

Didactics without borders

I believe that you have always been good in mathematics at school. This is good, but it also means that you have not directly faced the challenges that weaker pupils face. To do so, you have to change the subject (because higher mathematics is a different kind of learning challenge). A didactical experiment that I did on myself and which I found truly instructive in multiple ways was self-learning the basics of Chinese. By this I mean reading and writing Chinese characters, for example “Hello!” is 你好! and not only its pinyin transcription “Nǐ hǎo!”.

Didactical choices: We may all agree that the first character to be learned is the simplest one, the number one “Yī” (pronounced eee), which is just one horizontal stroke 一.

Next come the characters two 二 and three 三, where you also have to pay attention to the length of the horizontal strokes. So far so good. What comes next?

You might be motivated to learn the character four 四 (with the new stroke types that it involves). Other texts show you the character for king 王, others the character for person 人.

My favorite choice is the character ten 十. It is a character with only two straight strokes. It teaches you the vertical stroke and that you need to do the horizontal stroke first. It is an important and common word, closely related to the words you already know. Last but not least it already allows you to make compound words: 十二 (twelve) 二十 (twenty) and 三十一 (can you guess which number this is?).

To be honest, I have not made up my mind as which are “the most basic 100 characters”, or a truly convenient order in which to present them. There are various considerations that come into play. And there is much which is a matter of taste. For example, I do like the idea of learning the characters king 王 and jade 玉 together to interiorize their similarity, and it is efficient learning a character as a variation of a known character. But somehow I don’t like the idea of learning the characters middle 中 and skewer 串 together. Indeed, the former character is basic and important (it is also part of the word China) while the second has no appeal to me and I’d rather postpone it.

Didactical material: Beyond books there are websites, learning apps, videos and online courses. I encourage you to explore them and reflect on what makes you progress. I have enjoyed texts with valuable information on strokes, and some memorization trick, and games involving a fast recognition of characters, beyond the invaluable dictionaries that draw characters progressively and also recognize characters that you write.

I have also experienced a very pleasant online course. In fact, I could get full score in the multiple choice tests after the explanation videos because for example I was temporarily able to distinguish an apple, a banana, and an orange (苹果、香蕉、橙子) however I have not learned those characters properly because they were disconnected from my characters’ understanding core.

I was in need of progressive learning with deep understanding, and I ended up collecting puzzle pieces from various sources.

This learning experience was instructive also because I became a struggling pupil. I experienced motivational shots and feelings of “unfairness”, and I realized how much one needs “trust” to support learning efforts. Moreover, I have experienced different (and sometimes unpredictable) learning outcomes, ranging from a vague memorization to a true interiorization.

These days we may dream of tailored didactical tools that can replace the best teacher. I (almost) believe in this dream, however we do have to allow for different learning tastes and we do have to pin down all there is to know. In particular, we must identify hidden prerequisites. Moreover, we need a graph collecting difficulties and interdependencies. The pupil may then explore the learning labyrinth in a custom way. No matter the path, it is technically possible to get exercises that only make use of the knowledge that the pupil has previously acquired.

New developments may sooner than expected revolution the way we teach and learn mathematics, and my message is also an encouragement towards a holistic view of didactics in order to develop the tools of the future.