. However, an important problem worthy of being noticed is that a qualified ESL teacher should never fabricate a connection between two words or chunks. Rather, were there two words obviously having nothing to do with each other, such as "bear" and "bare", "alter" and "altar" or some other words sharing a similar pronunciation but being not cognate words or synonyms, the teacher would not be allowed to build a false connection or even impose them on students. In this regard, the requirements to ESL teacher's professional quality should be improved: they are constrained to have a better grasp of the historical events and cultural backgrounds of the English-speaking countries and aware that not only do they need to teach students how to pass an English exam or speak English well, but they should teach them how to think like English native speakers and fully understand English culture.

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