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Penless Chinese Character Reproduction

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PENLESS CHINESE CHARACTER REPRODUCTION

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Abstract

In view of the fact that hand-writing Chinese characters is the most frustrating factor in Chinese language learning, we propose in this article a fairly radical approach that could bring a fundamental change into Chinese language teaching. Our suggestion is abolishing the requirement for writing Chinese characters by hand at the beginning of Chinese language learning process, and utilizing Chinese word-processing software instead to help the students (1) bypass the difficulties entailed by character hand-writing, (2) achieve an early development of writing skill, and (3) reach a comprehensive improvement of their language competence. In this article, we have offered our assessment on the following three aspects: (1) The degree to which character hand-writing constitutes a major obstacle to early Chinese language learning; (2) The benefits of using Chinese word-processing software in acquisition of Chinese language skills; (3) The side effects from adopting this approach and the possibilities of their overcoming. We believe this proposal addresses one of the most pressing issues in today's Chinese language teaching, and should generate fruitful discussions among Chinese language teachers, as well as general interest in the field of foreign language teaching.

Learning Chinese language is by no means an easy task, whereas learning to write Chinese characters is probably the most difficult aspect facing all the students learning the language, in particular, the beginning students. Until now, there has been no way to remove this gigantic stumbling block other than asking the students to labor for hours and hours on practicing character hand-writing.¹ The precious time devoted to character hand-writing by the students is obviously taken away from the more pressing business of learning to speak and read in the language. Moreover, the prolonged and slow-moving process of learning to write Chinese characters by hand often leads to extremely unsatisfactory result in character reproduction and significantly slows down the entire

¹ As Professor Jing-Heng Ma points out, all Chinese language textbooks currently used in the United States focus on spoken language, where Chinese characters are treated only as an accessory left for the students to deal with on their own (Ma, 1997:107-108).

process of learning Chinese language. With an ever increasing number of students enrolled in Chinese language classes in this country and throughout the world, the obstacles presented by writing Chinese characters become all the more obvious and all the more acute. It is now the time for a change that is consonant to the fast-changing world we live in.

This article presents a fairly radical two-part strategy that can help the student overcome the difficulties inherent in Chinese character reproduction: first, we propose abolishing the traditional requirement for hand-writing Chinese characters at the beginning of Chinese language learning process; second, we suggest utilizing Chinese word-processing software as a tool to help the student "write" Chinese characters without using a pen. The students using well-designed word-processing software should be able to "write" Chinese characters on the computer screen, so long as they can (a) input on regular keyboard the romanized letters representing the sound of a Chinese character; and (b) recognize the intended character from among a small group of different characters that have the same sound. In other words, the ability to write Chinese characters by hand now becomes unnecessary and is actually converted into two other related skills that are relatively easier to acquire: the ability to speak (a) and the ability to read (b). The real difficulties entailed in "drawing" the proper strokes that constitute a correct Chinese written character have been left to the "hands" of the computer.

We will elaborate this strategy in the following three areas. First, we will show the degree to which writing Chinese characters by hand constitutes a major obstacle to Chinese language learning. Second, we will outline the benefits of using Chinese word-processing software in acquisition of Chinese language skills. Third, we will consider the side effects from adopting this approach and the possibilities of their overcoming. Also included is an appendix that reports the results from our empirical study on the problem of hand-writing Chinese characters, which indicate the dramatic improvement the Penless approach could produce.

I. The Problems of Writing Chinese Characters by Hand

The fundamental problem underlying the learning of Chinese character hand-writing is simple: Chinese is not a phonetic language ---- there is no necessary relation between the pronunciation and the physical appearance of a character. In other words, a Chinese character consists of a number of strokes that, unlike the roman alphabets, by themselves do not represent phonemic values. This characteristic alone is what makes learning Chinese language much more difficult than learning a phonetic language, for in Chinese language there exists tremendous distance between speaking and reading, and again, between reading and writing. In other words, to be able to speak Chinese words is far from being able to read those words, and to be able to read Chinese words is far from being able to write those words. We can safely say that, although all languages have certain distance between these aspects, no other language has a distance as large as in Chinese language.

