Stroke order

for Dutch secondary school students

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Contents

1. Introduction

I teach *Chinese Language and Culture* at Dutch secondary schools. Since the 2017-2018 school year, this subject has been an official exam subject in Dutch secondary schools (Visbeen: 2018). Therefore, this subject is still relatively new. Currently, there are 70 Dutch secondary schools that offer the subject as an option and, among them, 15 schools offer the option for students to follow it as an official exam subject (Nuffic: 2019). This means that the students can participate in the exam at the end of their secondary school education. After that, the subject and the student's scores are presented on their diploma.

There are two possibilities for offering the subject as an exam subject. One is a short version: students follow the subject from the fourth grade to the sixth grade. The students are about fifteen years old in the fourth year. Another option is a long version, which means that extra lessons are also provided from the first grade to the third grade. It is highly recommended for both versions that during the fourth grade to the sixth grade three 50 minutes' lessons per week are arranged, given that there are 40 lesson weeks per school year. The recommendation for the first to the third grade is more flexible. Schools can decide in which grade to begin the subject and how many lessons are taught each week. (SLO[1]: 2014-number of lessons)

For the exam at the end of the secondary school, five aspects are tested (SLO: 2015). They are

- reading
- listening
- speaking (including monologue and dialogue)
- writing (including handwriting and writing with digital equipment)
- Chinese culture (including Chinese literature)

Based on SLO research, the following is the level students should at least achieve for the two different programs (SLO 2014 – final level), see Table 1.

[1] SLO stands for Stichting Leerplan Ontwikkeling 'Organization for study plan development'.
SLO is an organization that focuses on the development of the curriculum in Dutch primary, special and secondary education. One of their tasks is to design and validate national curriculum frameworks.

	Reading	Listening	Speaking	Handwriting	Writing on computer
Long version	A2	A2	A2	A1	A2
Short version	A1	A1	A1	A1	A1

Table 1: Minimum level for Dutch secondary school students (SLO 2014 – final level)

For very talented and motivated students, the following levels are also attainable:

Long version, reading: B1

Long version, handwriting: A2

Short version, listening and speaking: A2

We can see above that the generally achieved level is either A1 or A2. According to the level description (ERK.nl), A1 and A2 are levels of basic language users. With A-level language proficiency, it is possible to express oneself very directly with simple words concerning daily issues. For example, introducing yourself and asking about personal information such as place of residence, age, work and/or family, for instance.

Interestingly, the level for handwriting (A1) is markedly lower than the other skills for the long version. This is because writing Chinese characters by hand requires a large amount of time to practise (Allen 2008: 240). Speaking from my own teaching experience, Dutch secondary school students, as second language learners, spend a lot of time practising handwriting. Still, handwriting remains a significant challenge for them. In addition, when following conventions, characters should be always written with the correct stroke order. It means each character is supposed to be written with a unique stroke order instead of writing those strokes randomly, although the final appearance is the same. The new characters presented in the Dutch student textbook for Chinese include stroke order, as can be seen in Image 1:

吗	丨 口 口 吖 吗 吗	吗	吗				
很	丿 彳 彳 彳 犭 犭 犭 犭 很 很	很	很				
也	𠂇 也 也	也	也				
再	一 厂 冂 冂 冉 再	再	再				
见	丨 冂 贝 见	见	见				

Image 1: New characters in student textbook with stroke order (Tsui 2012: 19)

Stroke order is also tested in the sample exam from SLO developed in June 2011. The exercise instructs students to count how many strokes each character has and then write the character in the right stroke order as in the example with character 好, See Image 2.

Opgave 1

Schrijf het aantal strepen op van elk van de volgende karakters.
Geef daarna voor elk karakter de streepvolgorde aan, zoals in het voorbeeld.
Gebruik een nieuw hokje voor elke streep die je toevoegt.
Er zijn soms meer hokjes dan je nodig hebt.

Voorbeeld:

好 hǎo	aantal strepen: **6**	乀	女	女	奸	好	好			

1. 看 kàn	aantal strepen: ……..										
2. 是 shì	aantal strepen: ……..										

Image 2: Stroke order is tested during SLO sample exam developed in June 2011.

In the 1980s, I had my primary school education in China and I have learned the stroke order as well. However, there have been huge transformations over the past 40 years, both with regard to the social environment and methods to learn a language. Moreover, I learned Chinese as a mother tongue, while the Dutch students learn it as a second language.

As such, my research question is whether it is necessary to teach stroke order to Dutch secondary school students. I will first introduce the background information about Chinese characters in the following chapter for a general understanding of the connection between Chinese characters and strokes and the development of strokes and stroke order through the history of Chinese script. Then, I will look into how strokes and stroke order are taught in China, which leads to a conclusion on the role of strokes and stroke order in Chinese education. Subsequently, I will analyse how strokes and stroke order are applied in the digital era in China, after what Chinese students have learned in school about strokes and stroke order. Finally, I will come back to Dutch secondary school education to compare the role of strokes and stroke order in Dutch secondary school education and further analyse the necessity of teaching the stroke order to Dutch secondary school students and draw a conclusion based on my findings.

2. Background information about Chinese characters

2.1 Chinese characters, components and strokes

Chinese characters are, at the most basic level, composed of strokes. However, between individual strokes and a character, the component in between plays an important role (Handel 2013:24-25). Components are what Chinese readers first see in a Chinese character (汉字 Hànzì) (Chen, Allport & Marshall 1996: 1038). They are potentially recurring elements that characters consist of. Typically, they are bigger than a single stroke. A component can be in a different position within a character, e.g. component 相 is in different positions in characters listed in 2.1.

No.	Component	Examples of characters that contain the component
2.1	相	想 箱 孀 湘 厢
2.2	木	相 柏 沐 案 闲
2.3	目	相 睛 看 循
2.4	乚	孔 礼 扎 吼
2.5	宀	安牢荣蛇

Table 2: component (examples are from GF0014: 2009)

In 2.1 of Table 2 相 appears in different Chinese characters. Therefore, 相 is a component in those characters regardless of its position in each character. 相 can be further broken down into two components 木 and 目 which also recur in characters listed in 2.2 and 2.3 respectively. Neither 木 nor 目 can be further broken down into separate components. 木 and 目 can, however, be further broken down into individual strokes. A component can therefore be a group of strokes as in 2.5 or even one stroke as in 2.4.

Some components are independent characters themselves and have their meanings such as 相 *xiāng* 'each other', 木 *mù* 'tree' and 目 *mù* 'eye', and some other components are not independent characters such as 乚 and 宀. Based on the most commonly used 3500 Chinese characters[2], there are 514 components which cannot be further broken down such as 木, 目, 乚 and 宀. Among these 514 components, 311 are independent characters themselves just like 木 *mù* 'tree' and 目 *mù* 'eye' (GF0014: 2009).

Some components are used more often in building characters than others. Based on the 3500 most frequently used characters in Chinese script, 木 appears in 218 characters and 目 appears in

[2] In 1988 and 2013 two versions of 通用规范汉字表 *Tōngyòng guīfàn hànzì biǎo* 'List of standard Chinese characters of common use' were published in the PRC. In the later version, 8105 characters are divided into three levels based on how frequently these characters are used. The first level contains 3500 characters, which are the most frequently used characters. Most of the educated native speakers can likely read and write most of them. The second level contains 3000 characters, which most of the native speakers cannot read or write. The third level contains 1605 characters, which contains the least frequently used characters. Very few native speakers are able to read and write them.

52 characters. Interestingly, the most frequently used component 口 appears in as many as in 516 characters (GF0014: 2009). Frequent appearance of components indicates that a single component can play a crucial role in building literally hundreds of characters. Furthermore, components can have phonetic or semantic function within a character. Changing a component then influences a character's semantics and/or phonetics, which is not the case when a single stroke is changed. In other words, when compared to strokes, components are more systemically significant (Handel 2013: 24).

In summary, we have seen that Chinese characters can be broken down into components and subcomponents and eventually into individual strokes. Components play a crucial role in systemically building characters. They reappear across characters and some of them are independent characters themselves. In turn, components consist of one or more strokes. In the next section, strokes will be further explored.

2.2 Strokes and *bǐhuà*

Stroke is a common English translation for *bǐhuà* (笔画/笔划) in Chinese. However, *bǐhuà* in Chinese is not equivalent to *stroke* in English. In English *stroke* means "(a line or mark made by) a movement of a pen or pencil when writing or a brush when painting" (Cambridge Dict). Chinese *bǐhuà* denotes a different concept. This thesis focuses on strokes in Chinese script, therefore, when I use stroke, it means *bǐhuà*, unless specified otherwise.

Let us first examine the literal meaning of Chinese term *bǐhuà. Bǐhuà* is a compound noun. Compound means "A word formed from two or more units what are themselves words or forms of words: e.g. blackboard from *black* and *board*" (Matthews 2014: 71). For example, 牛肉 *niú ròu* 'beef' is a compound word consist of 牛 *niú* 'cow' and 肉 *ròu* 'meat'. Beef is a kind of meat, therefore, 肉 *ròu* 'meat' is the central unit of the compound word 牛肉 *niú ròu* 'beef'. 牛 *niú* 'cow' is used to modify 肉 *ròu* 'meat' to indicate what kind of meat. If the second unit is the centre, it is a subordinate compound (Chao 1968: 372). Therefore, 牛肉 *niú ròu* 'beef' is a subordinate compound. If both units are equally important, they form a coordinate compound (Chao 1968: 372). For example, 书报 *shū bào* 'reading material-collectively' consist of 书 *shū* 'book' and

bào 'newspaper' which are equally important for the meaning "reading material". Therefore, 书报 *shū bào* 'reading material-collectively' is a coordinate compound.

The two units in *bǐhuà* are *bǐ* and *huà. bǐ* (笔) is a collective noun for all writing utensils, including not only a modern pen, pencil, ballpoint pen and a fountain pen, but also early Chinese writing utensils: traditional Chinese ink brushes. Moreover, 笔 *bǐ* also means "strokes in Chinese script" (Lǔ 1996: 77). *Huà* has two possible Chinese characters: 画 and 划. In the dictionary, 画 *huà* means "strokes in Chinese characters", which is interchangeable with 划. 划 *huà* also means "strokes in Chinese characters" and is interchangeable with 画 (Chinese online Dict). If *bǐhuà* is a coordinate compound noun, both *bǐ* and *huà* are important, *bǐhuà* is literally *stroke-stroke,* which can be interpreted as "strokes in Chinese characters." On the other hand, if *bǐhuà* is considered as a subordinate compound, then *bǐhuà* is literally *writing utensils-strokes,* which can be interpreted as strokes written with writing utensils. Both interpretations do not explain what strokes are in Chinese characters.

Therefore, the question arises: what exactly does the stroke signify in the Chinese script? Three definitions of "stroke" are found. One defines it as "the smallest writing unit of Chinese characters in Model Script" (Lì et al., 2015: 164). According to *Xiàndài Hànyǔ Cídiǎn* 'Dictionary of Modern Chinese' *bǐhuà* are "various shapes of dots and lines to compose Chinese characters, for example: 一 *héng* 'horizontal stroke', 丨 *shù* 'vertical stroke', 丿 *piě* 'left falling stroke', 丶 *diǎn* 'dot' and 乛 *zhé* 'turning stroke" (Lǔ et al., 2013: 68). In both definitions of stroke*,* we can see that "Chinese script" is mentioned. Compared with the definition of "stroke" in English, the definitions exclude any random "marks"*.* However, these two definitions of stroke are ambiguous. For example, is 乛 *zhé* 'turning stroke' a smallest writing unit in Chinese script or does 乛 consist of two smallest units of 一 *héng* 'horizontal stroke' and 丶 *diǎn* 'dot'? Both definitions are from sources in Chinese. One source in English from Handel (2013: 24) seems more practical. Stroke is defined as "movements of the writing utensil that cannot be interrupted by lifting it from the writing surface".

In this section, we have seen the literal meaning of *bǐhuà* and discussed three definitions. In general, it seems that the meaning or definition of *bǐhuà* is not clear. For the purposes of this thesis, Handel's definition is more practical compared to the two definitions in the Chinese sources. As such, that particular definition will be used. In the following section, we will further explore the history of the Chinese script with respect to strokes.

2.3 Development of strokes and stroke order through history

In this section, let us turn to the history of the Chinese script to see how strokes were distinguished at different times and how strokes and stroke order have developed so far.

