Re-thinking the Instruction of Chinese Characters in the Computer Age

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Abstract
Character learning has often been the most difficult process for students learning Chinese. Research has also indicated that character production—that is, the ability to write a character from memory—is much more difficult than character recognition. Following our understanding that the majority of Chinese characters are not “ideograms” but rather complex characters that contain both a phonetic element and a “signific” element, I would suggest utilizing both visual and aural/oral cues in the instruction of characters. Some mnemonic strategies based on this idea would also be suggested in my paper. Furthermore, given the fact that more and more students studying Chinese are interested in composing sentences and essays with the aid of a computer (i.e., inputting alphabet), and communicating with one another and searching for information in Chinese on line, how should we re-conceive the ways we teach Chinese characters and assess students’ skills in Chinese character recognition and production? I would explore a few answers to this question in my paper.

Presentation
I have taught true beginners different levels of Chinese since 1986. When I started teaching at UCR (the University of California, Riverside) in 1992, I discovered a serious problem in Chinese language instruction there. Many of the students in first-year and second-year Chinese language classes were overqualified, ranging from advanced heritage speakers to even native speakers. Since students could unrestrictedly enroll themselves in first-year Chinese, and the lecturer did not bother to actively channel advanced students away from first-year Chinese, this type of student thus enrolled in a class that was at far too simple a level, and thus would usually obtain an easy A. In the meantime, a number of true beginners had difficulties enrolling in first-year Chinese because the classes were often crowded. Even when true beginners managed to enroll in one of these classes, they would typically constitute a small minority of the students within a given class. As a result of there being too many native or heritage speakers in first-year Chinese classes, true beginners were intimidated by the prospect of being “slower” by far than their native-speaker classmates, and often dropped Chinese after only one or two terms of study—less than a year’s worth of study in all.

A good number of the overqualified students have been first-generation immigrants from China or Taiwan. They are not only native speakers, but many of them are also native-level readers, and some of them are even native-level writers. In 1992-93 I designed CHN 110 (E-Z) & CHN 115 (E-Z)—reading Chinese literature in Chinese—especially for these rather advanced "heritage" students so as to channel them away from first- through third-year Chinese courses, to challenge them with a very advanced level of reading, speaking, and writing, and to develop their appreciation for Chinese literature in its original language. While my initiation and instruction of these
courses had ameliorated the situation somewhat, administrative intervention was badly needed in order to solve the problem.

It was not until 2002 when I began serving as Director of the Asian Languages and Civilizations Program that I could propose and implement structural changes to fix this long-standing problem. By devising better placement strategies, proposing a new heritage-learner track and new courses for first-year Mandarin heritage students (CHN 20A-B), and carefully supervising Chinese instructors, I have finally improved the situation significantly. In the past two years I have also been co-authoring a textbook specifically designed for Mandarin heritage speakers, which I titled *Heritage Chinese: First-year Mandarin*. The term “Mandarin heritage student” refers to a student who is raised in a home where Mandarin Chinese is spoken, who speaks or merely understands Mandarin, and who is to some degree bilingual in English and Mandarin. While these students (mostly born in the U.S.) already have some proficiency in understanding and speaking Mandarin, they are usually unable to read and write Chinese. The textbook thus aims to effectively address the unique educational needs of these students.

My discussion about the instruction of Chinese characters thus stems from my experience in teaching and developing instructional materials for both true beginners and Mandarin heritage learners in the U.S. An instructor teaching Chinese as a second or heritage language at a university would soon find out that character learning is often the most difficult process for students learning Chinese. In terms of the skill of learning characters, character production—that is, the ability to write a character from memory—is even more difficult than character recognition. Indeed, as a study indicated, “retaining and producing Chinese characters is not only difficult but also time consuming (Ke 97; Everson). The study also pointed out that “our students do better in character recognition than production,” and that “they would need to reach to a higher level of orthographic awareness in order to perform significantly better for character production,” and suggested that “at the initial stages of Chinese language learning, we need to control the amount of characters for our students to produce” (Ke 97-98). This suggestion concurs with what I have practiced for years in my classes and what I recommended to my co-writers of the textbook. I usually designate a limited amount of characters per lesson for “active” mastery—meaning the mastery of both character recognition and production—while leaving the rest of the characters in the lesson for “passive” mastery. Students need not learn to reproduce the characters for “passive” mastery from memory, but only need to know their meanings and pronunciation.