It is certainly true that reading in a foreign language is generally more difficult than speaking the same language, and the ability of speaking a foreign language does not

automatically translate into the ability of reading in the language. But, because Chinese is not a phonetic language where the physical appearance of a character may have nothing to do with its pronunciation, reading in Chinese is much more difficult than speaking the language. It is in this sense that DeFrancis (1984:52) “guesstimates” that “learning to speak Chinese is about 5 percent more difficult than learning to speak French, whereas learning to read Chinese is about five times as hard as learning to read French.”

Moreover, with Chinese language, even if one can read Chinese characters, one is still far from being able to write them. Writing such characters means that one has to remember all the necessary strokes in their correct order, which is clearly much more difficult than simply recognizing the characters where a general impression of them would suffice. Clearly, while there is little distance between speaking and reading, between reading and writing in many phonetic languages, Chinese character writing is far removed from the spoken language, which by itself is rather easy to learn.

Indeed, as Moore and Walton suggest, this distance may account for the “Category 4” status of Chinese, which labels the language much more difficult for English-speaking learners than Romance and Germanic languages. According to Walton and Moore (1992: 128),

This complexity [of nonalphabetic writing systems] affects the study of the language in two ways: the writing system itself takes longer to master than the writing systems of Category 1-3 languages do; and mastery of reading and writing takes so much time away from study of the oral language that the entire language learning process is slowed significantly.

Various romanization systems of the Chinese language or phonetic representations of Chinese speech, e.g., Pinyin, GR and other schemes, were created precisely to shorten the distance between speaking and reading, between reading and writing. But, so far, they have been used only to *help* the learning of Chinese language, especially in terms of pronunciation, not as alternative scripts replacing the characters.²

The beginning students of Chinese language, therefore, immediately find themselves actually dealing with two entirely alien systems at once, the romanization system and the Chinese characters, whose proper reproduction entails hours and hours of tedious practice. If we equate learning a Chinese romanization system to the learning of a phonetic language, then learning Chinese means that the students have to accept some extra work in comparison with learning most other languages. What is worse, the “extra” work is both tedious and frustrating.

Many a time, teachers have watched the students still frustrated with their inability to reproduce correctly formed characters, despite the tremendous efforts they

² A 1980 report by the CETA delegation to China, entitled *Computers, Language Reform, and Lexicography in China*, indicated that Pinyin, as a supplemental script, was primarily used as an aid for learning characters and their pronunciations, and that many university students who had studied Pinyin in first and second grades acknowledged that they had practically forgotten it (Mathias and Kennedy, 1980:20-24). The situation remains largely so in today's China as well as other countries where Chinese language is taught. And the only possible change would have to be initiated by using Pinyin as an input method on computers, which in fact has become a notable trend in recent years.

have made to master the written form of the characters. Our empirical study has found that over 44% of all errors made by Chinese language students have to do with writing the characters by hand (see the Appendix). Not surprisingly, in our survey, students cite the difficulty of writing Chinese characters as the number one reason when asked why they decided to discontinue taking Chinese after the first year of study. And 91% of the students who did leave Chinese study complained about the amount of time dedicated to character writing. Clearly, the development of the skill to write Chinese characters by hand is inevitably slow, and the time spent on developing the skill is again inevitably the time taken away from the development of other still more important language skills. As a result, learning to write Chinese characters by hand considerably slows down the pace of learning in speaking, reading, and listening to the language.

The same frustration is also reflected in different approaches to Chinese language teaching. Some colleges simply avoid teaching the students any Chinese characters for the entire first year, with all instructional needs relying on one or another form of romanization. This approach clearly aims to push aside the main obstacle in order to achieve a faster development of speaking and listening skills. Unfortunately, this approach at best yields only an incomplete Chinese language learning experience, as it is the Chinese characters, not the romanization schemes, that are used in written communication in all Chinese-speaking communities. Also, while this approach may temporarily postpone the difficulties of writing Chinese characters by hand, it does not really "resolve" any of the inherent problems of character hand-writing, because the characters eventually will have to come to the scene in the learning process. The same drawback also exists in the so-called "two-track" programs, where some courses are focused on training oral/aural skills with no Chinese characters involved, and the others are devoted to the development of reading and writing in Chinese characters alone. While the separation of the two "tracks" may indeed meet some students' special needs, in either case it can provide only incomplete Chinese language learning experience, except when a student takes both at the same time, where the second "track" would still inevitably interfere with the first.