When the Chinese script was carved in oracle bones, the vertical and oblique strokes were done first. Then, the oracle bones were rotated a quarter and the horizonal strokes were done in the same way as the vertical strokes (Wàn 2017). Wàn also shows a piece of oracle bone with vertical strokes, without the corresponding horizontal strokes, see Image 3. In other words, in oracle bones era, we do not see the strokes of 一 *héng* 'horizontal stoke', 丨 *shù* 'vertical stroke', 丿 *piě* 'left falling stroke', 丶 *diǎn* 'dot' and 乛 *zhé* 'turning stroke" as mentioned in Dictionary of Modern Chinese.

Image 3: Oracle bones with vertical strokes; horizontal strokes were never added (Wàn 2017)

Since the Western Zhou Dynasty (1100-800 BC), from the inscriptions on the bronzeware, Chinese characters have gained a square-shaped appearance. This is the same as what Chinese characters look like today. Around 200 BC, ink brushes became the main writing utensils (Wàn 2017). Ink brushes have remained the main writing utensil for quite a long time until the 1950s, when the pen was introduced (Wiedenhof 2015: 367).

When considering ink brush writing, *Yǒngzì bā fǎ* "Eight stroke types of the character 'Yong'" (永字八法) is historically significant. It is a commonly used term for Chinese calligraphy practice, although there are different theories about its origin. These different theories span almost 500 years and their individual validity is unclear. As far was able to ascertain, the earliest mention of *Yǒngzì bā fǎ* "Eight stroke types of the character 'Yong'" was by Zhāng Huáiguàn (Lìdài 1979: 143) from the Tang Dynasty (618 AD – 907 AD), see Image 4.

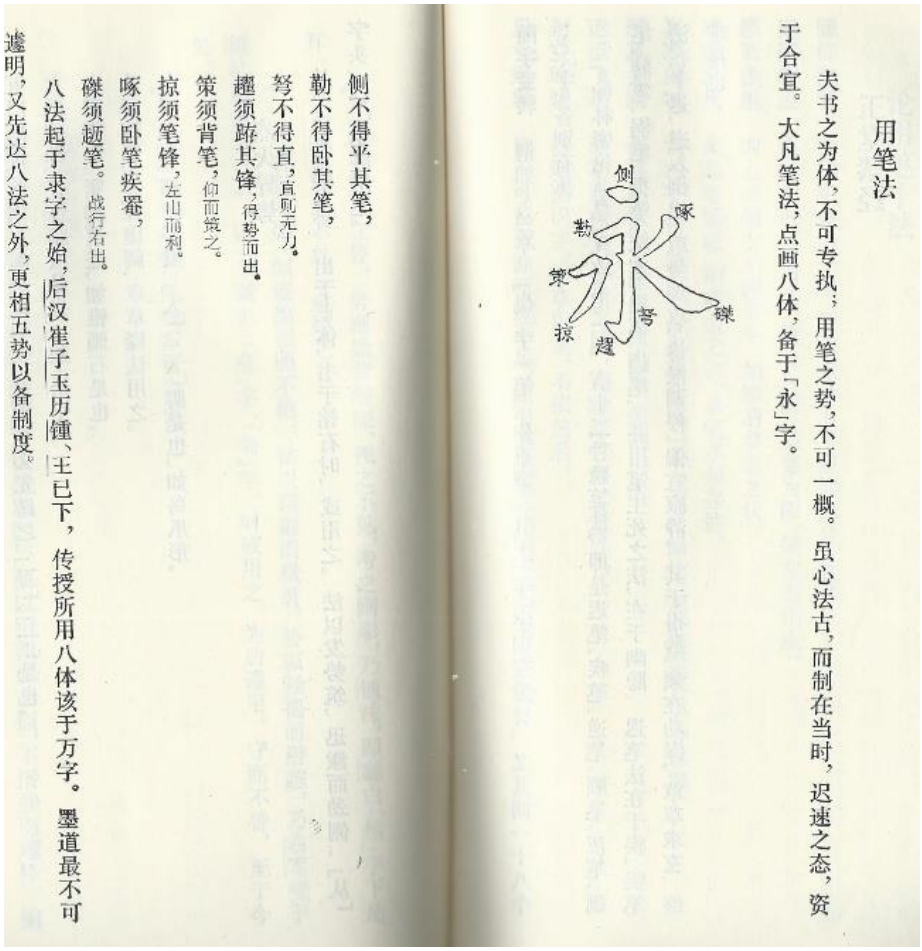


Image 4: *Zhāng Huáiguàn* mentioned "Eight stroke types of the character 'Yong'" (Lìdài 1979: 218，219). The text is from top to bottom and from right to left.

Zhāng first said: “With regard to writing strokes, the eight strokes can all be found in the character ‘*yǒng*’’ (Lìdài 1979: 218). Then, Zhāng identifies every stroke with a Chinese name (see Image 4). Next, Zhāng explains the do’s and don’ts of writing each of the eight strokes in eight lines. Finally, he explains the origin and history of *Yǒngzì bā fǎ*: “The eight stroke types originated from the period in which the Model Script started being used. Later, through the teaching of Cuī Zǐyù, Zhōng and Wáng, the eight strokes could be applied to all characters” (Lìdài 1979: 218).
If “the eight strokes could be applied to all characters”, the question arises: did those eight strokes comprise all strokes someone needed to write all the characters, when characters were still written with brushes? As far as I am aware, based on the material I have read, there is no mention of a total number of strokes that someone needs to master to write with a brush.
Here, I would like to add my interpretation. First, it is peculiar that the character “Yong” contains these eight commonly used distinct strokes, which is ideal for people to practise their calligraphy. There are probably more strokes beyond those eight, however. Secondly, writing with a brush is about the process as well, i.e. when to apply pressure, lift the brush and how to make a beautiful character. Arguably, it is more of an art than a mere functional form of writing. I assume it is very difficult to specify a number of movements one could learn to master writing with brush.

Until now, we have seen that the forms of strokes has changed from only vertical and oblique strokes into “Eight stroke types of the character ‘Yong’”. This is due to the change in both writing/carving utensils and the materials that were carved/written on. That is to say, moving from carving on bones to writing with ink brushes on bamboo strips, silk and/or paper. Since the 1950s, ink brushes have gradually been replaced by modern writing utensils such as pencils, fountain pens, ballpoint pens, etc. Let us move to a more recent official document to further explore strokes in modern script.

In 1997, the Standardization Commission of National Language Commission (国家语言文字工作委员会标准化工作委员会) published a book titled *Standardization of stroke order of commonly used characters in Modern Chinese* (现代汉语通用字笔顺规范). In this book, which I will henceforth refer to as *Bǐshùn Guīfàn*, the character 永 *yǒng* has five strokes, as in Image 5 instead of eight strokes as in Image 4. However, in Image 4, 永 has eight distinct strokes and in Image 5, two types of *zhé* ‘turning strokes’ are considered as the same basic stroke.

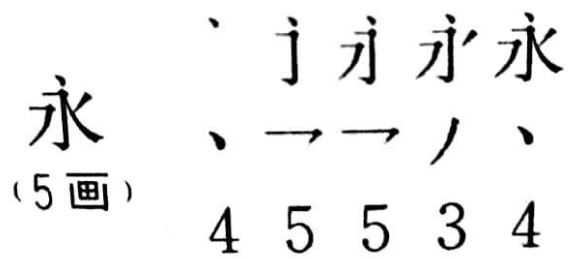


Image 5: strokes of 永 *yǒng* when written with a modern writing utensil (*Bǐshùn Guīfàn* 1997: 20)

In Image 5, on the left, under the character 永 *yǒng,* the Chinese character 5 画 *5 huà* literally means five strokes. There are three different lines next to the character. These three lines represent three ways that strokes and stroke order of every character are explained in this official guidance book. *Bǐshùn Guīfàn* (1997: 2) describes in the instruction that "stroke order" of every character is explained in three ways. In the first way, it shows how a character is written stroke-by-stroke. The second way is that they use five basic strokes to show the different strokes of a character. The third way is to assign a number to every stroke based on five basic strokes as 1.2.3.4.5 accordingly. The five basic strokes and their numbers are explained in Table 3. Character 永 *yǒng* in Table 4 will be further explained as an example for those three ways of explaining stroke order for each character in this official guidance book.

Five basic strokes	Classified as the same category	Number of each basic stroke
一 *héng* 'horizontal stoke'	ノ *Tí* 'rising'	**1**
丨 *shù* 'vertical stroke'	亅 *shù gōu* 'vertical hook'	**2**
丿 *piě* 'left falling stroke'		**3**
丶 *diǎn* 'dot'	乀 *nà* 'right falling stroke'	**4**
乛 *zhé* 'turning stroke'	all kinds of zhé 'turning strokes'	**5**

Table 3: Five basic strokes. *Bǐshùn Guīfàn* (1997: 2)

First way	Second way	Third way
丶	丶 *diǎn* 'dot'	4
	乛 *zhé* 'turning stroke'	5
	乛 *zhé* 'turning stroke'	5
	丿 *piě* 'left falling stroke'	3
	丶 *diǎn* 'dot'	4

Table 4: Three ways of explaining strokes and stroke orders for 永

In Table 5 we see the change from "eight" stroke types to "five" basic strokes of Character 永 *Yǒng.*

Eight strokes in *Yǒngzì bā fǎ*	Five strokes in *Bǐshùn Guīfàn*
	

Table 5: Comparison of eight strokes and five strokes of 永.

From Table 5, we can see that the similarity is that the first stroke 丶, the seventh stroke 丿 and the eighth stroke 乀 are the same in all cases. The difference is that the second, third and fourth

strokes in “Eight stroke types of the character ‘Yong’” are combined into one stroke 𠃌 in *Bǐshùn Guīfàn*. The fifth and sixth strokes in “Eight stroke types of the character ‘Yong’” are combined in to one stroke 𠂆.

As we have seen previously, a change in carving/writing utensil can change the forms of the strokes. Let us examine how different strokes appear when written with an ink brush compared to by a modern fountain pen. See Image 6 (Wiedenhof: 369).

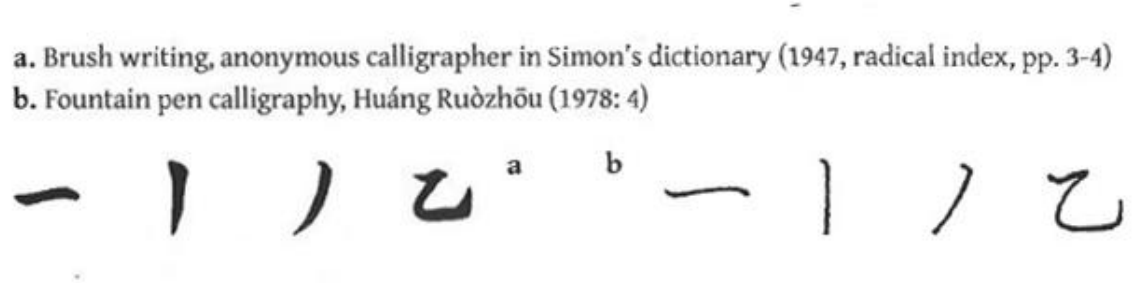


Image 6: a comparison of strokes written with a brush and modern fountain pen (Wiedenhof 2015: 369).

Here, we see that writing with a brush shows varying pressure and different boldness of ink, resulting in a difference in appearance compared to writing with a fountain pen. We have seen that the character “Yong” has changed from eight distinct strokes/movements when written with a brush (in Image 4) into five strokes when written with a modern writing utensil (in Image 5). It shows that the definition of strokes was different back in the time when Chinese characters were written with ink brushes. When writing with a modern pen, it is clear that those “five basic strokes” are only general types of strokes, such as in character 永， two strokes of 𠃌 and 𠂆 are both classified as *zhé* ‘turning strokes’. There are more specific forms of strokes in every general type of stroke in order to write all characters.

Actually, in the modern-day Chinese education system, students need to learn a set of strokes ranging from 20 to 28. More details about full set of strokes in Chinese education will be discussed in chapter 3.

If the definition of stroke is changing, then what about the writing order of the strokes? Does it change as well? Stroke order includes two aspects with respect to writing characters: the first is about the orders of the strokes in a character, the second is about the directions of each individual stroke (Wàn 2017). Wàn（2017）states that both aspects of stroke order did not play a role during

the oracle bone era. In Image 4, we can see that there is a clear order when using a brush. Moreover, in using modern writing utensils, stroke order definitely plays a role. The specific stroke order for characters is clearly regulated in *Bǐshùn Guīfàn.* The specific transition from writing with ink brushes to *Bǐshùn Guīfàn* and its relation to stroke order will be covered in section 2.4.

