CFL Education at the College Level

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Abstract This chapter offers a critical review of the teaching of Chinese as a foreign language (TCFL) to non-heritage students at the college level. Drawing upon recent research in the field, it examines the current state of curriculum and instruction, highlights important issues, and attempts to provide recommendations for future development. The discussion on curriculum emphasizes the central role of national standards in today's curricular planning and urges CFL programs to match their curricular scope with content standards, and to ensure quality and accountability via benchmarking with proficiency standards. In addition to offering a description of the curricular scope and sequence as reflected in popular CFL textbooks, the chapter also describes major characteristics of the Chinese language and provides a critical examination and rethinking of some prevalent TCFL practices. Finally, some pedagogical innovations and resources are shared, with particular attention to the use of new technological tools.

Keywords CFL curriculum and instruction at the college level • Standards-based CFL curriculum at the college level • Content standards • Articulation of CFL curriculum • Scope and sequence of CFL curriculum • CFL textbooks at the college level • Special-purpose Chinese language courses • Integrated Chinese curriculum

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1 Introduction

The teaching of Chinese as a Foreign Language (CFL) in the West was traditionally based at the collegiate level. CFL education in American and European colleges and universities dates back to the late nineteenth and early twentieth centuries. Chinese language classes were first introduced in the U.S. in 1871 at Yale University. In the U.K., Chinese was initially offered at the School of Oriental Studies in London in 1917 (Tsung and Cruickshank 2011). By contrast, CFL instruction in secondary schools in the U.S. began in the early 1960s. Although significant development took place during that decade in teacher training, material development, as well as pedagogy, such efforts suffered severe setbacks as funding dwindled in the 1970s (Zhou 2011). For colleges and universities, however, CFL teaching enjoyed a steady (though slow) growth through the 1990s. (For a brief history of CFL in the U.S., see Zhou 2011.)

Today, after two decades of intense growth at both collegiate and pre-collegiate levels, colleges and universities remain the principal locales for CFL teaching and learning. Furthermore, in the United States (and possibly in other Western countries as well) post-secondary teaching and learning of the Chinese language take place primarily at the undergraduate level. In Fall 2006, the Modern Language Association of America identified 661 institutions offering Chinese language courses (MLA 2006). A total of 51,582 students were enrolled, of which 50,455 (97.8 %) were undergraduates. Enrollment increased to 60,976 in Fall 2009 (Furman et al. 2010) and to 61,055 in Fall 2013 (Goldberg et al. 2015). The ratio of undergraduates, however, remained stable at 98 %. A recent survey by the Chinese Language Teachers Association reported 19 % (40) of the respondents offering M.A. programs and 13 % (27) offering Ph.D. degrees in Chinese (Li et al. 2014).

This chapter reviews Chinese language curriculum and instruction at the college level (for K-12 level, see Chapter 7, "Chinese as a Foreign Language in K-12 Education"). The field of CFL in the U.S. has accomplished much; yet, challenges remain that could make further development seem arduous. Drawing on information and insight from recent research in the field and from our own experience, we discuss the current state of curriculum and instruction, highlight important issues, and attempt to provide directions for future development or further research.

2 CFL Curriculum: Standards, Scope, and Integration

2.1 Standards-Based CFL Curriculum

2.1.1 Role of Standards

As Everson (2012) aptly puts it, we are now in the "era of standards," and there is no going back. Indeed, standards play a central role in today's foreign language field. Standards determine what we teach (curriculum), how we teach it

(instruction), and how we know what our students know and are able to do (assessment). Phrases such as "standards-based instruction" or "standards-based curriculum" have become nearly cliché. The ability to integrate standards into curriculum and instruction is also included in the guidelines developed by the American Council on the Teaching of Foreign Languages (ACTFL) in conjunction with the National Council for Accreditation of Teacher Education (NCATE) or teacher training programs. Candidates are expected to demonstrate the ability to incorporate national and local standards-based curriculum and instructional planning and to use these frameworks as a basis for choosing instructional materials (ACTFL 2002, p. 25). Not surprisingly, much research has been devoted to the importance of standards to CFL curriculum and instruction in recent years (Bai et al. 2013; Everson 2011, 2012; Ke et al. 2001; Xing 2006; Xu and Ning 2013; Zhang 2013b).