Other colleges emphasize the unity of all aspects of Chinese language learning, though they disagree among themselves over the appropriate pace of character acquisition. For instance, the popular textbook, *Practical Chinese Reader*, adopting a most traditional "easy but slow" approach, introduces the four skills immediately and in unison. Thus the sentences, and therefore the grammatical items, must remain relatively simple to match the process of character acquisition. Because much of the energy is spent on characters, much less time is allowed for oral-aural skill development. And because one can only learn to write a very limited number of Chinese characters per lesson, the oral-aural content in each lesson has to be limited to the same degree. As a result, the students using this textbook have a low overall proficiency, showing that through equal emphasis of all four skills none is well developed.

In contrast, the more demanding textbook *Chinese Primer* prefers to set a "difficult but fast" pace (Ch'en, 1994:xi). Chen based his *Chinese Primer* on the philosophy that the college student's already developed cognitive abilities make him or her different from the elementary school student. The Chinese language texts used in Chinese elementary schools, not matched with the intellectual and emotional levels of the

college student, are not appropriate instructional materials. Thus, the proper approach should be to create material suited for the student. Ch'en's text, created for the college-level student, emphasizes the oral-aural skills so that within one year all major grammatical points and sentence patterns are covered. The introduction of characters, then, has to be secondary, as the number of Chinese characters appearing in each lesson is simply too large to be tackled by any college student within a limited time frame. The students therefore are asked to learn only few characters a day, fewer than what they can speak and comprehend with the help of a romanization system. As a result, the ability of reading and writing Chinese characters is almost always falling behind the ability of speaking and listening comprehension, which is the well-known "temporary lag in character-learning" (Ch'en, 1994:xi).

While the editors of the *Chinese Primer* are absolutely right to point out that the "easy but slow" approach unnecessarily slows down the entire learning process,³ they themselves fail to account for the "temporary lag in character-learning" retained by the *Chinese Primer*. This "temporary lag," again, does nothing to resolve the basic problems entailed by hand-writing Chinese characters, as the students are still required to write all the characters anyway. Moreover, the students using the *Chinese Primer* are often quite confused exactly by the unbalanced development of their linguistic skills caused by this "temporary lag." The fundamental problem, again, lies in the requirement of hand-writing Chinese characters.

Clearly, the above three approaches to Chinese language teaching have already exhausted all the logical possibilities of dealing with character hand-writing in Chinese language instruction. On one end of the spectrum is the approach that simply avoids Chinese characters altogether. On the other end is the approach that takes care of everything, including speaking, listening, reading and writing in characters. The approach represented by the *Chinese Primer* is actually a pretty wise compromise in this respect, as it handles Chinese characters while maintaining a relatively fast pace.

But, none of the approaches, as we pointed out above, has resolved the problem of hand-writing Chinese characters. Character writing in Chinese is so far removed from the spoken language that as long as there is a requirement of hand-writing Chinese characters, one has to live with the problem no matter what approach is adopted. To get a sense of exactly how removed Chinese character writing could be from the spoken language, one only need to refer to the results we have obtained from our empirical study that are detailed in the Appendix. Trying to find out exactly how much (or how little) the students can write what they can already speak and read, the experiment has yielded astounding results: given the most favorable conditions, the students can write correctly

³ According to a 1995 survey involving Princeton University, Swarthmore College, Bryn Mawr College, and Middlebury College, the overall proficiency of first-year students using the *Chinese Primer* is higher than average. While on the scale of American Council on the Teaching of Foreign Languages (ACTFL) students using Chen's text average intermediate-low (I-L), students using other texts rank novice-mid (N-M) to novice-high (N-H).

only 39% of what they can speak and read, and the students produced a large number of partially correct Chinese characters (44%), an avoidable event if they were not hand-written.