In this section, we have seen that have different strokes are distinguished in oracle bone era, ink brush era and modern writing utensil era. From the example of character "Yong", we can conclude that strokes are approached differently when characters are written with modern writing utensils, compared to the use of the ink brush. Furthermore, the role of stroke order in the Chinese script is apparent from the early age to writing with modern times. Aside from the change in writing utensils, the influence of the simplification of the Chinese characters to strokes and stroke order will be examined in the next section.

2.4 Strokes and stroke order during the simplification of Chinese characters

After the establishment of the People's Republic of China in 1949, The Committee for Research on Reforming the Chinese Script was established on February 5th, 1952. The goal of the committee was to eliminate obstacles in learning and mastering Chinese characters. Consequently, workers and farmers could more easily master the language and they would then lead the country to prosperity. China's leader Mao then instructed that language reform should start with simplification of the characters instead of replacing the characters. The reform should not stray too far from reality and should not break with the past (Biānnián jìshì 1985: 26).

On January 31, 1956, the State Council announced a list of 515 simplified Chinese characters and 54 simplified components. The simplification process continued in the following years. The complete official list of 2238 simplified characters was published in 1964 as 简化字总表 *Jiǎnhuà zì zǒng biǎo* 'Comprehensive list of simplified characters'. This list remains as the basis of the current official writing systems of People's Republic of China. Taiwan and Hong Kong have not implemented the character simplification and have continued using the traditional form of Chinese characters. Image

7 features an example from the Comprehensive list of simplified characters in order to compare the characters before and after simplification. The characters in the brackets are the traditional forms before simplification.

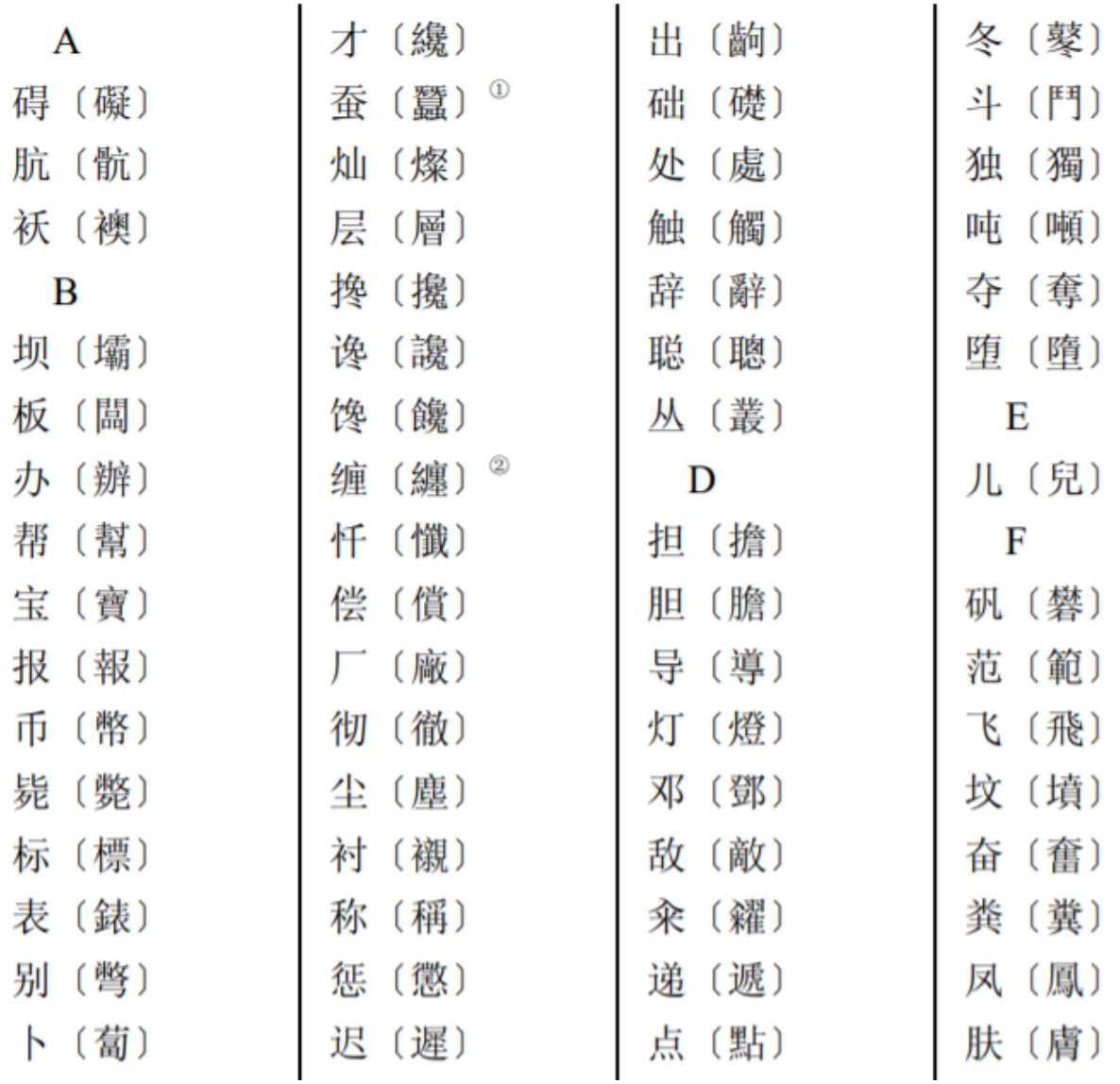


Image 7: A comparison of characters before and after the simplification. (Jiǎnhuàzì: 1964)

We can see from the list that the total number of strokes of each character is reduced and some components have become simpler. However, Handel (2013: 43-48) found inconsistencies in the character simplification. For instance, one component was simplified in several characters but not in other characters. In some other cases, identical components were simplified into different forms in

different characters. Furthermore, he compared the difference in literacy in the PRC, Hong Kong, and Taiwan, concluding that there is no advantage or disadvantage of the character simplification process with regards to learning characters and the literacy rate (Handel 2013: 48-49).

During this simplification process, the total number of strokes of a character was reduced. However, as far as I am aware, no new strokes were created. Therefore, the definition of strokes remains the same before and after the simplification. With regard to stroke order, it was mentioned the first time in 印刷通用汉字字形表 *Yìnshuā tōngyòng Hànzì zìxíng biǎo* 'A list of standard forms of Chinese characters for print' published in 1965. This list is the basis of the later published *Standardization of stroke order of commonly used characters in Modern Chinese* (现代汉语通用字笔顺规范) in 1997 (Sina Shanghai: 2013) which is the current standard for stroke order of Chinese characters. From the name, I assume the primary purpose of the 1965 list is to have a standard Chinese character form for print, since in 1964 the simplified characters were published. Zìxíng biǎo (1983) mentions that the purpose was also to provide a standard form for teaching and learning in education. From Image 8, we get an idea what it looks like.

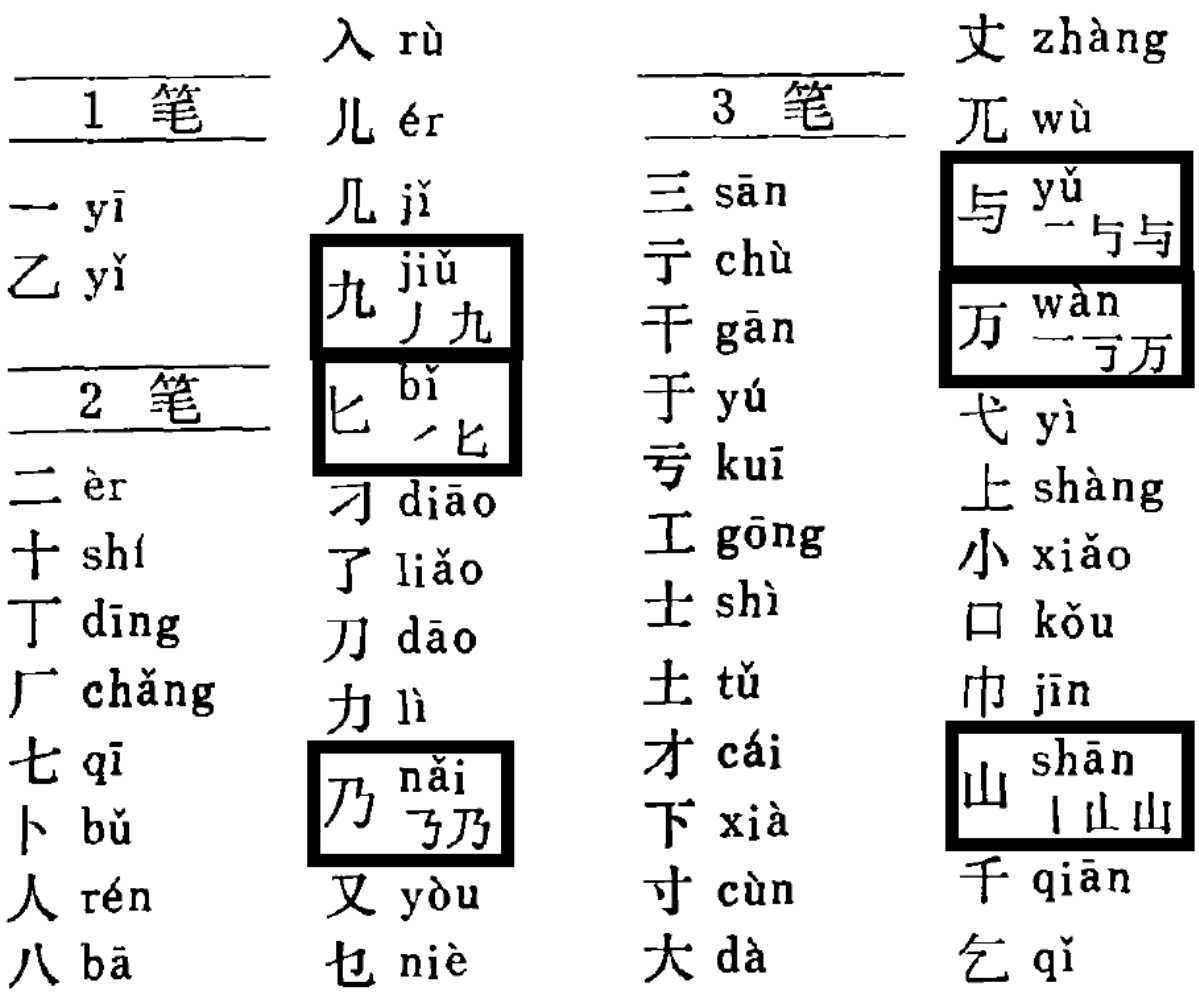


Image 8: A screenshot of *A list of standard forms of Chinese characters for print* (Zìxíng biǎo: 1983)

From the example above, we can see that only a few characters (marked by a box) have a stroke order next to it. The explanation of how to use the standardization list (zìxíng biǎo: 1983) says: "when some characters may have more possible stroke orders, the normally used one will be chosen". In this list, most of the stroke orders are not listed. It was assumed that people could determine the stroke order by the order in which the characters appear. However, this decision caused a lot of confusion (Sina Shanghai: 2013). That is why in the latest 1997 version, the stroke order for each character is clearly illustrated.

Shortly after the announcement of this 1965 list, the Cultural Revolution started. Society was in chaos and this list never had a chance to be officially published in any newspaper or book. It was only published in 1983 in a magazine by readers' request. In an interview about stroke order with

two linguists, Fèi (Sina Shanghai: 2013) says that for some characters, there are indeed several possible stroke orders. For the sake of standardization, one option needs to be chosen. For some controversial characters, he suggests further discussion. The standard could then be optimized. It also turns out that the stroke order in the list was based mainly on the stroke order when writing with brushes.

Based on the original explanation of the standardization list and the interview, I interpret the situation as follows: Originally, there was no unique and correct stroke order for each character. It is only due to the standardization that one specific stroke order of a character would have to be the sole correct one. The basic rules for stroke order from this 1964 version are simply kept for current 1997 versions. This was based on outdated practices and, arguably, there are better options of stroke order for some characters.

In this section, we have seen that Chinese characters have undergone a simplification. During this process, no new strokes were created. Therefore, the defination of strokes was not influenced by the process of simplification. Soon after the simplification in 1964, the first official document about stroke order was published. However, the basis of the stroke order of this official document was based on writing with brush. Furthermore, there is still room for the potential improvement of some stroke orders.

2.5 Conclusion

In chapter 2, we have seen that components play a crucial role in building Chinese characters. Components are broken down further into strokes. For the purpose of building characters, components are systemically more important than individual strokes. The absolute definition of a stroke is not clear, however. We have seen that the definition of stroke is dynamic: when characters were carved in oracle bones, all the strokes were carved as vertical strokes; when writing with brushes, strokes are the result of movement and the art of writing. Further still, there are eight movements in character “永” when writing with brushes, while there are only five strokes for character “永” if modern writing utensils are used.

