Learning Chinese Characters in the Digital Learning Room

In the field of teaching Chinese as a foreign language (abbreviated to CFL), the use of various mobile applications (apps) to learn Chinese characters (CCs) is growing increasingly common within and outside classrooms. Although the benefits of using these apps for CC learning are widely acknowledged, it remains unclear what students actually think about using them. Due to a lack of particular focus on effective app learning experiences, issues on emerging pedagogical directions for CFL teachers have been insufficiently addressed. This paper aims to find out what students think about the use of mobile apps to learn CCs in the digital learning room, as well as finding out what kind of pedagogical expertise CFL teachers need in relation to this. I begin with a literature review accounting for the difficulties existing in the learning of CCs, and the potential of using mobile apps to learn CCs; after which I outline three research questions. Next, I report on a qualitative case study, focusing on 14 Chinese-major students at Aarhus University, Denmark. The main body of the paper is structured in the form of answers to three research questions. Finally, I conclude with a discussion of findings and provide some suggestions for future research.

Literature review

The Chinese language is considered a difficult language to learn for non-native speakers, such as Danish learners of Chinese. Due to

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its unique features, teaching CFL presents the following key challenges to teachers and learners: (1) tones; (2) character recognition and writing; (3) lack of obvious correspondence between the character script and the sound (Zhan & Cheng 2014: 148). Take the syllable ma, for example: mā may mean mother (妈) or to wipe (抹); má may mean hemp (麻) or what (嘛); mǎ may mean horse (马) or number (码); mà may mean to scold (骂). A few researchers (Gao & Meng 2000; Rosell-Aguilar & Qian 2015) have discovered that learning CCs requires learners to actively stimulate four linguistic mappings: (1) *pīnyīn* spelling[1] with pronunciation, (2) *pīnyīn* spelling with character script, (3) *pīnyīn* character with pronunciation and script, and (4) the above three mappings with a semantic meaning.
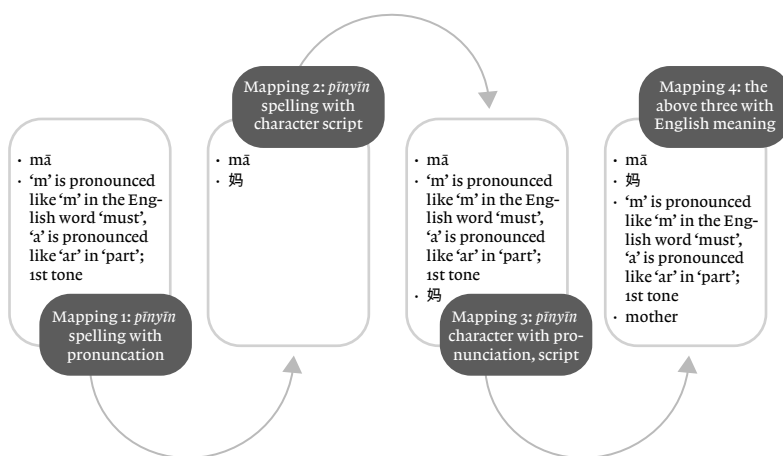

Figure 1: An example illustrating the four mappings learners need to match *pīnyīn* spelling, pronunciation, character script and translation.

In order to ease the burden of learning CCs, integrating technology – for example, digital tablets and mobile apps – in language learning and teaching has become increasingly prevalent. One feature of mobile app language learning is that it can take place "anytime, anyplace" (Geddes 2004: 1). Among a handful of studies on CC learning, Zhu and Hong's (2005) study discovered that multimedia and animations facilitate character recognition. Their studies recognised the merits of using apps such as stroke order (*bǐhuàshùnxù* 笔画顺序)[2] animation programs as an effective tool for CC learning. Lai and Gu (2011) found that using technology can facilitate students' learning and provide methods to help overcome the need to handwrite CCs. Their findings revealed that students found it easier and quicker to

learn to type CCs in mobile devices than to handwrite them with paper and pen. A recent study (Xu, Chang, Zhang & Perfetti 2013) showed that the combination of writing and stroke order animation led to excellent form recognition. Their study also revealed that animation features embedded in apps granted learners both reading and writing practice while enhancing the acquisition of orthographic knowledge, including form, sound and meaning. But few studies have looked into students' motivation for and impression of using apps; even fewer articles have discussed teachers' pedagogical challenges while teaching CCs in the digital learning rooms. In order to address this gap in the research, this study aims to answer the following three research questions.