In terms of character production, a widespread if not universal practice in existing Chinese textbooks is to expect students to learn to read and write from memory every single Chinese character that surfaces in the texts. In other words, students are expected to learn character recognition and production at the same rate. This unrealistic expectation can result in two common problems in textbook production and pedagogy. On the one hand, a given first-year textbook may require students to memorize 30 or so characters from the very first lesson. For a “true beginner” who already must spend a great deal of time learning correct pronunciation and memorizing vocabulary and correct word order, it is very time-consuming and often frustrating if they also have to learn to write so many characters from memory from the beginning. On the other hand, some authors, aware of students’ difficulty in producing characters, wrote with the intention of keeping the vocabulary and characters at a low level and within a limited number. These texts, however, can be extremely simplistic and often boring. After all, an author often needs to utilize more characters and higher-level lexical items in each lesson in order to be able to provide students with relatively interesting, varied, and high-quality input. Therefore, it may be difficult for teachers to motivate students in either of these two
cases: students may either become frustrated by their inability to correctly reproduce so many new characters per lesson, or else lose interest in learning Chinese because the texts are too boring—lacking in varied, high-quality input.

In order to avoid these pitfalls, I have recommended a kind of “staggered” approach. In the initial chapters of the textbook *Heritage Chinese: First-year Mandarin*, we designate only 20 or so high-frequency characters per chapter for students to produce. The number of new characters for production will then gradually increase to 25 or so later on. We also try to eschew low-frequency characters, while adopting, as much as possible, the more commonly used characters in the chapters. To make the lessons interesting and challenging enough for Mandarin-heritage speakers, however, even the first few chapters contain far more than 20 new characters each. In other words, while students would need to learn all the characters in each chapter “passively,” they are required to learn only the 20 or so designated characters “actively.” An ideal textbook should contain a manageable quantity of new vocabulary entries and high-frequency Chinese characters in each lesson. It would hopefully achieve the balance of motivating students with enough high-quality input while not overburdening them with character learning.

To facilitate students’ character-learning process, it is important to debunk the myth that Chinese characters are pictographic or that one must learn many thousands of them in order to read a Chinese text (Williams & Wu 270). On the basis of research by scholars such as DeFrancis, we realize that only an extremely small percentage of Chinese characters could be considered “pictographs” or “ideographs.” The overwhelming majority of Chinese characters are complex characters consisting of both a phonetic element that suggests the real or approximate pronunciation and a “signific” element that hints at the meaning. Moreover, orally fluent learners who have mastered about a thousand commonly-used characters, or even just 500 of the highest-frequency characters, would already be able to read a newspaper with the aid of a dictionary.

A number of visual, aural, and oral cues can be utilized in the instruction of characters. An instructor can use flash cards, transparencies, or power point presentations in class to introduce characters. Based on my experience, having students create their own character flash cards can also be an effective way to memorize characters. I suggest that the student write on the front of an index card the character, along with its simplified version, if any, and preferably also its stroke order. The back of the card can contain the pinyin romanization of the character and its meaning in English, and preferably also a couple of compounds or short phrases in which the character appears.

Students should be urged to conscientiously learn the correct stroke order for each character from the very beginning and to practice writing new characters repeatedly. They should know that if they use the same standard stroke order each time they write it, they will be more likely to write well-proportioned characters and to learn and memorize any new character quickly. Once a student has learned the wrong stroke order or the wrong writing of a given character, it is extremely difficult for him to unlearn them afterwards. Prof. Shou-hsin Teng’s *Practical Chinese Reader I & II: Writing Workbook* sets an exemplary model for us. Printed in an aesthetically appealing brush-style fontface, each character in this workbook contains a numerical indication of its stroke order, and is accompanied by its pinyin and English translation. For over thirteen years, students at my university have been using *Practical Chinese Reader, Book I* in first-year Chinese classes. Although this textbook is far from ideal, students have found Prof. Teng’s workbook very useful. In *Heritage Chinese: First-year Mandarin*, I helped create two types of digitized stroke order charts to help students practice writing characters and memorize correct stroke order [Insert Illustration Here]: one type is similar to Prof. Teng’s in that stroke-order numbers are added to each large-size character to denote the place where a given stroke should begin; the other type show the character in its various stages as it is written stroke by stroke. In
addition, I am interested in creating a computerized prototype, showing a character being written slowly and stroke by stroke, one stroke at a time, in correct sequence of strokes, and in correct direction for each stroke. (Please see a very simple demo in http://chassit.ucr.edu/chinese/song.html, in which the “next” and “back” provide a way to move forward or backward and to view the stroke sequence.)