As for stroke order, it was standardized for the first time in an official document published in 1965. This list is the basis of the current official Standardization of stroke order published in 1997 (Sina

Shanghai: 2013). The standard of the stroke order of the 1965 official document was mainly based on writing with ink brushes. There were still potential improvements for it, however. Regardless, it was directly used as basis for the 1997 official document. As a matter of fact, ink brushes were just being substituted by modern writing utensils for daily writing. If the definition of strokes and stroke order has changed when moving from the oracle bone to the ink brush era, it seems logical to assume that something similar happened when ink brushes were replaced by modern writing utensils.

I presume that the situation in society has changed, however, and that the standard currently in use is based on an outdated assessment of Chinese society. As we will see, this inconsistency will cause conflicts between the standard and the situation in modern-day 'real life'. In chapter 3, we will have a closer look at strokes and stroke order in current Chinese education.

3. Strokes and stroke order in Chinese education

In this chapter, how strokes and stroke order are taught in Chinese schools will be elaborated through examining national standards, especially student textbooks and teacher handbooks. Based on the analysis, the role of strokes and stroke order in Chinese education will be identified.

In China, children start their primary school at six years old. Before university, they have accumulated a total of twelve years of education: six years of primary school, three years of middle school and three years of secondary school. The first nine years – including primary school and middle school – is compulsory. After finishing six years of primary education at the age of twelve, a student is supposed to passively recognize about 3,000 Chinese characters and is able to actively write 2,500 characters of these 3,000 (Kèchéng biāozhǔn 2019: 12). Students learn characters and basic language skills in the subject Yǔwén, which is short for Yǔyán wénzì 'Language and script'. "Yǔwén is a subject for the students to study and put the motherland's language and script into practice" (Kèchéng biāozhǔn 2019: 3). Yǔwén is always a compulsory subject in all Chinese schools for those twelve years of education. Starting from university, depending on the majors, Yǔwén might be optional.

Before September 2001, all primary and middle school students in China used identical textbooks published by People's Education Press including Yǔwén subject. According to the Ministry of

Education (2001), since 2001, education has been reformed. This reform aims to improve students' overall development, instead of focusing on teaching specific contents of every subject. Identical textbooks for all of China have not been applied anymore since 2001. Instead, textbooks from different press companies have appeared in schools. All the textbooks are required to meet the national curriculum standards. Since September 2019, after this period of 18 years, the student textbook for Yǔwén subject in primary schools has once again gone back to one standardised book across the whole country (CEIW: 2019).

"Curriculum standards (Kèchéng biāozhǔn)" are "the foundation for the country to manage and evaluate a subject and is the basis for textbooks, teaching, evaluation and exams (Ministry of Education 2001)." Since September 2001, twelve Yǔwén textbooks from various presses have been used across China (Wáng 2014: 75). Yǔwén press is one of the twelve publishers that compile textbooks, including additional exercise books and teacher handbooks. Due to the availability of the material, I will use the student textbooks and teacher handbooks of the Yǔwén press as research material for my detailed analysis about how strokes and stroke order are taught in Chinese schools.

The series of student textbooks edited by Yǔwén press covers the entire six years of primary education. There are two textbooks for each year. That makes a total of twelve student textbooks for six years of primary education. Every student textbook has one corresponding teacher handbook. According to the "Curriculum standards" (Kèchéng biāozhǔn: 7), the basic strokes and stroke order should be mastered by students during the first two years of primary education. The student and teacher books for the first two years will be examined. As all the texts in the student textbooks and teacher handbooks are in Chinese, I have translated them.

3.1 Student textbooks

During the first semester of Grade One, 21 strokes are introduced in the student textbook. When a new character contains a new stroke, this specific stroke is shown in red and is followed by the new character, see Image 9. The red colour is an indication to show students it is an emphasized learning object.

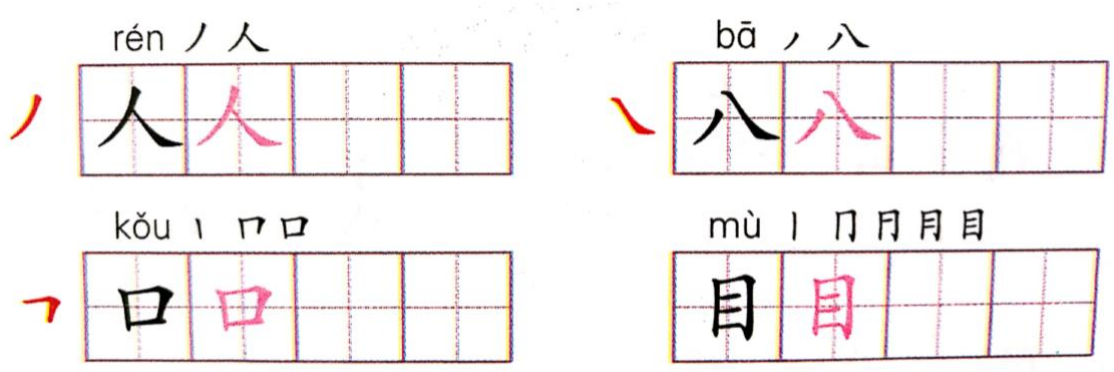


Image 9: New strokes in the first semester of Grade One (Yǔwén 1.1: 27)

In Image 9, we can also see that the stroke order of those characters is shown above each character. In the first semester of Grade One, a student is required to recognize 312 characters and actively write 112 characters out of those 312. In addition, those 112 characters should be written with correct stroke order (Yǔwén 1.1: 88-91). All 112 characters are presented in the student textbook with their specific stroke order as in Image 9.

Moreover, in the first semester of Grade One, seven general rules about stroke order are presented in the textbook, see Image 10.1- 10.3.

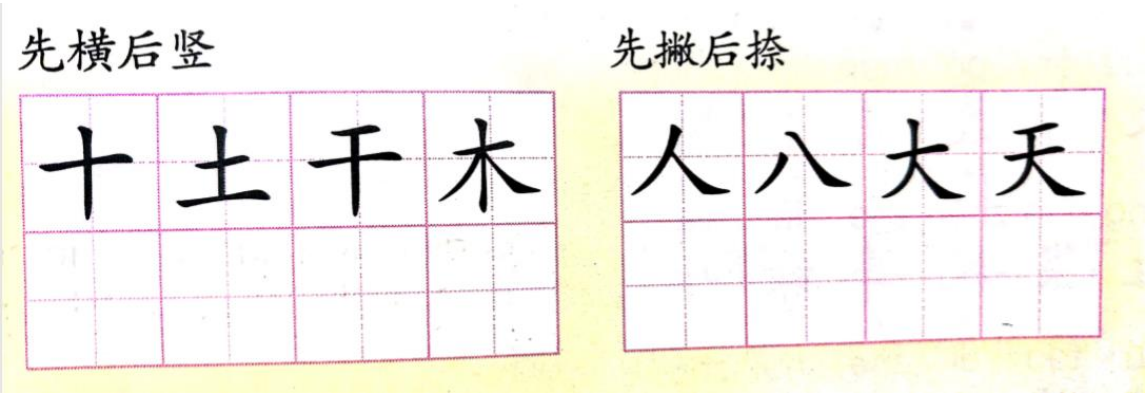


Image 10.1 (Yǔwén 1.1: 44)

Translation: First horizontal, then vertical. Examples: 十，土，干，木

First left falling stroke, then right falling stroke. Examples: 人，八，大，天

Examples[3]:

[3] The stroke order of all characters can be found in the student textbook. The first character as an example for each general rule is listed.

十：一十 (Yǔwén 1.1： 24)

人：丿人 (Yǔwén 1.1： 27)

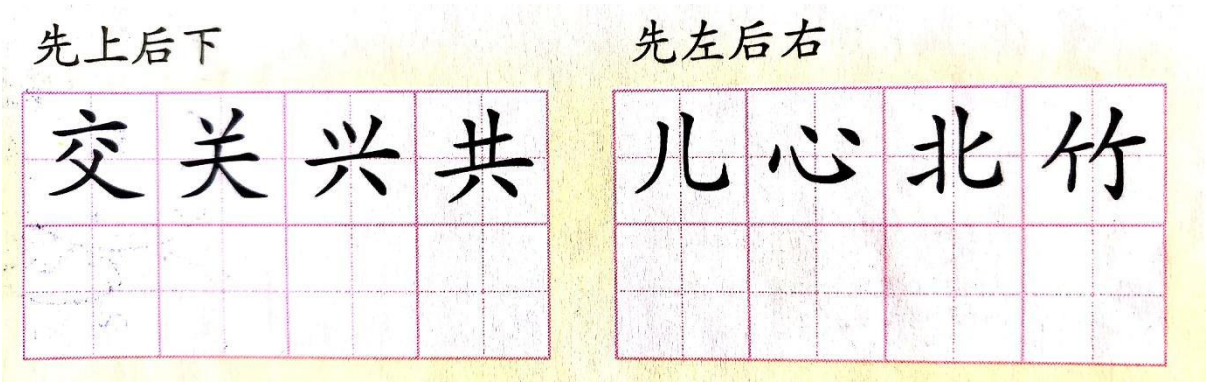


Image 10.2 (Yǔwén 1.1： 64)

Translation: First top, then bottom. Examples: 交，关，兴，共

First left, then right. Examples: 儿，心，北，竹

Examples:

交：丶亠六六亣交 (Yǔwén 1.1： 61)

儿：丿儿 (Yǔwén 1.1： 49)

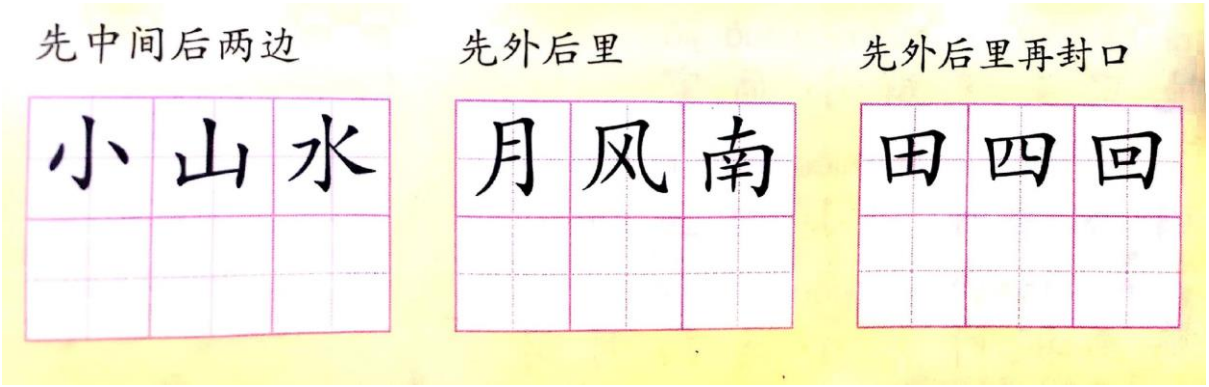


Image 10.3 (Yǔwén 1.1： 85)

Translation: First middle part, then left and right sides

First outside, then inside

First enclosure, then enclosed, finally base of enclosure

Examples:

小: 丨小小 (Yǔwén 1.1: 49)

月: 丿月月月 (Yǔwén 1.1: 37)

田: 丨冂冃田田 (Yǔwén 1.1: 31)

In the second semester of the first grade, students need to be able to recognize another 421 characters and actively write 228 characters with correct stroke orders out of those 421 (Yǔwén 1.2: 89-91). No new stroke is presented after the 21 strokes of the first semester have been taught as in Image 9.

Instead of new strokes, components of a character are marked in red. It seems the emphasis is transferred from strokes onto components. Reminiscent of the first semester, the exact stroke order for 228 characters is still shown above the characters, see Image 11. This stroke order pertains to characters that students should be able to write actively.