We wonder, nonetheless, if many collegiate CFL programs would consider themselves standards-based, and if many instructors at the college level would consider their instruction fully informed by national guidelines. Anecdotal evidence suggests there might be a disproportionate few programs that are standards-based in comparison to the size of the CFL field.

The reason for this gap between talking the talk and walking the walk on the issue of standards in CFL teaching could be multifold. Fundamentally, it could be a general lack of accountability in the current academic setting of CFL programs. Most programs at the college level are relatively independent. Within the institution, they often are not required to answer to higher-level authorities as to the structural soundness of the curriculum or the proficiency level of their graduates. Outside the institution, since the majority of students enter college with little or no formal learning experience in Chinese and do not continue beyond the college years, there is little demand to connect to pre- or post-secondary CFL education. A second reason could be the enrollment boom CFL programs have enjoyed for the past two decades. With programs ever expanding, the outlook is good from every direction. Another important reason could be resource constraints. Those programs and faculty who are able to hold themselves accountable and are intent on implementing the national standards more actively and fully could find themselves already strapped for time and energy maintaining the current level of day-to-day operations. Work on the curriculum, especially, would require coordination and collaboration that could be cumbersome. If there are few external incentives to begin with, integrating standards could become even less appealing.

Looking forward, we must recognize not only the value of standards, but also the importance of implementing them in order to be taken seriously as a field. The lack of standardization is already reflected in the great unevenness in the quality of CFL programs (see further discussion in Sect. 2.1.3). Circumstances could also change – enrollments could decline, programs could shrink, and the students we teach could come with substantial experience and expect a smoother transition from pre-college to post-secondary study of Chinese. In the era of standards, it is time we muster our resources, create a positive environment, and get started with this important work.

There has been a proliferation of standards related to CFL education both in the U.S. (ACTFL 1986, 1999, 2001, 2012, 1996, 1998, 2014; CLASS 1999; ILR 1950s,

1968, 1985) and in other parts of the world (Council of Europe 1989–1996, 2011; Hanban 2007, 2008). For college-level programs in the U.S., the most commonly recognized standards are the various guidelines published by ACTFL. Two types are particularly helpful when it comes to curriculum building: content standards and proficiency standards.

2.1.2 Matching Curricular Scope with Content Standards

Content standards address what and how we teach. In existent research, much emphasis has been placed on content standards. The ones widely recognized in the U.S., for example, are ACTFL's *Standards for Foreign Language Learning*, first published in 1996, with Chinese-specific guidelines put forth two years later (ACTFL 1998). Commonly known as the "Five C's," these standards address five goals and content areas – Communication, Cultures, Connections, Comparisons, and Communities – of foreign language education. Despite their obvious connection to curricular scope, however, discussion of these standards has been mostly limited to what is desired (see Everson 2011 for a study that proposes specific teaching methods in reference to the Five C's), and relatively less has been done on how to use these standards as guidance to construct a better curriculum. Standards-based curriculum remains very much an abstract notion.

When it comes to curriculum development, many programs may tend to focus on the adoption of textbooks. We rely on textbooks in choosing content for students to learn, and we also test students mostly on their mastery of material in textbooks. Programs may rarely examine the extent to which the components of their curricula match the requirements of the content standards. What is offered in language courses most often defaults to whatever is included in textbooks. It is no exaggeration to say that for many programs, the curriculum remains textbook-based rather than standards-based.

2.1.3 Using Proficiency Standards to Ensure Quality and Accountability

If content standards determine what students learn, proficiency standards address specifically how well students learn and how we know what students are able to do. Content standards alone cannot guarantee accountability. To ensure high-quality and consistent outcomes, we must incorporate the use of proficiency standards in curriculum and assessment, such as the guidelines developed by ACTFL to outline students' proficiency levels either in individual skills (*ACTFL Proficiency Guidelines*1986, 1999, 2001, 2012) or in overall linguo-cultural performance (*ACTFL Performance Descriptors for Language Learners*).