II. The Advantages of Writing Chinese Characters with Computer

As we pointed out before, the students using well-designed word-processing software should be able to "write" Chinese characters on the computer screen, so long as they can (a) input on regular keyboard the romanized letters representing the sound of a Chinese character; and (b) recognize the intended character from among a small group of different characters having the same sound. It is clear from the above-mentioned experiment that if computer were used in place of hand-writing, the students would have been able to "write" exactly as much as what they can both speak and read. In other words, there would have been a 44% to 61% improvement in the students' performance immediately. Now, with the use of computer, the students may only make two possible mistakes in "writing" Chinese characters: they may mispronounce the character or fail to recognize its visual form (which in reality reflects the problems the students have in either speaking or reading). As the software immediately alerts the students to both these mistakes (for the right Chinese character will not be found on the screen if any one of the two mistakes is made), "writing" Chinese characters on the screen becomes fully integrated with two other tasks in Chinese language learning --- speaking and reading. Although Chinese language, as a non-phonetic language, will never be really "easy" to learn, the removal of the single largest obstacle to the development of early language learning skills will make access to the language much easier.

This Penless approach has the undoubted advantage of helping to reinforce the individual student's knowledge of Chinese romanization system, which is now used in virtually all Chinese word-processing software programs as a major input method. If the software programs were designed to incorporate tone marks in their input methods and to produce the appropriate sound for the selected character appearing on the screen, the student's listening comprehension and pronunciation would definitely be further enhanced. Theoretically, this approach should even improve the student's ability to recognize Chinese characters, since the student will be constantly urged to make conscious choice between characters with structural similarities as well as differences, rather than depending upon rote memorization of Chinese characters. This approach will also highlight the picto-phonetic characters, which constitute more than 80% of Chinese characters, so that the students can easily learn to separate the sound and meaning components of such a character, a skill that will further speed their acquisition of Chinese characters. This approach, needless to say, will greatly benefit the development of the students' composition ability at a very early stage. This approach, by the way, will also have the advantage of bridging the difference between simplified and traditional characters, as the switch-over from one form to another requires no more than clicking the mouse or pressing a single key on the keyboard.

Most importantly, this approach will lead to the synchronized and faster development of reading, writing, speaking, and listening skills, which up to now has been merely an unrealizable ideal. Borrowing the words of the *Chinese Primer*'s editors, this approach solves the old problem of how to have the four basic language skills "pursued in concert, and used to reinforce one another" (Ch'en, 1994:xi). Teachers no longer need to fear that in emphasizing one aspect of the Chinese language learning process they may be exerting a negative impact on the development of the student's comprehensive ability to function in the language, as all the four basic language skills will be intertwined in such a way that an exercise on anyone of them will have a positive impact on the development of all others.

As for the so-called picto-phonetic characters mentioned above, there obviously exists a strong misconception, even among linguists, that Chinese orthography lacks any systematicity. This certainly appears true to English-speaking students whose familiarity with an alphabetic system contrasts sharply with any phonetic similarity that may exist within the Chinese system. According to Tan and Perfetti (1997:42), however, "Most modern characters (about 80-90%) consist of a phonetic component (the phonetic) and a semantic radical." This knowledge can certainly be used in the instruction of Chinese characters. Tan and Perfetti (1997: 41) suggest that Chinese readers may use these phonetics "during the identification of Chinese words." Although they are speaking of first-language readers, the same is also true for the students of Chinese as a second language. If students are able to grasp phonetic similarities among parts of characters they will have a real advantage in the learning process. The Penless approach, undoubtedly, provides extremely rich opportunities for the students to become aware of the structural similarities and differences among Chinese characters as the characters appear side by side on the screen for them to choose.

A related issue would be the fact that Chinese language has a high rate of homonyms. The same sound in Chinese could refer to dozens even hundreds of distinct meanings and as many characters. With the Penless approach, once again, the students have to make a conscious decision when facing all the possible characters with the same pronunciation on the computer screen. In our empirical study, we find that among all partially correct characters produced by the students, a whopping 74% are errors related to homonyms. It is then no doubt that a vast majority of these errors could have been avoided if a computer were used in producing the characters.