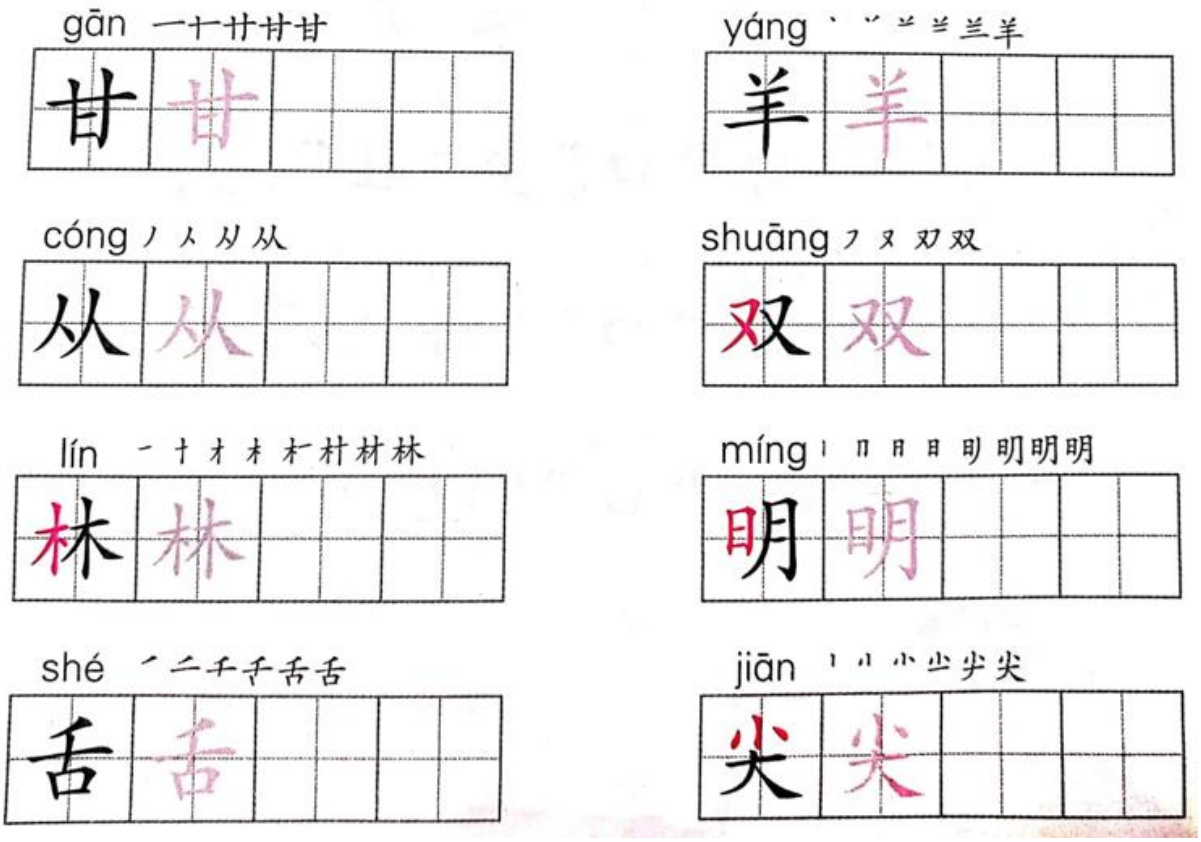


Image 11: Component in red and the stroke order is shown above characters (Yǔwén 1.2: 5)

Later, in the second grade, even the stroke order for new characters is not shown in student textbooks anymore. New components are still marked red. See Image 12.

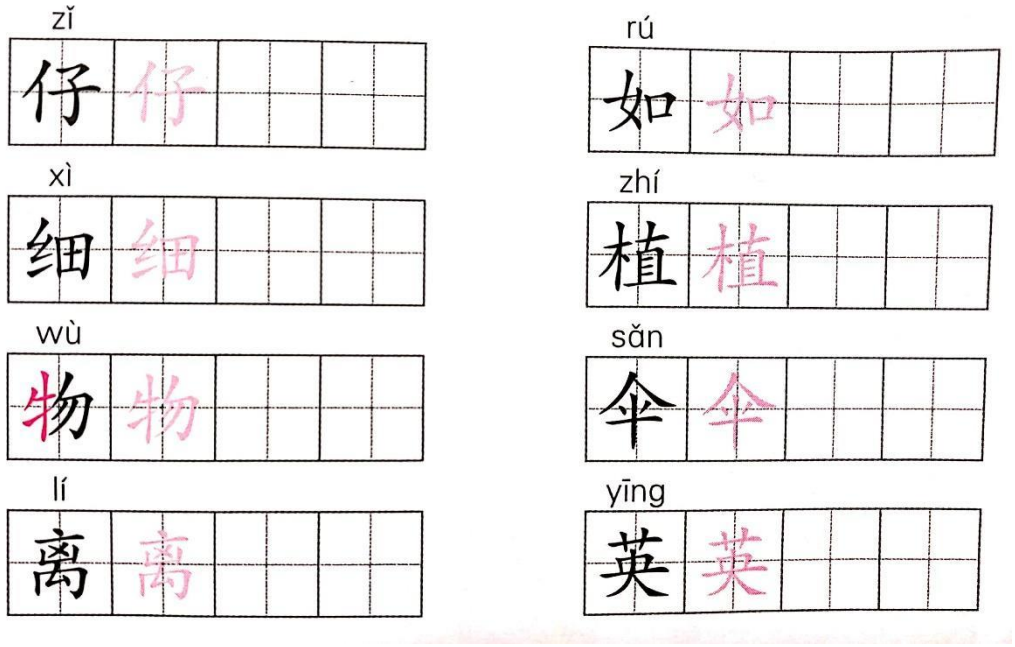


Image 12: Characters in the student textbook of the second grade (Yǔwén 2.1： 40)

However, similar to the first grade, the number of characters that students should be able to recognize and to write actively is still listed in student textbook. See Table 6 for the overview of the first two years.

Textbook	Recognize	Write	Reference
Grade One, Semester One	312	112	(Yǔwén 1.1: 88-91)
Grade One, Semester Two	421	228	(Yǔwén 1.2: 89-91)
Grade Two, Semester One	417	233	(Yǔwén 1.2: 93-95)
Grade Two, Semester Two	423	244	(Yǔwén 1.2: 85-87)
Total	1573	817	

Table 6: Numbers of characters students need to master in first two years of primary school

The excerpt above shows that new strokes and general rules for stroke order are exclusively introduced in the first semester of Grade One. Starting in the second semester of Grade One, no new strokes are introduced. Instead, the learning emphasis is transferred from individual strokes onto new components, which are important building blocks for characters. This didactic choice is consistent with Handel's (2013: 24) statement that components are more systemically important than individual strokes. In both semesters of Grade One, stroke order for individual characters is shown. In the second grade, although students are required to write 477 characters with the right stroke order, a specific stroke order for each character is not illustrated the same way as in those two textbooks of the first grade. Based on this observation, it seems that the students are expected to master the strokes and stroke orders through one year of explicit learning.

3.2 Teacher handbook

As mentioned at the beginning of chapter 3, according to "Curriculum standards" (Kèchéng biāozhǔn 2019: 7), strokes and stroke order should be mastered during the first two years in primary school: as we can see it is only explicitly indicated and taught in the first year. In the second year, it seems students can process and apply what they have learned in the practice. Teaching strokes and stroke order is consistently listed in the section of 识字写字 *shízì xiězì* 'Recognizing and writing characters' in teacher handbooks.[4] In those four teacher's handbooks, teaching objectives build up gradually with respect to learning characters including strokes and stroke order. Teaching objectives correspond with the learning objectives in student textbook with extra guidance. In the first semester of Grade One, 21 new strokes are taught. Starting from the second semester, no new strokes are listed in the teaching objectives. Instead, 90 components are taught in one and half year in total. Writing habits are mentioned in three semesters out of four. Very precise numbers of characters that should be recognized and written in each semester are listed in each handbook. The ability of writing with correct stroke order is mentioned in all four semesters. The skills of using Pinyin[5] and the component indexing system to use dictionary are also built up. All the learning objectives above are concrete and testable.

[4] See appendix 2 for the detailed teaching objectives in each handbook.
[5] Pinyin is the transcription system for standard Chinese: Mandarin.

On the other hand, some other teaching objectives are very vague and are hardly testable, such as “to understand that Chinese characters have a deep-rooted history and profound meanings” or “cultivate the affection for the motherland’s language and script” from the first and second semester of the first grade. It is not clear what the standard would be to test whether a student has affection for the Chinese language and script? Interestingly enough, in each of the first four teacher’s handbooks, several characteristics of each student textbook are introduced to help the teacher get the most out of the student textbook. One shared characteristic for all four student textbooks is that they all seek to combine “rich and broad traditional Chinese culture" with the teaching of language and script (Jiàocān 1.1: 9, Jiàocān 1.2: 8, Jiàocān 2.1: 9, Jiàocān 2.2: 9). It means that in the subject language and script, teachers need to ensure the students have mastered the practical skills of reading and writing but also that they should use language and script to carry on and pass down the Chinese culture that is embedded in these characters.

Furthermore, there are another two additional explanatory documents listed in the teacher handbook for first semester of Grade One. One is 汉字笔画名称表 *Hànzì bǐhuà míngchēng biǎo* ‘Names of strokes in Chinese script’, a table with 32 strokes with their names and example characters containing that specific stroke. It is listed as an appendix in teacher handbook (Jiàocān 1.2: 200), see Image 13. In comparison with the “21 basic strokes (Jiàocān 1.1: 8)” in the student textbook, there are eleven more strokes in this appendix. Those eleven strokes – which are not introduced to the students – are in bold font in my translation of Image 13. The explanation for this difference of eleven strokes will be covered in section 3.3.

附录

① 汉字笔画名称表

笔画	名称	例字	笔画	名称	例字
一	横	三土天	𠂉	撇点	女巡巢
丨	竖	十中下	𠂆	撇折	云东台
丿	撇	人禾行	𠃌	横斜钩	飞热气
丶	点	火头宝	𠄎	横折提	认鸠额
乀	捺	八木合	𠃍	横折弯	设朵船
𠂉	提	习虫打	𠃊	横折钩	也力月
𠂇	横撇	水又乏	𠄌	横折折	凹
𠂈	横钩	皮写买	𠃎	竖弯钩	儿北巴
𠂊	横折	口目骨	𠃋	竖折撇	专
亅	竖提	长瓜以	𠃌	竖折折	鼎
𠃍	竖弯	四西酉	𠃐	横撇弯钩	阳那都
亅	竖钩	小水求	𠃑	横折弯钩	九几艺
𠃌	竖折	山牙发	𠃒	横折折撇	及这建
𠃎	斜钩	我民戈	𠃓	横折折折	马鸟与
亅	弯钩	家猫狗	𠃔	竖折折钩	马鸟与
乚	卧钩	心秘	𠃕	横折折折钩	乃奶扬

【说明】一般用笔画查字的字典按横（一）、竖（丨）、撇（丿）、点（丶）、折（𠂇）五种笔形排序。其中“横”包括提（𠂉），“点”包括捺（乀），“竖”包括竖钩（亅），其他都归入“折”中。

- 200 -

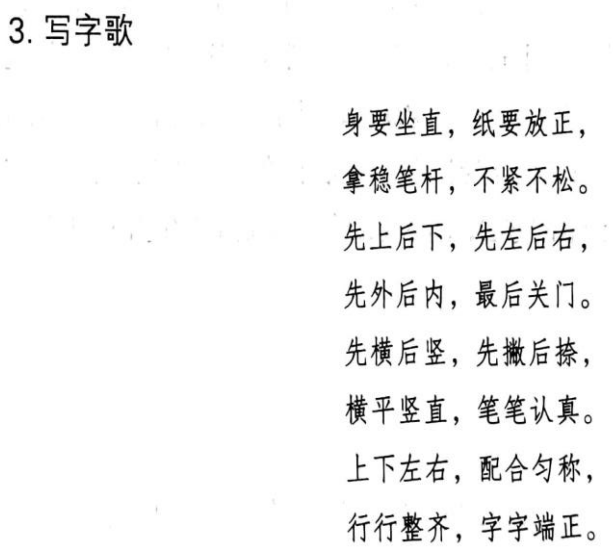
Image 13: 32 strokes with name and example characters. (Jiàocān 1.2: 200)

My translation of **Image 13**:

Stroke	Name	Example characters	Stroke	Name	Example characters
一	horizontal stroke	三土天	𠂉	left falling dot	女巡巢
丨	vertical stroke	十中下	𠂆	left falling turning	云东台
丿	left falling stroke	人禾行	𠂇	horizontal slanting hook	飞热气
丶	dot	火头宝	**乛**	**horizontal turning rising**	**认鸠秃**
乀	right falling stroke	八木合	**乚**	**horizontal turning curved**	**设朵船**
丿	rising	习虫打	𠃌	horizontal turning hook	也力月
𠂉	horizontal falling	水又乏	**乙**	**horizontal double turning**	**凹**
㇀	**horizontal hook**	**皮写买**	𠃍	vertical curved hook	儿北八
𠃌	horizontal turning	口目骨	**㇇**	**vertical turning left falling**	**专**
𠃍	vertical rising	长瓜以	**㇄**	**vertical double turning**	**鼎**
𠃍	vertical curved	四西酉	**㇈**	**horizontal left falling curve hook**	**阳那都**
亅	vertical hook	小水求	𠃎	horizontal turning curved hook	九几艺

𠃌	vertical turning	山牙发	𠃍	**horizontal double turning left falling**	**及这建**
𠄌	slanting hook	我民戈	𠃎	**horizontal triple turning**	**凸**
亅	**curved hook**	**家猫狗**	𠃏	vertical double turning hook	马鸟与
乚	lying hook	心秘	𠃐	**horizontal triple turning hook**	**乃奶扬**

Another explanatory document covers the general stroke order rules, which is mentioned in a children's song called "How to Write Properly", see Image 14 (Jiàocān 1.2: 113).