Articulation of the CFL curriculum should be benchmarked with proficiency guidelines. Within the parameters of the curriculum (e.g. a set number of weekly contact hours), both instructors and students should know clearly what proficiency levels the majority of students reach when they have completed a given portion of

the curriculum. Evidence of a lack of standardization in this respect comes from the greatly uneven expectations of student proficiency levels by CFL programs. As shown by CLTA's (2012) survey, programs that offer 4 years of courses for non-heritage speakers expected their students to reach anywhere from Intermediate Mid to Advanced High in speaking, reading, and listening, and one sublevel below that in writing. Likewise, the proficiency level of completers of most 2-year programs ranged from Novice High to Advanced Low in three of the four skills (Li et al. 2014). It appears that many of the CFL program faculty themselves are either unfamiliar with proficiency guidelines or are unclear about where their programs fit along that spectrum.

Reasons for the current state of CFL programs may be the lack of external demand or internal incentives for accountability or the inconsistent practice of assessing students. If we have not systematically evaluated students' proficiency, we will not be able to confidently come up with proficiency benchmarks, either for the curriculum or for the field. As a result, the field may run the risk of losing credibility in the long run. One practical difficulty often cited in incorporating ACTFL proficiency guidelines is the high cost of Oral Proficiency Interview (OPI) testing. Most programs do not have resources for sustained measurement using the official OPI. One possible solution may be to devote the limited resources to certifying faculty as OPI testers, and faculty can then use unofficial, OPI-style testing to assess their students. Further research will be very useful on alternative, more cost-effective assessment methods that also allow programs to use ACTFL proficiency guidelines.

2.2 Curricular Scope and Sequence

2.2.1 Length of Language Curriculum

Chinese language courses in North American colleges and universities primarily cater to students learning Chinese as a foreign language (as opposed to a heritage language). Based on CLTA's 2012 survey, two types of language courses were most common: 71 % of the responding institutions offered courses open to both non-heritage and heritage learners, and 61 % offered courses limited to non-heritage students. Those that offered heritage courses were much fewer: 24 % reported having courses tailored to Mandarin speakers and 11 % to Cantonese speakers (Li et al. 2014, p. 14).

CFL curriculum in college typically starts with entry-level courses. This is because most undergraduate students taking Chinese have not had significant experience with the language before they come to college. With more and more students beginning their Chinese study in secondary or elementary schools, there is now a strong consensus on the need to develop a long-sequence curriculum that spans grades K-16+ (Ke et al. 2001, p. 47). However, besides certain Flagship programs (Spring 2011), Chinese programs at most colleges and universities implement

language and culture training with the assumption that first-year students have little prior experience with the language. Indeed, the majority of college CFL curricula begin at the elementary level (Li et al. 2014).

Furthermore, most CFL curricula are limited to elementary and intermediate levels. The majority of programs surveyed did not offer language courses beyond the second year. Only about one third of the programs offered mixed or non-heritage courses up to the third or fourth year, and another 5 % to 10 % extended their courses to the fifth or sixth years (Li et al. 2014, p. 14).

Thus, when we speak of the scope and sequence of a 4-year CFL curriculum, we are speaking of a relatively small portion of all CFL programs. We will, however, use the 4-year curriculum as a general frame of reference because first of all, it is the most typical of all BA-degree-granting Chinese programs (Li et al. 2014, p. 12), and secondly, the length of an undergraduate career for most of our students is 4 years. In describing the scope and sequence of a CFL curriculum below, we will refer to the first year of study as the elementary level, the second year as intermediate, and the third to fourth years as advanced, respectively. We will focus on non-heritage courses. For a review of curriculum models and development for college heritage learners, see Chapter 9 "The Teaching of Chinese to Heritage Language Learners at the Post-secondary Level" of this volume.