III. Possible Side-Effects of the Proposed Approach and their Overcoming

There must have been concerns among the readers of this article that the students' hand-writing skill will be impaired if trained according to the Penless Approach. In fact, some of the students may never learn to hand-write Chinese characters properly if they start with computer instead of a pen. But let it be clear that our proposal here by no means excludes the possibility that the students may learn to hand-write Chinese characters at a later stage, perhaps out of their own interest in hand-writing or their appreciation of Chinese calligraphy. This proposal merely recognizes that there is a

world of difference between choosing to write Chinese characters by hand (to satisfy special needs) and needing to write Chinese characters for the purposes of everyday communication.

Students are motivated to learn Chinese language for many different reasons. Most of them hope to function in the language to deal with personal, professional, and social situations. Such situations seldom require an immediate demonstration of hand-writing skill, while reading, listening, and speaking are constantly brought into play. For students who come to Chinese language learning with a particular interest in Chinese art or aesthetics, some additional courses on character hand-writing and calligraphy may be offered, perhaps even in conjunction with learning "classical Chinese."

Furthermore, we need to look into the current (which has been "current" for thousands of years!) Chinese language teaching practice to answer any possible questioning about the proposal of abolishing hand-writing requirement. The issue here, as we see it, is NOT that the students will not have the ability to hand-write if trained by the proposed method, but that the students are NOT able to write the characters as required when trained in the traditional way. As our empirical study has demonstrated, the students cannot reproduce 61% of required characters even when they are able to pronounce and read them. And the same or similar results should be easily obtained at any school for any type of students. Anyone who questions the proposal of abolishing hand-writing requirement and deplors the disappearance of pen in Chinese language learning process should be reminded the painful fact that the students simply CANNOT reproduce Chinese characters with a pen as required in spite of their tremendous effort. The very essence of our proposal is precisely that it addresses the long-standing problem in Chinese language teaching, that is, much time has been wasted on character hand-writing with very discouraging results.

Let us suppose that the students have a complete command of pronunciation and character recognition for certain numbers of Chinese characters, then we can have two scenarios: (1) the students have spent a huge amount of time on hand-writing but still can not write all the characters they have learned; (2) The students do not spend any time on character-writing per se but can write all the characters they have learned (so long as they know how to pronounce and recognize the characters, both of which being presupposed already). In other words, there is simply NO scenario where the students could hand-write all the characters they have learned (unless, of course, one spends his or her life time on practicing hand-writing)!

Obviously, this proposal presupposes some initial expenditure on computer equipment on the part of colleges and universities (and possibly students). Still, with the increasing use of the computer in both academia and business, such expenditure has been routinely factored into the regular operating budget of institutions and individuals. And thanks to modern technology, computers are becoming smaller and cheaper, but more sophisticated and powerful.

What should really concern us the most about this proposal now seems to be the fact that none of the currently available Chinese word-processing software programs suits the proposed approach ideally. But the good news is that, technically, it is not difficult at all to design an ideal one for the purposes outlined above.

An ideal Chinese software program for the Penless approach should at least incorporate the following set of features: (1) It should have complete letter input, instead of partial letter input. That is to say, the student would need to type in the complete romanized form to produce a single Chinese character, not the partial romanized form for the sake of time efficiency as we find in all commercial Chinese word-processing software packages. (2) It should require that the student indicate tone as a part of input, which is both to help narrow down the scope of possible characters having the same sound and to aid the student in developing greater accuracy in pronunciation. (3) It should randomly re-order the characters appearing in the input window every time when a character is chosen so as to make sure that the student chooses a specific character through real recognition, not by remembering its numbered position in the input window. (4) It should be able to produce the sound of the character when the character is chosen by the student, so as to reinforce the association between the sound and the written symbol. (5) It should have a limited number of Chinese characters in store, so that the students could better concentrate on basic vocabulary appearing in commonly used Chinese textbooks. (6) It should be able to have the romanized form appear below or above the character chosen in the text to further reinforce the association between the romanized form and the specific Chinese character.

It should be noted that the rapid development of speech recognition technology will soon make keyboard input unnecessary, which for us would mean simply dictation input instead of keyboard input---the final realization of our premise: as long as one can produce a correct sound and recognize the character among a number of homophones, one can "write" the character on the screen.