- What is students' motivation for using apps and how do they use them?
- Do the students think that using the apps has improved their learning of CCs?
- What learning tasks should teachers set in order to enhance student learning and what roles do the teachers play in the digital learning rooms?

Methods

I utilised three approaches to collect data: a pre-study online survey, a focused online survey, and a post-study interview. The pre-study survey (hosted by surveymonkey.com) consisted of 40 questions and was conducted in March 2016. CFL students from three Nordic universities (Aarhus University, Copenhagen University and Stockholm University) were invited to take part. Prior to this survey, I emailed the students and the teachers a letter of consent stating the purpose of the study. On a voluntary basis, 46 undergraduate CFL students responded and completed the questionnaire in June 2016. Data was also retrieved from a focused online survey which ran between September and October 2016. Fourteen students from Aarhus University took part in this survey. In order to validate the quantitative data collected from the two surveys, a post-study interview was conducted afterwards. I selected four students and interviewed them one by one. Each interviewee was given a pseudonym: Michael, Katherine, Robert and Anders. I posed a series of questions to each of them, with each interview lasting about 20 minutes. Using a thematic analysis of the interview transcriptions, the data was analysed to evaluate the differences and similarities in the student responses.

Results and discussion

What is students' motivation for using apps and how do they use them?

The pre-study survey asked the participants about their motivation for using apps. A vast majority of the respondents indicated that the apps were mostly used to learn Chinese informally, i.e., as a supplement to classroom teaching. In the focused survey, the respondents indicated that they used the apps in conjunction with the Integrated Chinese textbooks. During the interview, Anders said that he used the app as a test tool because "it helps reinforce and test the CCs learned in the textbook". Michael used the app as a tool for training which characters he "needs practice" and which characters he "has good command of". With regard to which apps they used in learning CCs, the respondents indicated that they used apps such as Pleco, Quizlet, Skritter, Memrise and Anki. All these apps are Chinese-learning tools offering a full and advanced Chinese dictionary search engine, flashcards, audio support and digital language proficiency tests. The pre-study survey showed that 100% of the respondents indicated they used Pleco for learning CCs. Different from Duolingo, Pleco has a comprehensive Chinese dictionary with 200,000 entries, a handwriting input method with a standard handwriting input system, and a stroke order diagram showing the learners how to draw each character with the correct stroke order. One great feature of Pleco is the adaptive learning function, i.e., every CC in the Pleco dictionary can be saved as a flashcard, allowing the students to revise unknown CCs. When the student begins a test session, the app will give the student a selection of saved flashcards. The characters the student has remembered will not be tested again until a few days later. The characters the student keeps forgetting will be repeated and checked on a regular basis.

With regard to where they used the apps, the participants responded well to the "anytime and anyplace" feature of mobile app language learning and the possibility of using the apps during "spare time" or "commute time". The interview data also confirms that the respondents made good use of segmented time (bite-size time). Michael commented that the app was "handy, more effective", and said that "the spaced repetition system in apps improves my learning focus". Robert mentioned he used Skritter as a dictionary to write the characters, the tones, stroke order, definition and *pīnyīn* spelling. He said that his CC learning took place "anywhere". Anders mentioned that he used Anki to check and correct CCs. But he com-

mented that the biggest drawback of using Anki was that no voice recognition was embedded in this app. He concluded: "you need to learn the pronunciation in class". Katherine also commented that she actually spent more time practising writing characters than she used to do. She emphasised that self-discipline and high-level motivation played important roles in learning CCs with apps.