2.2.2 Scope and Sequence of a 4-Year CFL Curriculum for Non-heritage Learners

In the absence of an articulated set of statements on curricular content at the college level (except for certain Flagship Programs; see Spring 2011), textbooks serve as a natural source of information for the topical scope and sequence of Chinese language courses. Curriculum and instruction, especially at the elementary and intermediate levels, usually follow the structure of the textbooks adopted. Additional materials may be used, but such materials generally complement and enhance the textbook topics. Therefore, to get a sense of what it is that students learn and in what order, we will take a close look at the most widely-used textbooks.

In the past 10 to 15 years, a variety of new textbooks for Chinese language courses have appeared on the U.S. market. Choices of the most widely used ones, however, have remained relatively stable. For instance, two surveys by the CLTA spanning 12 years both found that *Integrated Chinese* (Ke et al. 2001) and *Practical Chinese Reader* (Li et al. 2014) were among the most popular options for college-level Chinese courses. Table 1 lists results from the more recent survey conducted by Li and colleagues (2014).

What are the overarching themes of these and other most commonly adopted textbooks? How are they distributed from the elementary to the advanced level? To answer these questions, we can divide the various topics into four thematic categories: (1) self, family, and friends; (2) routine communicative tasks; (3) culture-specific topics; and (4) literary works. By tallying the number of lessons that fall under each theme, with each lesson counted once, we arrive at Table 2.

Table 1 Most-widely-used textbooks adopted by non-heritage courses

	Elementary and Intermediate Levels	Advanced Level
1	*Integrated Chinese* 《中文听说读写》	*All Things Considered* 《事事关心》
2	*New Practical Chinese Reader* 《新实用汉语》	*New Practical Chinese Reader* 《新实用汉语》
3	*Chinese Link* 《中文天地》	*Reading into a New China* 《变化中的中国》and *Crossing Cultural Boundaries* 《文化纵横观》

Table 2 Numbers and percentages of lessons associated with various topical themes in popular textbooks at the elementary, intermediate, and advanced levels

Theme	Elementary		Intermediate		Advanced	
Self, family, and friends	*IC*	4	*IC*	2	*ATC*	0
	NPCR	7	*NPCR*	0	*NPCR*	2
	CL	5	*CL*	0	*RNC*/*CCB*	0
	Subtotal	16 (24 %)	Subtotal	2 (3 %)	Subtotal	2 (3 %)
Routine communicative tasks	*IC*	16	*IC*	10	*ATC*	3
	NPCR	15	*NPCR*	6	*NPCR*	0
	CL	17	*CL*	18	*RNC*/*CCB*	0
	Subtotal	48 (70 %)	Subtotal	34 (53 %)	Subtotal	3 (5 %)
Culture-specific topics	*IC*	0	*IC*	8	*ATC*	29
	NPCR	4	*NPCR*	17	*NPCR*	7
	CL	0	*CL*	2	*RNC*/*CCB*	11
	Subtotal	4 (6 %)	Subtotal	27 (42 %)	Subtotal	47 (75 %)
Literary works	*IC*	0	*IC*	0	*ATC*	0
	NPCR	0	*NPCR*	1	*NPCR*	11
	CL	0	*CL*	0	*RNC*/*CCB*	0
	Subtotal	0 (0 %)	Subtotal	1 (2 %)	Subtotal	11 (17 %)
Total	68 (100 %)		64 (100 %)		63 (100 %)	

IC integrated Chinese, *NPCR* new practical Chinese reader, *CL* Chinese link, *ATC* all things considered, *RNC* reading into a new China, *CCB* crossing cultural boundaries, RNC/CCB represents the average count of the two textbooks

The sequencing of topical themes in the CFL curriculum appears to form certain patterns. Topics on self, family, and friends appear most heavily at the elementary level but dramatically decrease at both the intermediate and advanced levels. Topics involving routine communicative tasks are predominant at the elementary level and remain the largest category in intermediate courses. These topics are usually not culture specific – that is, they are part of the modern life with which both American and Chinese young people are familiar. At the advanced level, themes involving routine communicative tasks sharply drop, and culture-specific topics become more dominant.