For thousands of years, writing brush was the only instrument commonly used to reproduce Chinese characters, and one of the criteria in judging the achievements of a learned person was his brush-writing competence. It was not very long ago that pen replaced writing brush as the main instrument in writing Chinese characters, with the result that brush-writing gradually transformed into a purely artistic form. How many of us today still feel embarrassed about our inability to produce good brush-writing, which supposedly best exemplifies the very essence of Chinese written language? And on what ground can we assert that pen is absolutely necessary for writing Chinese characters, as writing brush was once so conceived?

This is not the place to speculate about the fate of pen in writing Chinese characters or in its general use. The reason why pen replaced writing brush is simply because the former is easier to use. The same should also be pertinent to the case considered here, when computer is proposed to replace pen as a writing instrument. Throughout the entire history, now for the first time, it becomes possible that a person who cannot write a Chinese character by hand can "write" it on the computer screen, without having to go through the extremely painful process of learning to hand-write the characters. Also for the first time in history, the writing of Chinese characters has something to do with their phonetic characteristics, as one has to enter romanized letters on the keyboard in order to bring Chinese characters onto the computer screen (and with a speech recognition program, it will be the speech itself that directly leads to Chinese characters on the computer screen). To the language of such a long history, computer

technology has brought along with it a real revolution, of which the Penless approach is both an outcome and a precondition.

Finally, after having discussed the ways in which the Penless approach would benefit the students of Chinese as a second language, we should note that this approach has equal application in first language learning situations as well. The same problems of hand-writing Chinese characters are common to the Chinese students in Chinese-speaking countries and regions. It is really surprising to realize how many precious early years of a Chinese student's life are spent on practicing character writing. It is certainly deplorable that a Chinese student cannot read and write adequately until they reach the age of 13 or even older simply because he or she does not have enough characters in storage even though their oral/aural competency has been much more developed. We have noticed that in recent years there has been an experiment conveniently labeled as "ZT" conducted in China, where the elementary school students use only Pinyin romanization for the entire first two years of their study so that they can more quickly develop their overall linguistic competence. It has been proved that the students trained with the "ZT" method show far better general linguistic ability than the conventional students, even in terms of Chinese characters when they eventually catch up with the convention students in dealing with Chinese characters (Rohsenow: 1996). The Penless approach could certainly supplement the "ZT" method to maintain its fast track while avoiding another unfortunate "temporary lag in character-learning".

To extend the point along the same line, the Penless approach will also have to do with the issue of "digraphia" much talked about in the past two or three decades under the general topic of Chinese language reform. "Digraphia", according to DeFrancis, is a situation of Chinese language where writing in Chinese characters would co-exist with writing in Pinyin (DeFrancis, 1984:268-9). This, of course, would be a transition period, with the final goal being a situation where writing in Pinyin eventually replaces writing in characters. Whatever the reason may have been, however, writing in all Chinese speaking communities today is still virtually 100% in Chinese characters, while writing in Pinyin or other romanized forms is limited to a few small newspapers specifically for school children. One may well wonder whether writing purely in Pinyin is too "foreign" to the Chinese who have been so used to their difficult yet "meaningful" characters, or whether the idea of giving up Chinese characters one day is too unthinkable to the Chinese whose entire culture has been inscribed in such characters. Here, the Penless approach should be able to provide some important perspectives. First, this approach will greatly promote the use of Pinyin or other romanized schemes in writing. Second, this approach by itself calls for "digraphia" of a kind as it constantly and instantly moves between a romanized scheme and Chinese characters. Finally, this approach, paradoxically enough, may eventually help preserve Chinese characters in writing, instead of abolishing them altogether.

As for the direction of Chinese language reform, the Penless approach should at least suggest a standardization of picto-phonetic characters---designating, for instance, a common character that is used as the phonetic component in picto-phonetic characters so that one can pronounce such characters correctly whenever the phonetic component is identified. This is actually to carry through the fundamental principle of picto-phonetic characters as it was conceived at the very creation of such characters thousands of years

ago. And the Chinese language as it stands right now, for many different reasons, has a large number of picto-phonetic characters that share the same phonetic component but pronounced differently, which has created tremendous confusion even among native Chinese speakers. Clearly, with the increasing use of Chinese word-processing software on computers, standardization of this kind should replace the traditional strategy of reducing the number of strokes for a character in consideration of relatively easier memorization and hand-writing, i.e., Chinese character simplification, as the number of strokes is no longer an issue with Chinese word-processing software, while a standardization as mentioned here would truly simplify the learning and the use of Chinese language in the digital era.