3. 写字歌

身要坐直，纸要放正，
拿稳笔杆，不紧不松。
先上后下，先左后右，
先外后内，最后关门。
先横后竖，先撇后捺，
横平竖直，笔笔认真。
上下左右，配合匀称，
行行整齐，字字端正。

Image 14: Children's song of "How to Write properly." (Jiàocān 1.2: 113)

My translation for Image 14:

Sit straight, put the paper straight,

hold your pen steadily: not too tight, not too loose.

Write from top to bottom, from left to right,

first outside and then inside, finally close up.

First write 一 héng *'horizontal stoke' then* 丨 shù *'vertical stroke',*

first 丿 piě *'left falling stroke' then* 乀 nà *'right falling stroke',*

horizontal stoke is flat and vertical stroke is upright, write every stroke carefully.

upper, lower, left and right, keep a good balance,

every line is straight and neat, every character is upright.

This writing song not only contains the general stroke order but also mentions proper writing habits. Words such as "upright" and "carefully" seem to connect the personality of a student with his wiring habits. The connection between writing and personality will be discussed later in detail.

3.3 Analysis of strokes and stroke order in Chinese education

Based on the examination of student textbooks and teacher handbooks, we can see that learning strokes and stroke order is considered very important during primary school, especially during the first two years. 21 strokes are exclusively taught in the first semester of primary school. In the second semester, no more new strokes are introduced in the student textbook. Instead, 90 components are presented in the student books and emphasized in the teaching objectives in the teacher handbooks. The general stroke order is taught in the first semester of Grade One. For both semesters of Grade One, the exact stroke order for individual characters is illustrated in the student textbooks. In Grade Two, the stroke order for individual characters is not listed in student textbooks anymore. However, learning stroke order is always one of the main teaching objectives emphasized in teacher handbooks through the first two years of primary school.

Most interestingly, there are eleven more strokes in the teacher handbook appendix, besides the 21 strokes in the student textbook. Those eleven strokes are contained in new characters. However, those eleven strokes are never presented as a new stroke to the students in the same way as the other 21 strokes. For example, when ㇇ "horizontal hook" is presented in the student textbook, the stroke is not introduced first in red and then character 写 contains this stroke, the same way as in Image 9. However, when ㇇ is presented in the new character 写 in the student book in the second

semester of Grade One, the component is the learning objective instead of the stroke, see Image 15.

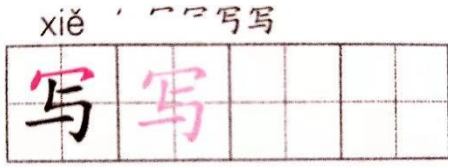


Image 15: ㇆ "horizontal hook" is not introduced in red, instead component ㇆ is in red (Yǔwén 1.2: 3)

I wonder what the reason is why those eleven strokes are not introduced to the students. Perhaps they not used very often, and, as such, it is not necessary to learn them. Wáng (2014: 75-80) has conducted a very detailed study about learning strokes across the twelve student textbooks used in China after September 2001. Wáng has observed that there is a significant difference in total number of strokes taught across those twelve different textbooks. The number varies from 20 to 28 and only fifteen strokes are taught and recur in all twelve books. Wáng also mentions that, according to official guidance for strokes (GB13000.1: 2001), there should be a total of 33 types of strokes. Surprisingly, four types of strokes do not appear in the commonly used Chinese 2500 characters. Therefore, Wáng concludes that 29 types of strokes should be taught in primary school.

Until now, none of these twelve textbooks teaches the complete set of 29 strokes complying with the official guidance. If only fifteen strokes are shared across those twelve student textbooks, it means different books add five to thirteen types of strokes on top of the shared fifteen strokes. According to Wáng (2014: 76), there seems to be no pattern to how every textbook chooses those five to thirteen strokes. Even the table of the strokes in the teacher handbook (Image 13) includes only 32 strokes instead of the complete 33 strokes. The only conclusion that can be drawn is that primary school students have learned 20 to 28 strokes, depending on which textbook they have been taught with.

As for the stroke order, the general rules are listed in the student textbook as in Image 10.1, 10.2 and 10.3. However, it is interesting to note the extra explanation. When explaining the stroke order rule of *First horizontal, then vertical*, the teacher handbook says the following (Jiàocān 1.2: 111):

> *Please note:*

> *When horizontal and vertical connect, the rule of* First horizontal, then vertical *applies normally, but not always. For example, 土， the stroke order is not first two horizontal strokes and then vertical stroke. Another example is 上， the first stroke is vertical not horizonal.*

However, the handbook gives no further explanation about when or under what specific circumstances this exception is applied. I assume the only choice for the students is to memorize the specific stroke order illustrated for total 340 characters from the two books in the first grade.

Aside from the concrete learning objectives including strokes, stroke order and Pinyin, other teaching objectives such to "appreciate deep-rooted history of Chinese characters" and "cultivate the affection for motherland's language and script" are also listed in teacher handbookThis is consistent with official instruction. In 2013, the Ministry of Education of China (2013) published a directive for teaching calligraphy in all primary and middle schools cross China. This directive states: "Chinese characters and Chinese calligraphy are treasures both for China and human civilization. Calligraphy is excellent for students' writing ability, aesthetic judgment and cultural characteristics". This directive requires students to practise calligraphy both with 毛笔 *máobǐ* and 硬笔 *yìngbǐ*. *máobǐ* is the traditional Chinese brush and *yìngbǐ* refers to the modern writing utensils such as fountain pen and ballpoint pen. Also, it instructs all primary schools to arrange at least one lesson per week for calligraphy practice with a traditional ink brush for students from Grade Three to Grade Six.

A similar statement about writing characters also appears in the academic field. Péng (2017) states that:

> *The Chinese character itself is culture. Characters carry not only traditional Chinese culture with thousands of years of history but also national spirit. Characters reflect Chinese people's thinking pattern, value orientation and standard for morality. For example, the stroke of 一 héng 'horizontal stoke' and 丨 shù 'vertical stroke' propose that we should be an upright person. We should be proud of our nation's great invention of Chinese characters and carry characters forward instead of forgetting how to write them.*

Moreover, Sū and Zhèng (2014) argue that

Chinese students should learn Chinese characters very well since the history of the Chinese script is evidence of the Chinese culture's origin and development. Every character reflects a profound meaning and understanding of nature and life. Therefore, Chinese characters contain wisdom of creatures in nature and cultural qualities. Chinese characters are a symbol of the country's unification. Chinese characters are not only a language recording system but are also the key content of national spirit and national identity.

In those statements, frequently appearing words are 'nation', 'culture', 'proud' and 'spirit'. It seems that that writing Chinese characters, learning strokes and stroke order, and practising calligraphy go beyond practical language skills. In this view, a cultural value is embedded in Chinese script and Chinese characters are uplifted to a position of helping to maintain Chinese identity.

3.4 Conclusion

From the overview, we see that primary school students have learned strokes and that different numbers of strokes are introduced in different textbooks. For the student textbook and teacher handbook of Yǔwén press, in the first semester of Grade One, 21 strokes are learned. From the second semester onwards, components are the most important learning objectives for the following three semesters. It seems that as soon as strokes are mastered, learning components is considered much more important. This process supports Handel's (2013: 24) statement that component play a more systemically significant role within characters than individual strokes. Also, learning components is important for the use of dictionaries in the future. At the same time, Pinyin is also a very important learning objective during the first two years for reading, speaking and using dictionaries.

Stroke order is listed as a learning objective for a longer time than the strokes themselves. Stroke order requires the students to write the characters in a specific order. Sometimes, characters that do not follow the rules have to be memorised as well. These characters are exceptions to the rules. However, the circumstances for these exceptions are left unexplained.

We see that Chinese characters are approached from two perspectives. First, characters pragmatically form the script. Secondly, they are seen as a symbol linked tightly to Chinese culture and identity. Both roles are relevant reasons for the inclusion of these elements in education.

In Chinese education, stroke order is considered an important learning objective. However, from chapter 2, we have seen in character "永" that the definition of the strokes has changed over time. The current official document about stroke order published in 1997 is still based on an outdated situation when characters are written with ink brushes. That is to say, the stroke order has not been updated with a modern definition of strokes. Interestingly, traditional calligraphy is (still) promoted in schools to reinforce the writing skills of the students. Is going back to the traditional calligraphy an efficient way to reinforce the writing skills of the students who writing with a modern utensil? Furthermore, with technological advancements, students are entering an era in which even writing utensils are seldom used. To inquire into this further, in the next chapter, we will examine strokes and stroke order in the digital era.

4. Strokes and stroke order in digital era

As mentioned before, after of six years primary school education, a native speaker of Chinese should have achieved the ability to recognize 3000 characters and actively write 2500 of them following the correct stroke order. In this chapter, we will inquire into the situation regarding Chinese character writing in the digital era and how writing skills are used in daily life. Accordingly, the underlying role of stroke and stroke order in present-day China will be identified.

4.1 The current situation regarding Chinese character writing

With the widespread use of computers and smartphones, the need for Chinese people to write characters by hand is rapidly declining, not unlike the rest of the world. Writing Chinese characters has mostly turned into typing characters. Therefore, "writing" Chinese characters is easier than ever (Almog 2019: 690). Generally, there are two types of input methods: one is based on pronunciation and another is based on character structure.

For the pronunciation-based input method, the phonetic transcription method of Pinyin is used for typing characters. Roman letters are typed with the computer keyboard or phone, the various characters appear accordingly and the correct one can be chosen from the list (see Image 16). This is an example for Chinese character 我 *wǒ* 'I', when Pinyin *wo* is input, all the characters with the pronunciation of *wo* will be available. Every fluent Mandarin speaker can effortlessly employ Pinyin. Pinyin is also one of the repeatedly emphasised learning objectives of the first two years of primary school education.

Image 16: Type Chinese characters with Pinyin on computer or phone

Character structure-based input methods include generally three types of input methods:五笔 *Wǔbǐ* 'five strokes'[6] , Stroke Order Input Method and another input method that one can simply write characters on a screen with your finger. Because of the complicated rules and inconvenience, few people employ those input methods. Chinese speakers prefer Pinyin input over structure-based input methods (Almog 2019: 716). A survey from 200 participants, half of which are international professional teachers of Chinese from all over the world, shows 98% of them use Pinyin. The remaining 2% non-Pinyin input users are all from Hong Kong and Taiwan. They use the *Cangjie* Input Method, which is comparable to the *Wǔbǐ* Input Method. Taiwanese participants also

[6] More details about five strokes' input methods, see Rebbeca Shuang Fu, *Incurable Character Amnesia: The Unavoidable Trend towards the Romanization of Traditional Chinese Handwriting.* Sino -Platonic Papers 224, Voctor H. Mair, ed., "Developments in Chinese Language and Script During the 20th and 21st centuries". May 2012.

mention that they use *Bopomofo* Input Method, which is also a phonetic input method (Mair 2010).

Besides all the haptic input methods, voice input also saves the user from actual typing. Voice can be converted directly into characters. That is to say, if one can speak standard Chinese, the voice input method can convert speech into Chinese characters. In Image 17, the upper green part is a voice message. The lower part of Chinese characters shows the output of the voice message. Various Apps such as VoiceNote can process longer voice messages and convert them to Chinese characters.

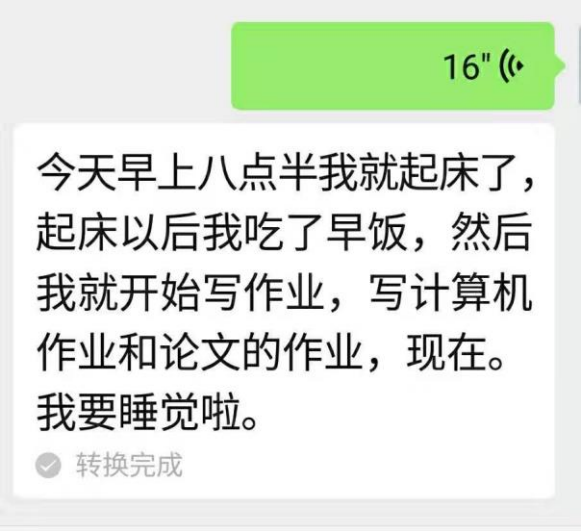


Image 17: Voice can be converted into characters.