This arrangement is in agreement with the cognitive trajectory of learning: from self to others, from day-to-day communication to concerns with social issues, from the culturally generic to the culturally specific, from the familiar to the unfamiliar, and from the concrete to the abstract. It is also worth noting that topical themes are not always arranged in a strict linear sequence. Rather, they often spiral across the same set of textbooks. For example, "shopping" and "travel" occur in both Level 1 and Level 2 of *Integrated Chinese*. In such cases, the topics are broadened, deepened, and reinforced as students become more advanced in their communicative skills. Such a spiraling design allows students to make more confident and steady progress towards advanced proficiency.

Do the scope and sequence of the CFL curriculum described above meet the requirement of the Five C's? If we aim to fully integrate all the goal areas at every level of the curriculum, then the current arrangement falls short in two areas. First of all, although Communication, Cultures, and Comparisons are addressed through all levels, there is a general lack of treatment of Connections and Community. More needs to be done in reaching the goals in these areas. What can we do to increase the opportunities for students to relate their Chinese knowledge, skills, and perspectives to other disciplines? What can we do to enable students to use Chinese language beyond the school setting? What do we need to do to help them become life-long learners by using Chinese for personal enjoyment and enrichment? To be fair, ineffective implementation of the Connections and Communities standards is likely not unique to Chinese – in fact, ACTFL is in the process of coming up with more implementable ideas for achieving these two goals. Nonetheless, we can begin to address some of the most basic questions as mentioned above.

The second point may not be readily apparent from the textbook topics alone, yet it is a relevant and important one. Judging from the content of the textbooks, our teaching of Chinese culture focuses much more on its products and practices than its perspectives. At the elementary level and part of the intermediate level, especially, the study of culture tends to be treated as reading some related information added on to the main text. When it gets to the advanced level, culture is often presented through Chinese-specific topics, such as Chinese opera, Chinese silk, etc., still at the product level. The teaching of cultural perspectives remains a challenge not sufficiently tackled. The challenge may be more deep-rooted than the current discussion has acknowledged. The nature of culture is such that those who grow up in it are largely unaware of its implicit assumptions without conscious examination and critique. Yet, it is precisely these assumptions that we are tasked to teach students. Instructors, who are mostly native Chinese, may find it necessary to inquire and learn about such perspectives from Chinese culture specialists first before effectively integrating them into materials and instruction.

2.2.3 Other Courses in the CFL Curriculum

Other language courses offered by college Chinese programs may include Classical Chinese and Modern Chinese for Special Purposes. We need to further develop such courses for the benefit of Chinese programs. Although these courses usually

complement the regular language sequence at the intermediate or advanced levels, they are beneficial to the richness and attractiveness of the CFL program as a whole. Most students taking Chinese in college do not go on to become Chinese majors. Students interested in pursuing their academic careers through professional schools might be drawn to such courses and might be attracted to taking the regular language courses or even to double-major in Chinese. However, these courses are not as widely available as one might expect. The 2012 survey showed that about one third of the participating institutions offered Business Chinese, and one third offered Classical Chinese. Only 18 % offered Newspaper Chinese, and 4 % Legal Chinese (Li et al. 2014).

Special-purpose Chinese language courses are more diverse than regular Chinese language courses. There is little discussion in the field about standardizing such courses, perhaps because they are usually stand-alone options and are not part of a strict sequence. Programs may tailor them to their own curricular needs or the strengths of the instructors. Thus, courses with the same title offered by different programs may be quite different in focus, scope, or even the instructional language. Take Classical Chinese as an example: 40 % of the programs teach in English and 60 % in Chinese (Li et al. 2014, p. 16). Yet, such flexibility may give programs more freedom for experimentation and innovation.