To help students learn and memorize characters, an instructor would introduce at least a portion of the 214 significs, which are commonly referred to as “radicals,” especially those that are already existing characters. She can design some exercises using the significs for students to do at home and in class. For example, she can have groups of students competing in writing on blackboard those characters that have the same signific.

While acknowledging that true pictographs and ideographs amount to less than three percent of the total number of characters, an instructor can still play the card of the “pictograph-ideograph myth” to her advantage. What I mean is that the instructor can encourage students to learn the small number of pictographs and ideographs as they are, and to memorize them by associating them with the images and meaning they supposedly represent.

Because the majority of Chinese characters are complex characters that contain a phonetic element in addition to the signific, and because phonetic elements are usually existing characters, the instructor could point out the recurring phonetic elements to the students’ attention, and design exercises that aim to help students learn to group characters that share the same phonetic element. Classifying characters by significs and phonetic elements makes character-learning more manageable. It can also serve as a strategy for faster memorization and longer-term retention.

Aural and oral cues are also helpful in character learning and retention. A student should be urged to intone the pronunciation of a new character out loud several times while writing it, so as to forge a strong link in her memory between the pronunciation of a character and its appearance (Williams & Wu 274). Furthermore, since a learner can guess at the sound of a given character once she learns how to pronounce its phonetic element, the practice of reading aloud can facilitate the process of learning new characters. Dictation exercises and quizzes are helpful in this regard. I usually ask students to look at the texts while listening to the tape or sound files, and to read aloud after the tape or sound files, so as to reinforce the link between the visual, aural, and oral components of a memory cluster. An instructor can design exercises that encourage students to guess at the approximate pronunciation or even the general meaning of a character that they have never seen before.

One of the strategies in character recognition and production is to learn Chinese characters in context, instead of in isolation. As instructors know, some characters only make sense in disyllabic compounds, and a given character can have different meanings when combined with other different characters into different compounds. In general, it is also easier to memorize an individual character in a meaningful context than as an isolated and sometimes meaningless entity. An instructor can make “fill in the blanks” exercises for students to fill in the appropriate character(s) or vocabulary item(s) in a sentence. Aural cues could be provided by the instructor or students through reading the rest of the sentence aloud, or by offering the pinyin equivalent of the character(s) to be filled in. These exercises can be done in class by utilizing transparencies or digital presentation. Dictation exercises or quizzes should preferably be designed to test not so much students’ knowledge of any discrete character, but their knowledge of compounds, phrases, and short sentences.

A well-known method for students to retain the characters they have learned is repetition with variation. A good textbook would help students review older material by using the characters and vocabulary items that have
appeared in earlier lessons. A good teacher would scaffold instruction so that students repeat, in different contexts and in interesting ways, materials and characters they have learned before.

Students can also learn characters and vocabulary items through translation exercises. An exercise is to have them look up certain English-Chinese dictionaries or Babel Fish (http://babelfish.altavista.com) and translate some simple words, phrases, and sentences from English to Chinese. Then the class can check or even correct the (mis)translation generated from using dictionaries and Babel Fish.

According to a recent study, a student’s language background (i.e., whether a heritage or a non-heritage learner) “is not a variable influencing students’ performance on Chinese character recognition and production.” (Ke 95). On the whole, it is true that character learning poses as much difficulty for heritage learners as it does for L2 learners. Nevertheless, in my experience, I find that compared with a non-heritage student, it is more likely for a heritage learner who can read a little to guess at the meaning of an unfamiliar character from its context when she already has the aural knowledge of most of the phrase that contains this unfamiliar character. Among heritage students, due to the circumstances in which they learned the language, some of them can recognize or write more characters than the others, or are better able to learn characters faster and more accurately than the others.