In summary, in present-day China, typing characters is more common than writing with pen and paper due to the ubiquity of computers and cell phones. There are basically two types of input methods for typing Chinese characters: pronunciation-based and structure-based. Seeing that the structure-based input methods are complicated and difficult to employ, a majority of Chinese speakers use the Pinyin pronunciation-based input method. Modern technology even allows voice to be converted into script. Thus, stroke order hardly plays an active role in digital communication for the majority of native speakers.

4.2 Character amnesia

As we have seen above, Pinyin input is widely used among Chinese speakers on computers and cell phones. Over the years, handwriting has gradually been substituted by typing as far as "writing Chinese characters" is concerned. Alarmists and observers[7] have noticed that there is a sharp decline in the ability to write Chinese characters by hand and claim that this decreased handwriting skill is a result of reliance on digital technology and the often-used phonetic input method.
Almog (2019: 691) gives a very accurate description of this phenomenon, which is called "character amnesia" in English: Speakers of Chinese have no problem reading and writing words with digital equipment. In contrast, they are very often unable to correctly write many of the characters by hand when they need to. The feeling is comparable to "It is on the tip of my tongue", while, in this case, "it is on the tip of my pen". In Chinese, this phenomenon is called 提笔忘字 *Tíbǐwàngzì* which literally means "pick up the writing utensil but forget how to write the characters".
In this section, we will look into the discourse of "character amnesia" and analyse the reasons behind the forming of this discourse. This is also linked to the previously mentioned cultural significance of character writing in section 3.3. Moreover, my goal is to discover the role of stroke and stroke orders within this discourse.

In Chinese social media, as well as in Chinese academic sources, "character amnesia" is linked with "national problem", "crisis" and "embarrassment". It is considered a problem that is to be solved. Also, government officials mostly agree with this view, including those in the Ministry of Education (Almog 2018: 2-3). In 2013, the State Language Commission supported by the Ministry of Education and China Central Television presented a program 中国汉字听写大会 *Zhōngguó hànzì tīngxiě dàhuì* 'Chinese Character Dictation Competition' on TV. It gained popularity in a short time period. In the official description of this programme (CCTV 2013), it is stated that the mission of this programme is to reinforce the handwriting ability of students. It also mentions that Chinese

[7] As we previous see Péng (2017), Sū and Zhèng (2014). See also Lee, whose article was on New York Times in 2001. https://www.nytimes.com/2001/02/01/technology/in-china-computer-use-erodes-traditional-handwriting-stirring-a.html

characters require repeated memorisation and continuous practise. In practice, due to the increased reliance on digital tools, the opportunities for handwriting decrease, which leads to a decline in handwriting ability.

Actually, from the Chinese government and in Chinese society, we can deduce a kind of fear: there is a wide-ranging anxiety in the discourse about "character amnesia". Almog (2019: 701-713) argues that the deep-rooted and mostly unconscious motives behind this discourse involve history and culture, politics, morality and even aesthetics. Those "deep-rooted" motives can actually be spotted in the studies and programmes mentioned earlier. In my opinion, most of time those motives are all interconnected. Those elements in various source can be identified.

In the studies of Péng (2017) and Sū & Zhèng (2014) mentioned in section 3.3 and the official description of purpose of "Chinese Character Dictation Competition (CCTV : 2013)", they all emphasize that Chinese characters carry "thousands of years of history" and express the worry that a decline in handwriting ability will influence the continuity of the culture heritage. Another scholar, Lì (2018), professor of Nanjing Normal University and also one of the hosts of Chinese Character Dictation Competition, assumes Chinese character writing is undergoing a severe crisis. He criticizes the media for only casually describing the decline of handwriting ability as ""character amnesia"". In his opinion, Chinese characters are an important carrier of Chinese culture and they play an essential role in China's survival through the ages among all ancient civilizations. Having seen that all the other ancient civilizations went extinct along with the decline and disappearance of their script, he sincerely believes that Chinese "character amnesia" is devastating to Chinese culture, and, finally, Chinese people will lose their national identity. Therefore, he made an urgent appeal to all Chinese people to keep practising handwriting. He claims that Chinese is the most beautiful and pure language in the world. From these sources, we can conclude that the fear of "character amnesia" is a fear of losing culture and history purportedly embodied in Chinese characters.

Another frequent came across statement concerns national unification. Sū & Zhèng (2014) state that despite huge differences in various dialects across China, the Chinese script is identical across the country. As such, Chinese characters are a proof of national unification and merge within all the ethnic groups. First, with regard to dialects, there is no universally accepted criterion to distinguish languages from dialects (Moser 2016: 14). The Chinese government considers those different

forms of speech as dialects. This is based on a political view and not on linguistic criteria (Moser 2016: 65). Script and spoken language (e.g. vernacular) are often two separate things. Therefore, an identical script is not a proof of one nation. Still, from the Chinese government's point of view, "one country, one script/language" is highly promoted. The law of the People's Republic of China on the Standard Language and Script enforce the promotion of the Chinese script (PRC GOV: 2005). The Ministry of Education (2018) emphasizes that the role of Chinese language and script, as a carrier of history and culture, is more prominent. Xí jìnpíng (Xí 2017), president of China, in the 19th National party Congress report set "developing a strong socialist culture in China" as one of the goals. He stated that "culture is the key element of a nation. Without self-confidence in Chinese culture and without cultural prosperity, there will be no national rejuvenation". We can conclude from the above that the language and script also has a political dimension. The fear of "character amnesia" is simultaneously a fear of losing the Chinese characters, as a proxy for a unified country.

Interestingly, when Sū & Zhèng (2014) state that fewer and fewer students are able to write beautiful Chinese characters, they point out one reason is that those students have a lack of patience and are not determined to improve their bad writing habits. It seems that a person who cannot produce beautiful handwriting must be impatient and that they lack persistence. This might sound familiar, since in the Netherlands sometimes teachers also express their hope that some students could deliver better handwriting if they were to pay more attention to their homework. Also, Péng (2017) believes there is a connection between Chinese characters and morality. For example, he claims that the stroke of 一 *héng* 'horizontal stoke' and 丨 *shù* 'vertical stroke' propose that we should be an upright person. This harks back to the writing song for children in teacher handbook (Image 14) about writing 一 *héng* 'horizontal stoke' and 丨 *shù* 'vertical stroke' for upright characters. Péng (2017) mentions there is a common understanding that the level of handwriting gives a good indication of level of education and self-cultivation. In fact, there is a Chinese expression that delivers this conventional wisdom, 字如其人 *zì rú qírén* 'handwriting predict one's personalities'. Keeping these observations in mind, it is not surprising that writing habits are emphasised during character writing lessons in primary school. In short, how you write characters says something about your character, according to some. However, whether the aesthetics of handwriting truly correlates with a person's morality is unknown.

As Almog (2019: 701-713) states and as we have seen, Chinese characters are linked to history and culture, aesthetics, morality and politics respectively, while some of these elements are also linked to each other. Furthermore, in practising calligraphy, the aesthetics and historical-cultural background of the characters are all connected.As shown in Diagram 1, All of those elements are bound together through Chinese characters. Those elements interconnect and mutually interact with each other. It is clear that the social anxiety and so-called “character critics” about the phenomenon of “character amnesia” is also a fear of losing Chinese characters and consequently all the attached elements as part of a national identity. It is believed that Chinese people cannot afford to lose the Chinese characters. Therefore, unsurprisingly, handwriting and the underlying strokes and stroke order are heavily emphasised in education and Chinese society.

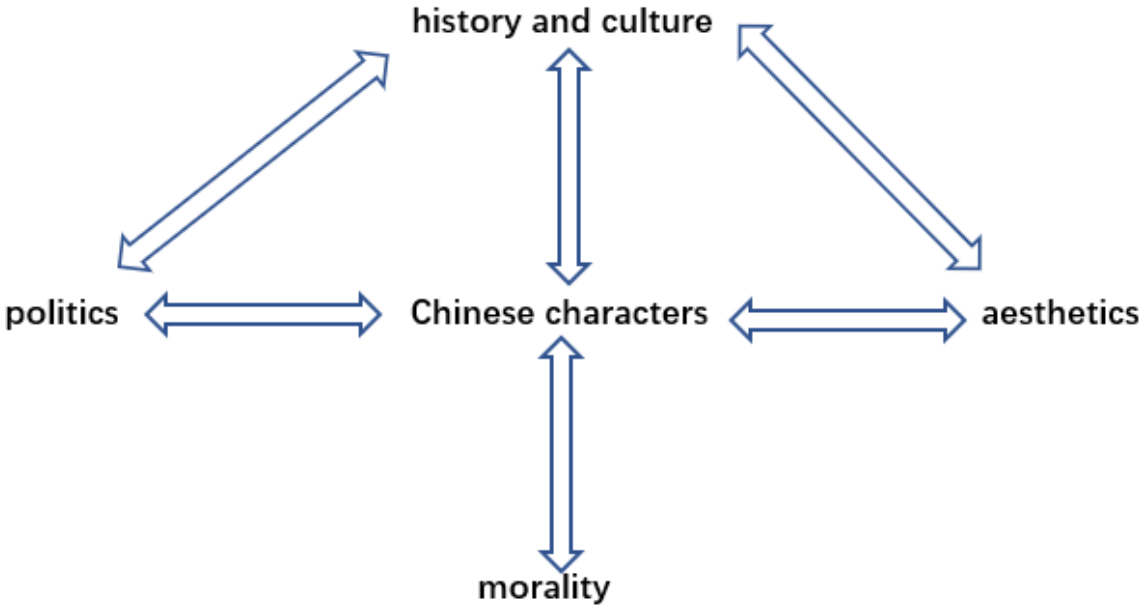


Diagram 1: Relations linked through Chinese characters

4.3 Conclusion

Nowadays, typing is gradually replacing handwriting. Compared with character structure-based input methods, pronunciation-based input method is more easily mastered. Any Mandarin speaker can effortlessly employ the Pinyin input method. Pinyin input method plays an absolutely dominant role among all the input methods. The easiest way is to use voice input, which can entirely remove the necessity of typing. Stroke and stroke orders, as basis of the structure-based input methods,

hardly play any active role. In practical communication, stroke and stroke order contribute very little.

Another heated debate about the phenomenon of “character amnesia” cannot be ignored in the digital era. In general, it has been approached negatively and a lot of solutions are proposed to “solve this problem”, despite a lack of proof whether this “character amnesia” discourse can be legitimised. As we have seen in section 4.3, the fear of losing Chinese characters as a national identity is a major part of the phenomenon of “character amnesia”. Conventionally, stroke and stroke orders are key elements to Chinese characters. That means if handwriting Chinese characters is what the government and society highly praise, stroke and stroke order can hardly be ignored. Therefore, for public figures and prominent decision-makers, there is a moral dimension to handwriting and the underlying strokes and stroke order.

In summary, on the one hand, with regard to practical communication in the current digital era, strokes and stroke orders can be largely ignored. On the other hand, because of the crucial role of strokes and stroke order within handwriting characters, they are connected to national identity via Chinese characters, as illustrated in Diagram 2. In this cultural perspective, stroke and stroke order plays an irreplaceable role that is hard to quantify; indeed, it is mostly linked to the perception that the Chinese identity is historically rooted and that this history is inextricably linked to the characters.

Diagram 2: Strokes and stroke order are connected to national identity via Chinese characters

5. Strokes and stroke order for Dutch secondary school students

Chinese writing is difficult, not only for Chinese native speakers, but even more so for second language learners. It is not surprising that the minimum end level for Dutch secondary school students is very humble, which has been mentioned in the introduction, (see Table 1). For the short

version, the end level for all the language skills are A1. For the long version, the end level is A2 except for the handwriting ability, which is A1. For very motivated students of long version, handwriting skills of A2 are also possible. What is a Chinese language learner with A1 or A2 level expected to do? Here is the information from SLO (2015- writing) about what a student should be capable of doing with certain level of writing skills. The original information is in Dutch, which I have translated into English.

> A1: Can write a short, simple postcard, for example for sending holiday greetings. Can enter personal details on forms, for example, write down his/her name, nationality and address on a hotel registration form.
>
> A2: Can write short, simple notes and messages, an write a very simple personal letter, for example to thank someone for something.