Depending on one's point of view, culture and literature courses may or may not be part of the CFL curriculum. But they are undeniably important components of the larger Chinese studies (or Chinese language, culture and literature) curriculum. In fact, they ranked at the top in terms of percentages of institutions offering such courses – Chinese culture at 69 % and Chinese literature at 59 % (Li et al. 2014, p. 16). Similarly, a Chinese program may also offer courses in Chinese history, politics, economics, religion, film and media, and arts, forming a multi-disciplinary curriculum. Below, we will discuss the relationship between such courses and language courses in the context of the Chinese Studies curriculum.

2.3 Developing an Integrated Chinese Curriculum

Like programs in most other foreign languages and cultures, perhaps since the beginning, Chinese programs have been offering a largely two-tiered curriculum: Chinese language courses occupy the lower stratus and are staffed with junior and temporary faculty, while Chinese literature and culture courses dominate the upper level and are taught by senior or tenure-track/tenured members of the department. In this model, the Chinese language is viewed as a tool with little intrinsic intellectual values. Students acquire this tool only to use towards other loftier academic goals. Even practitioners in the field had long believed that "the primary goal (of a Chinese language curriculum)… is to train students in the acquisition of the four skills" (Xing 2006, p. 33) or "a steady focus on the performance of language skills is the distinctive feature of language courses" (Walker 2010, p. 66). The division between language courses and so-called "content courses" (a term gradually dropping out of use for its unwarranted implication that language courses do not have

content) likely has been deep, pervasive, and persistent in the CFL field as with other foreign languages.

For Chinese studies to maintain its intellectual relevance and vitality as a discipline, however, such a model is outdated and unsustainable. In response to the post-9/11 language crisis, the Modern Language Association (MLA) issued a call for departments of foreign language, literature, and culture to develop "broader and more coherent" (2007, p. 2) curricula that are "intellectually driven" (p. 1). As well, CFL curriculum must assume its position as a discipline that contributes to students' intellectual development in interdisciplinary ways. It must break out of its silo and start building and strengthening connections with other parts of the larger China curriculum in order to produce "educated speakers who have deep translingual and transcultural competence" (MLA 2007, p. 2), and develop an integrated Chinese curriculum.

As previously discussed, the five C's content standards should be fully implemented at all levels of the curriculum, not just at the higher levels. For example, the teaching of cultural perspectives (in addition to the other aspects of culture) needs to start at the elementary level and be sustained through the entire curriculum. It is perhaps not too challenging to envision the integration of literary or cultural study in language courses at the advanced or even intermediate level (e.g. Zhang 2013a). For instance, textbooks for advanced learners often include original literary text or films, and their topical themes, as we have seen, often center on social issues. The challenge then is to engage students in learning that is culturally rich and intellectually rigorous at the elementary level, when they are still learning to navigate daily interactions in routine scenarios. There has been a substantial amount of research on teaching culture to beginners. Some suggest that behavioral culture or cultural perspectives (ideas, attitudes, underlying beliefs, and values) rather than achievement or informational culture could and should be the primary focus in Chinese language learning starting from the elementary level (e.g. Christensen 2011).

We must broaden the base of course offerings. In this regard, MLA (2007) particularly recommended interdisciplinary, collaborative courses. These could be co-taught by language faculty together with faculty with expertise in other areas. Currently, most of the courses outside the modern Chinese language sequences are taught in English. For these courses, a discussion or writing component in Chinese could be added (MLA 2007). Conversely, for lower-level Chinese language courses, students could read and discuss in English about related cultural topics while using Chinese expressions where they could, so they would not have to be limited by their Chinese language ability and could engage in more sophisticated and intellectually challenging conversations about China.

As recommended by MLA (2007), we also need to develop interdisciplinary courses that connect the various components of the Chinese studies curriculum into unity. Currently, a few of the most developed programs may be multi-disciplinary. They may contain courses that belong to a wide range of disciplines – history, sociology, political science, women's studies, and so on – yet the courses may not be significantly related to each other in perspectives, content, or methodology except

for the connection of being about China. As a whole they are even further removed from Chinese language courses, when reading, writing, lecture and discussion are all conducted in English, as is often the case. To break the disciplinary boundaries, an excellent possibility is to take advantage of the interdisciplinary nature of the Chinese writing system as an object of study and develop courses that integrate points of view from a variety of fields (Li 2011). These could be courses in English that take a combination of linguistic, cognitive, socio-cultural, and literary-artistic approaches. Such courses could be supplemented by modules taught in Chinese that aim to elevate students' proficiency in writing Chinese characters.