Do the students think that using the apps has improved their learning of Chinese characters?
In order to elicit data on users' Chinese-language improvement, the second survey asked the participants about their expectations and how these were met. The results showed a large range of expectations about the apps. The first question was about the relationship between handwriting characters (*shǒuxiě* 手写) and typing characters (*jīxiě* 机写). It should be noted that there is an ongoing debate about whether it is best to learn CCs by handwriting or typing. Some scholars argue that writing CCs by hand is an active way of processing each character, making it easier to focus on the individual components and their relationship to other components, rather than simply learning characters by looking at them and clicking. Others argue that typing characters is quick and efficient, and in particular that it makes it easy for beginners to gain a sense of fulfilment and confidence. It is difficult to draw any clear conclusions about this. What interests me is how much time teachers should spend on teaching handwriting or typing. So, the second question asked participants whether they thought that practising writing characters on screen helped to learn to write them on paper. Surprisingly, more than half of the respondents provided a very positive reply to this question.

In the focused online survey, I asked the participants to rate the four features (pronunciation, form, meaning, recognition) of learning CCs with the help of apps. After viewing the rating quality of the responses, I noticed that not all the features were rated equally. In terms of learning to recognise and write CCs, the apps were given a very high rating; and their quality in terms of memorising stroke order was given a generally positive rating. But their quality in terms of listening and pronouncing CCs was rated as unsatisfactory. Using apps to learn pronunciation refers to the way in which learners pronounce a character (tones included) and test whether the apps can correct learners' pronunciation. These two features (listening and pronouncing) were not rated highly, possibly due to the lack of a large database of sound files embedded in these apps. The participants regarded the apps as an unsatisfactory way of learning the

meaning of CCs, a result which confirmed some of the key challenges discussed above.

What learning tasks should teachers set in order to enhance student learning and what roles do the teachers play in the digital learning rooms?

The surveys and interview data show that the benefits of using apps to learn CCs were largely recognised by the participants. Apps are easy to use, convenient and effective when learning to write and to recognise CCs. Learning CCs with the available apps can facilitate learners' autonomy and increase their access to the Chinese language. Although their convenience and ease of use made mobile phones quite useful and ubiquitous in the classroom, there are some problems connected with the way CCs are taught. The data showed that the students rarely used dictionaries that were printed on paper, and in fact most of the students do not own such dictionaries. Many used Pleco and/or Skritter as a dictionary because this allowed them to look up unknown characters easily and quickly. One of the problems connected to using mobile phones in the classroom is that it is sometimes hard for the teacher to ascertain whether students are looking up a character or merely checking Facebook or Instagram. Although the increased autonomy of learners and the creation of a personalised learning pace are beneficial for the students, this does not render the teacher's guidance superfluous. In digital learning rooms there are two key challenges: how many hours of teaching are needed, and what should the focus of the teaching be? As Chinese-language teachers, we need to understand the effectiveness of learning CCs with apps. But we must also be ready to provide instruction focusing on three areas of learning that mobile technology cannot cover adequately; i.e., teachers should spend time (1) correcting student pronunciation; (2) explaining the meaning of CCs and their use in sentences; and (3) explaining cultural and etymological knowledge behind each CC. For instance, it is important to explain the roots of the radicals (*bùshǒu* 部首)[3] and highlight the different combinations of strokes. If students are given a semantic and componential scaffolding, I believe that learning CCs will become a less daunting prospect for them.

Conclusion

This study has provided a general picture of how students at three Nordic universities use various apps to learn Chinese at beginner lev-

el. The results from this study have found the apps help students recognise characters and reinforce writing ability because they combine the stroke-by-stroke writing of scripts, *pīnyīn* spelling, pronunciation and translation. The feedback and data collected from students will be useful for CFL teachers in terms of the focus and level of guidance needed both within and outside the classroom. Finally, I believe more studies are needed to understand the way learners in different age groups engage with apps. For example, how do high-school students use CC-related apps? What are their experiences when using these apps, and how do they evaluate them? And most important of all, what evidence is there of actual CC learning with the help of apps? In my opinion, such questions can form the basis of fruitful further research in the field of CFL within the context of the digital learning room.

Noter

1. *pīnyīn* spelling refers to romanisation of the Chinese characters based on their pronunciation.
2. Stroke order refers to the sequences of writing a character. See more information at https://www.archchinese.com/chinese_stroke_order_rules.html.
3. A Chinese radical refers to a graphical component of a Chinese character under which the character is listed in a Chinese dictionary. See more information at https://en.wikipedia.org/wiki/Radical_(Chinese_characters).

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