APPENDIX: The Empirical Study

Purpose

The purpose of this empirical study is to measure the distance between writing and speaking/reading in Chinese language learning. To put it in more concrete terms, the purpose is to find out exactly how much (or how little) a student can write what he or she can already speak and read.

Procedure

SUBJECTS

N:54

College Level Students, first-year Chinese students

Proficiency: 550 characters

First year Chinese students of a top private liberal arts college and a summer intensive Chinese language program with various Chinese backgrounds. Most students' Mandarin background (if they have any) is limited to speaking ability with little or no background in character recognition or reproduction.

DESIGN OF THE EMPIRICAL STUDY:

Based on the psycholinguistic theory, the process of learning characters consists of two stages: recognition and reproduction. Some students acquire only the recognition competence, which is the passive knowledge of character writing. Some students can "reproduce" but the characters are either completely incorrect or partially correct. Neither of these two can be considered acceptable "reproduction."

As stated earlier, the purpose of this study is to find out exactly how much (or how little) a student can write what he or she can already speak and read, we designed the study in two parts: Recognition and Reproduction.

Recognition:

Students were presented with a list of Chinese characters alphabetically arranged according to each character's Pinyin. All of the 550 characters taught in the first year Chinese course made up the list.

This part of the study required that students first write the sound of a character in Pinyin (including tone mark) to show their ability to pronounce the character; then, they were required to write down the English equivalent of the Chinese character to show their ability to read the character with understanding.

Reproduction:

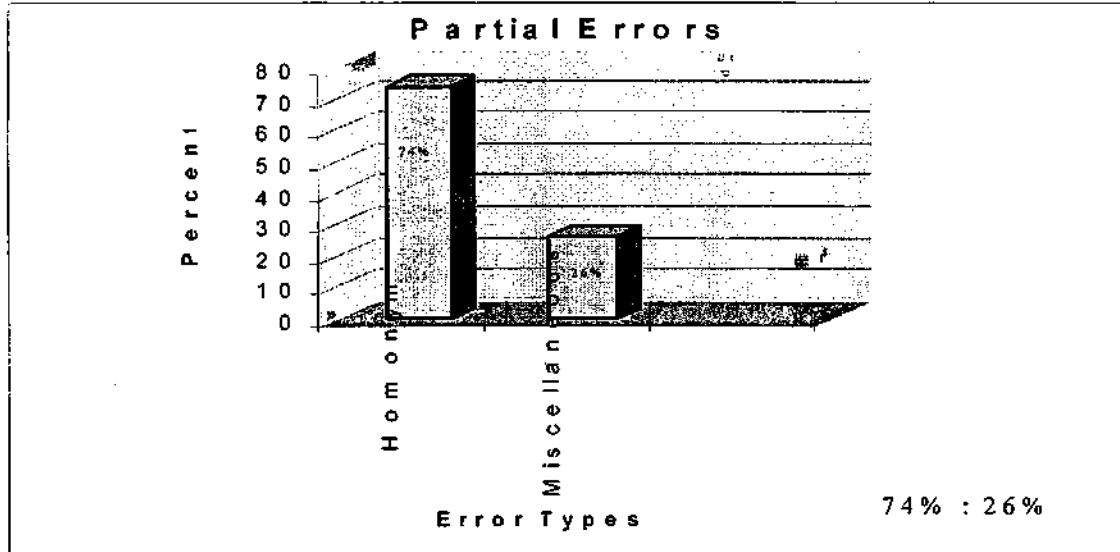
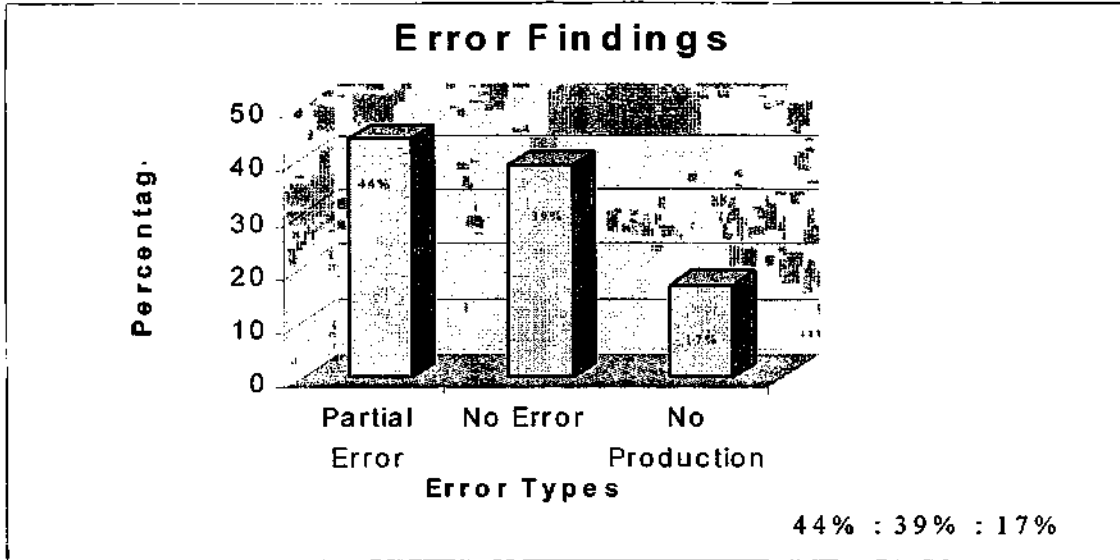
Given short sentences in English and their Chinese translation in Pinyin, students were asked to write down the Chinese translation in characters for the given sentences. Pinyin translation was provided together with the English sentences, because the point of emphasis of this study was the difference between character recognition and character reproduction, not translation. With the Pinyin translation, the students would be able to concentrate on producing the characters instead of attempting to translate the sentences properly. Therefore, the errors, if there were any, could only come from character reproduction, instead of translation. The characters to be used in translation, of course, were all present in the list for recognition mentioned above.