Last but not least, to attract more students to the Chinese major, we need to provide multiple paths for them to complete requirements for the major. Currently, only a minority of students who take Chinese language courses go on to become Chinese majors (Li et al. 2014). According to MLA's 2013 enrollment survey (cited in Goldberg et al. 2015), the ratio of introductory to advanced course enrollment was 4:1. Furthermore, the majority of Chinese majors do not pursue a doctoral degree later (see MLA 2007, p. 4). Thus, to meet the needs of our students, we must allow them to attain a major in Chinese through multiple pathways. If their interest is primarily in literary study, then they can choose to take more courses in Chinese literature. If they prefer to focus on Chinese linguistics, then this can also be a viable option. We can also consider opportunities for students to structure their major around other areas of Chinese studies, such as economics, politics, history, and society.

3 The State of CFL Instruction

It should be stated at the outset that it is very difficult, if not impossible, to accurately describe the state of CFL instruction. Unlike reporting on CFL research, which can be empirically grounded on published literature, describing how Chinese is taught in the classroom treads on much less solid ground. Due to logistic difficulties, the most likely source of information, namely surveys, tends to stay at the fairly general level of major curriculum options, such as course design and delivery. Large scale personal observations and interviews are out of the question. It is, therefore, important to bear in mind that what is attempted here is necessarily impressionistic in nature, based on anecdotal evidence, personal observations, and to a great extent, indirect inferences made from textbooks, which do reflect pedagogical practices to some extent.

As it is unrealistic to offer a description of the state of CFL instruction, this section will attempt to do the more realistic and identify some of the more obvious problems, such as certain prevailing myths and misunderstandings, the discrepancy between theory and practice, the uneven attention to different aspects of CFL, and various cold and blind spots. This will be exemplified with several important areas of CFL instruction, namely pronunciation, vocabulary, grammar, characters, and reading.

In addition to discussing problems, some general tips on instructional practice will be given. But it is the authors' belief that instead of giving specific instructions on a myriad of instructional situations, it is more realistic and advisable only to caution teachers on potential pitfalls and let individual teachers unleash their creativity and imagination. Some specific recommendations on learning resources will be given, however, especially high-tech tools that have become available only in the last few years.

3.1 Research and Practice

3.1.1 Uneven Attention in Research

Z. S. Zhang (2014b) recently tallied the frequency of key terms in the *Journal of the Chinese Language Teachers Association* (JCLTA) article titles and found that not all aspects of CFL have been equally attended to. For example, grammar and characters not surprisingly have been given the greatest amount of attention, while pronunciation (except tones) and vocabulary have received less attention, and discourse and pragmatics even less. In terms of the four skills, there seems to be more attention given to the literacy skills of reading and writing, as opposed to speaking and listening. The uneven attention to different skills is collaborated by Ke (2012), who observed that no other area has received more attention than reading, while listening is very much an under-researched area.

There is also an asymmetry between productive and receptive skills. Between reading and writing, the receptive skill of reading has received more attention than the productive skill of writing. Writing, which is important for fostering grammatical accuracy and discourse competence, definitely deserves more attention. On the other hand, the receptive skill of listening has received less attention than the productive skill of speaking. But as one of the two channels to receive linguistic input, listening should be as important as reading, and may be more challenging than reading, due to its ephemeral nature.

Due perhaps to native-speaker teachers' familiarity with the language, there also seemed to be some blind spots, such as word segmentation and out of vocabulary (OOV) items (names, abbreviations etc.) in the area of reading, which in fact are the most problematic issues for the computational processing of Chinese text (Wong et al. 2009).