It is clear that those are quite easy tasks. The question arises how many characters a language learner needs to accomplish those tasks. Normally, there is no definite word list. Still, SLO (2015 – knowledge of characters) gives an indication as follows:

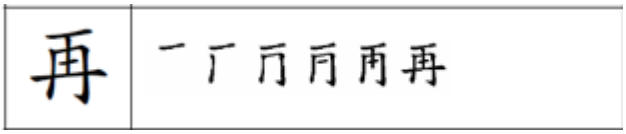
	Handwriting	**Writing on computer**
A1	150	400
A2	480	700

Here we notice that the proficiency of handwriting and writing on computer are indicated separately. It acknowledges the difference between those two skills with regard to writing. For example, take the long version of Chinese lessons in Dutch secondary school, the minimum achieved level of handwriting is to be able to write 150 characters by hand, whereas, at the highest level, students should be able to write 700 characters digitally. The minimum achieved level is also based on practical experience; it shows how challenging handwriting is for Dutch students.

In chapter 3, we have seen that students are expected to learn strokes in one semester and in two years to gradually master the stoke order. It will take a huge proportion of the lessons to teach and learn the stroke order for Dutch secondary school students, also given that Chinese students have more frequent lessons than the suggested three lessons per week in Dutch schools. Moreover, unlike Chinese primary school students, Dutch students have very little understanding about

Chinese characters before they choose Chinese as a school subject. In practice, it will probably take more than two years for the Dutch students to master stroke order.

Furthermore, stroke orders for certain characters are different in different versions, e.g. the character 再。 Below is a comparation between Image 1 from Tsui (2012: 19) and in a Chinese student textbook (Yǔwén 1.2: 68).



Tsui (2012: 19)

(Yǔwén 1.2: 68)

We can see the fourth and fifth strokes are swapped. Which one is actually correct? The answer is unclear. In teacher handbook, there is an extra note mentioned in chapter 3. That is

When horizontal and vertical connect, the rule of First horizontal, then vertical *applies normally, but not always.* (Jiàocān 1.2: 111)

However, there is no further explanation is given. It seems there is also discussion in academic fields in China about stroke order in the situations when "horizontal and vertical connect" (Zēng, Xiào, Zōu : 2015).

Furthermore, as mentioned in 2.5 about 印刷通用汉字字形表 *yìnshuā tōngyòng Hànzì zìxíng biǎo* 'A list of standard forms of Chinese characters for print' published in 1965 and its explanation about the stroke order together with the interview from Fèi (Sina Shanghai: 2013), we can see that there is no unique correct stroke order for every character.

Putting all this together, we can conclude it is not an efficient use of time for Dutch students to learn and practise the stroke order when there is even no (historical) consensus about certain stroke orders in Chinese society.

Moreover, for Dutch students, learning characters is primarily for practical purposes, that is to say, to communicate with Chinese speakers. In this digital era, Dutch students are most likely always

able to use a computer and mobile phone to write/type Chinese characters. They can also use Pinyin input, knowing the correct stroke order is unnecessary.

Let us go along with the aforementioned assumption that, culturally, strokes, stroke order and Chinese identity are connected through Chinese character within Chinese society. This argument for learning stroke order does not apply to Dutch students, as can be seen in Diagram 3. First, the political perspective related to characters is only relevant to Chinese society. In the Netherlands, there is no compulsory calligraphy to connect aesthetics and history. For Dutch students, it is mostly just interesting to experience calligraphy lessons. Secondly, Dutch students have no cultural responsibility to carry over handwriting skills to new generations. Properly writing Chinese characters could probably more or less nurture their capabilities in the area of aesthetics, but this will not primarily reflect on their day-to-day Chinese character writing. Finally, it might very well be possible that Dutch students who write Chinese characters with the correct stroke order will strengthen their perseverance and patience correspondingly, however, there is no evidence to back up such a claim. And even if it were true, there are other ways to strengthen one's perseverance.

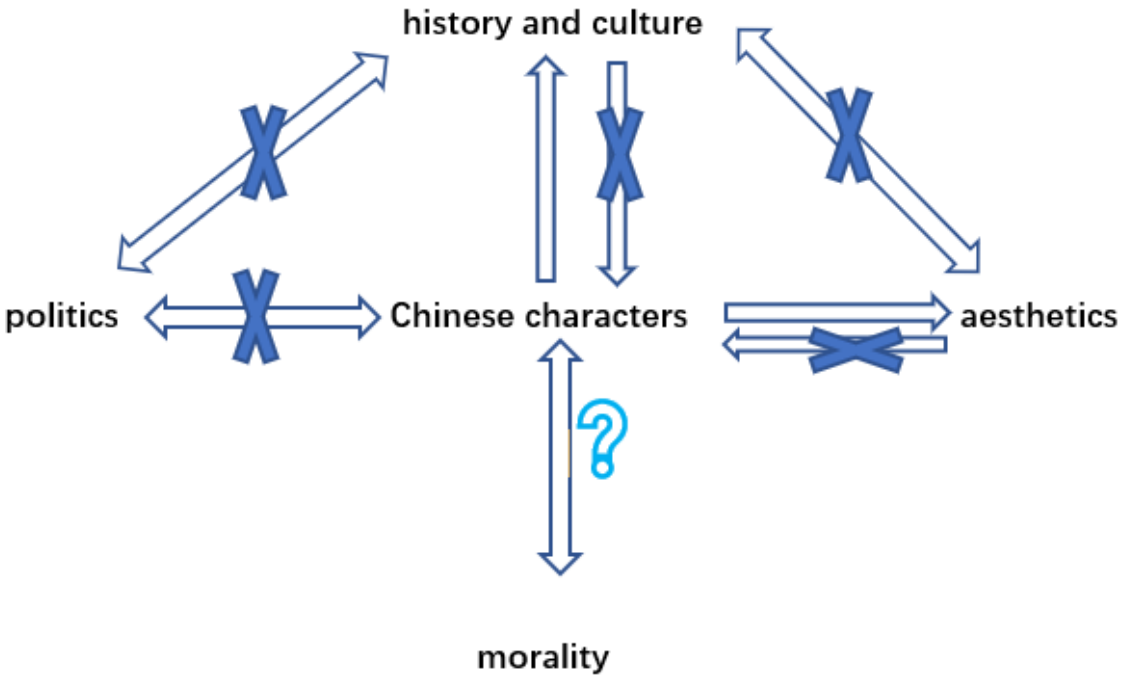


Diagram 3: Relations linked through Chinese characters for Dutch students

In summary, handwriting is difficult enough for Dutch students, let alone the mastering underlying strokes and stroke order. The limited lessons in Dutch school restrict the teaching and learning of strokes and stroke orders and the cultural and historical reasons for learning stroke order do not apply to Dutch students. Given that there is even a divergence for certain stroke orders and given the convenience of using the Pinyin input method for typing, it is not the most efficient use of time teach Dutch students stroke order.

6. Conclusion

Strokes and stroke order are compulsory elements in order to write Chinese characters by hand in the conventional way. The definition of strokes has historically changed from carving in oracle bones to writing with a brush and further to writing with modern writing utensils. However, the current official standardization for stroke order is still based on writing with brushes, while the modern writing utensils have already replaced ink brush for the daily use. It could be argued that this partially contributes to ongoing divergence of certain stroke orders in Chinese academic fields. In Chinese education, strokes and stroke order are still very important learning objectives. Chinese students are expected to master strokes and stroke orders in about two years. However, there has never been any consensus about stroke orders. Perhaps more importantly, for daily communication in this digital era, stroke and stroke orders seldom plays any active role in digital input methods. As a reaction to this, in Chinese society there is a fear of “character amnesia”, which means being afraid of losing the ability to write Chinese characters. Observers that are worried about this phenomenon base their worries on the idea that Chinese characters carry a political, historical and cultural “baggage” that the Chinese people should pass on to future generations.

As for Dutch students, the necessity for Dutch students to handwrite Chinese characters is even less prominent than for native Chinese speakers. It is always possible for Dutch students to use Pinyin input to type/write Chinese characters on a computer and phone. Furthermore, from the cultural perspective, the role of strokes and stroke order connected to national identity via Chinese characters do not apply to Dutch students.

The final level for Dutch secondary school students is A1 or A2, which is quite humble. Character writing is difficult enough, let alone the stroke order, especially since there is still discussion about

certain stroke orders in Chinese academic fields. There is limited instruction time for Chinese and it does not provide enough time for Dutch students to master strokes and stroke order. Pragmatically, it is not worth the time to learn it.

As such, the answer to my research is negative. It is not necessary to teach stroke order to Dutch secondary school students. As a teacher, I am convinced that one should always see which practical and competitive skills are necessary in a rapidly developing society. Even though stroke order is still presented in student textbooks and in some tests, I highly recommend ignoring those elements and using the time more efficiently to develop key language proficiency.

It is beyond the scope of this thesis to answer the question whether it is necessary to teach handwriting in general. This would be an interesting question for further research. My final hope is that this thesis can contribute to further studies about the necessity of teaching handwriting for second language learners and how to efficiently teach Chinese to second language learners in a digital era.

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Appendix 1: Chinese names of the organization and terms

This list is in alphabetical order of the first English letter in that term.

English	**Chinese** characters	**Chinense Pinyin**
State Language Commission	国家语言文字工作委员会	Guójiā Yǔyán Wénzì Gōngzuò Wěiyuánhuì
Standardization Commission	标准化工作委员会	Biāozhǔnhuà Gōngzuò Wěiyuánhuì
Stroke	笔画	bǐhuà
Stroke order	笔顺	bǐshùn
the Committee for Research on Reforming the Chinese Script	中国文字改革研究委员会	Zhōngguó Wénzì Gǎigé Yánjiū Wěiyuánhuì
Ministry of Education of the People's Republic of China	中华人们共和国教育部	Zhōnghuá rénmen gònghéguó jiàoyù bù
Law of the People's Republic of China on the Standard Language and Script	中华人民共和国国家通用语言文字法	Zhōnghuá rénmín gònghéguó guójiā tōngyòng yǔyán wénzì fǎ

Appendix 2: Specific teaching objectives of the four semesters

With regard to recognizing and writing characters.

The first grade, first semester (Jiàocān 1.1: 10):

1. Be able to recognize 312 characters, able to read and recognize characters with Pinyin.
2. Acknowledge multiple approaches to learning characters and learn multiple ways to recognize characters. Stimulate the students to be fond of[8] learning Chinese characters and actively involved in learning them.
3. Be able to write 112 characters and learn the basic strokes and stroke order. Write characters neatly and with proper form.
4. Experience the beauty of Chinese character's form and structure; to understand that Chinese characters have a deep-rooted history and profound meanings.
5. Learn the proper writing habits, including how to hold a pen properly and sit upright.

The first grade, second semester (Jiàocān 1.2: 9)

1. Be able to recognize 421 characters. Be able to read and recognize characters with Pinyin.
2. Acknowledge multiple approach to learn characters and apply the character learning in to practice in daily life.
3. Be able to write 228 characters and learn 48 indexing components[9]. Understand basic structure of Chinese characters and be able to write them with stroke order rules.
4. Have Preliminary understanding of structures and structure patterns of Chinese characters. Experience the beauty of pronunciation and profound meanings of Chinese characters. Cultivate the affection for the motherland's language and script.
5. Recognize capital letters and master Pinyin Chart.
6. Learn how to look up a new word in dictionary with alphabetical order.

Second grade, first semester (Jiàocān 2.1: 9)

[8] In English, be fond of character learning sounds somewhat peculiar. However, in the teacher handbook, in the original Chinese text, the learning of characters is considered as something you can feel affection for.

[9] Chinese dictionary uses components as index to look up words.

1. Strengthen Pinyin learning and be able to read other relatively easy materials aside from the textbook with the help of Pinyin.
2. Be able to recognize 417 characters and pronounce them correctly with the help of Pinyin.
3. Be able to write 233 characters. Master strokes and 23 new indexing components. Be able to write the characters according to the stroke order rules. Pay attention to character structures.
4. Having proper writing habits. To write characters properly, upright and neat.
5. Strengthen learning of checking up new words in a dictionary with alphabetical order. Learn and be able to check up new words with indexing components system.

Second grade, second semester (Jiàocān 2.2: 9)

1. Strengthen Pinyin learning and be able to read other materials than textbook with the help of Pinyin.
2. Be able to recognize 423 characters and pronounce them correctly with help of Pinyin.
3. Be able to write 244 characters and master 19 new indexing components.
4. Be able to write characters with correct stroke order rules and pay attention to structures. Having proper writing habits. To write characters properly, upright and neat.
5. Be able to look up new words in a dictionary with both alphabetic order and indexing component system.