J. Marshall Unger suggests that we apply the mental magician Harry Lorayne’s three techniques for instant memorization to the memorization of Chinese characters: the “link” system, the “peg system,” and the method of “substitute words” (Unger 72-73). For “linking,” one tries to imagine or picture an association that is “as ridiculous as possible.” As for the “pegs,” Lorayne used numbers, associating the ten digits with consonant phonemes of English, for example. In other words, “linking” is to visualize something “irrational.” By contrast, “pegging,” as Unger explains it, is “a linguistic (auditory) strategy that depends on constructing rational rules for organizing speech forms in pairs” (76). As far as “substitute words” are concerned, one can apply this method to the memorizing of foreign-language vocabulary items as follows: “find an English phrase that ‘sounds like’ the foreign word and visually link the word’s meaning to the (non)sense of the English phrase” (Unger 77). However, I do not quite agree with Lorayne and Unger in emphasizing only the illogical for the “link” system. Unger argues that it is no good seeing a horse itself in the character for “horse,” because it is “too logical.” I believe that both logical and illogical means can be used successfully in the “link” system.

While all three mnemonic techniques have their limitations, the instructor can still introduce them to students. In class, the instructor can also ask students to talk about their frustration or success in studying characters, or even to provide feedback and exchange their strategies. Although I have seen some students making phenomenal progress in character recognition and production as a result of using flashcards diligently, there have also been students who claim they learn better by writing the same characters over and over again on a sheet of paper. Clearly motor skills and “manual” memory, or the memory of the hand and fingers, also play a role. Depending on individual aptitude and skills, some may memorize a character better by creating a little story about its various components, while others may prefer to associate components of characters with numbers, colors, musical notes, and whatnot.

In recent years more and more students studying Chinese have become interested in composing sentences and essays with the aid of a computer (i.e., inputting alphabet), and communicating with one another and searching for information in Chinese on line. In fact, in many professions such as business, the professional most likely would be reading computer-generated Chinese materials and writing Chinese with a computer, rather than writing by hand. Chinese word-processing is a required skill in many professions. Many of us have been generating course and testing
materials with a computer, or even utilizing computer software that helps us in teaching Chinese language and culture. An instructor may worry about the possible deterioration of students’ character handwriting as a result of students shifting to writing with a computer. Still, in this computer age, writing Chinese with a computer is a trend that is bound to develop. Should we perhaps re-conceive the ways we teach Chinese characters and assess students’ skills in Chinese character recognition and production? If so, how? I have gradually changed my teaching and assessment to accommodate the shift, and I now include computer-related reading and writing as part of—not the entirety of—the class instruction. For example, I encourage students to use the computer to type out sentences and paragraphs, and conduct some research by accessing materials from websites. I also encourage advanced students to read news on-line and write Chinese essays with a computer. When grading and correcting computer-generated writings, the instructor still needs to check the content, grammar, use of words and characters, etc., though she will not need to check if individual characters are correctly written. I reduce the percentage of character production in in-class exams, supplementing them with a few dictation quizzes that include vocabulary and sentences. In my oral exams, I also ask students to read aloud from texts in both traditional and simplified characters so that students would work on character recognition.

I have observed that in general Mandarin heritage students have an advantage over non-heritage students in composing comprehensible sentences and essays. Since typing out comprehensible sentences on the computer requires a good grasp of basic word order, once heritage learners become familiar with using pinyin, they would be able to use their strengths in aural/oral proficiency and succeed in composing comprehensible sentences sooner than their non-heritage counterparts.

To conclude, I suggest a “staggered” approach in teaching Chinese characters so that students would not have to devote most of their study time to character production or feel bored both by simplistic text passages and the laborious practice of character writing. I recommended using visual, aural, and oral cues in the instruction of characters, and suggesting mnemonic strategies to students. I also believe that we can utilize computer technology in teaching characters. In this computer age, we need to re-conceive the ways we teach Chinese characters and assess students’ skills in Chinese character recognition and production.

Works Cited