Error Types:

The errors made on both sections of this study can be divided in the following categories for the purposes of our study (see charts below).

1. **No Production:** This would be the case if the student had forgotten how to write the character completely.
2. **Partial Error:** This includes both homonym errors and miscellaneous errors: the former refers to the characters that are not the intended characters but have the same pronunciation as the intended characters, the latter includes all other partial errors, for example, using an incorrect radical, etc..
3. **No Error:** This would be the case of complete Recognition and Reproduction.

The ones marked partially correct are the characters with mainly correct strokes with some small errors. Many of the participating students made more partial errors and homonym errors than full errors. Out of all the partial errors, the most common ones are homonyms of the desired character or words with the same components.



Background Information

GENDER

The sex of the students does not seem to effect this question. Our results show other factors to be more important; thus, we did not account for data of this kind.

PREVIOUS EXPERIENCE

Clearly, previous study of Chinese has a direct correlation to the number of characters both recognized and reproduced. In this study, however, the students did not have substantial (if any) previous character study. Therefore, this variable does not warrant further study in this case.

TIME LIMIT

Since our focus is on ability, not speed, we did not see any need to set a time limit for completing the word list and the translation. Otherwise it would have created a tense situation that would not have borne reliable results.

CONTACT HOURS/WEEK

The students from the liberal arts college who participated in the study each had seven hours of contact time with instructors every week. The students from the summer intensive program had twenty hours of contact time with instructors every week.

LIMITS OF CURRENT STUDY:

Target Population:

The number of subjects is very low. This study should clearly be realized again with a broader subject base.

The selection of students is also shallower than we would like. Subjects of this study were all first-year students, though based on the results, we believe that the results apply to other levels as well.

Outstanding Cases:

Nearly all (98%) of the cases comply with our expected results and thus are addressed in our reflections on the study. The remaining 2% are aberrations that represent too small a number to account for, yet must be reported.

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