3.1.2 Gap Between Research and Practice

While not all SLA research is application-oriented (Han 2007), classroom practice can no doubt benefit from a better understanding of the language and the process of language acquisition. As pointed out by Hatasa (2013), however, there is often a gap between theory and practice in foreign language instruction. More thorough research

and deeper understanding of the language may not directly translate into better classroom practice.

The gap between theory and practice seems even wider in Chinese. As discussed elsewhere in this volume, the most pressing need at the moment has to be teacher training. The recent upsurge of interest in Chinese has exposed a severe shortage of qualified teachers. Some teachers are pressed into service with not much more preparation than that they speak the language natively. Worse than ill-preparedness and lack of knowledge is the misinformation some teachers bring with them, for example concerning Chinese grammar and the nature of characters. Some teachers otherwise well-trained in language pedagogy may not be sufficiently informed about the specific issues of Chinese language instruction.

3.2 Four Basic Areas of CFL Instruction

These are by no means the only areas that merit discussion. Left unaddressed are many important topics that all deserve in-depth treatment. But these four areas are the basic areas of CFL instruction that are relevant from the very beginning of Chinese language learning.

3.2.1 Pronunciation

Although its syllable structure is rather simple, the Chinese sound system is by no means easy to master. In addition to the difficulty with tones, there are quite a few trouble spots in initials and finals as well, such as: ü, e, o, j, q, x, zh, ch, sh, r, z, c, and for some heritage learners the distinction between n vs. ng and retroflex (zh, ch, sh) vs. non-retroflex (z, c, s, j, q, x) sounds. Despite the difficulties, issues of pronunciation have typically not been sufficiently addressed in both research and practice. Work on pronunciation rarely goes beyond the first few weeks of instruction ("foundation work" in the words of Chao 1947, p. 67), while pronunciation problems persist well into advanced levels.

In addition to the drastic tapering of attention to pronunciation, problems also arise from the misunderstanding of certain linguistic facts. One common problem, probably due to the misleading Pinyin tone marks, is the practice of treating the full third tone as basic, while in fact the half third tone is found in most contexts (Lu and Xie 2004; H. Zhang 2014a). In general, most instructors have focused attention on tones in isolation while not as much attention has been paid to tone changes and tones in connected speech, a good command of which is essential for native-like pronunciation. Another much overlooked problem, due also to an incorrect understanding of the nature of Pinyin, is the potentially detrimental effect of presenting sounds through Pinyin before direct exposure to them. As Pinyin is not entirely regular, due to the lack of strict one-to-one correspondence between sounds and symbols (e.g. "i" and "e"), and abbreviation conventions (e.g. iou→iu, uei→ ui,

uen→un, üen→ ün etc.), hewing too close to it may lead to problems of "spelling pronunciation," such as pronouncing the "i" in "shi" like the one in "xi."

While more pronunciation practice is definitely needed, with so few contact hours in typical contexts outside of China, it is quite unrealistic to devote much class time to pronunciation. Self-monitored practice outside the class has to play a greater role. But the likelihood of improvement crucially depends on the availability of feedback. While frank and unstinting feedback may be unrealistic to expect from peers, some recent hi-tech tools can prove helpful. The free acoustic analysis program WaveSurfer can provide instant visual feedback to students' production of tones. While iPhone/iPad's Siri voice recognition function may fall short in carrying on intelligent conversations, it can nonetheless be used to gauge the minimal acceptability of pronunciation when used as a text input option, in that only adequate pronunciation can bring up the intended characters. Google Voice Input can be used similarly for inputting search terms. The image option for Google search can be used at even the pre-character stage since the form of feedback (i.e., search results) is visual rather than textual. These tools all have the advantages that they are patient, consistent, and less likely to hurt learners' feelings.

Due to the limited time available, priorities also have to be set. An example of priority-setting is how to approach practicing tones in context. While practicing all possible tonal combinations (as is done in some textbooks) certainly is systematic, it definitely runs the risk of boring students and being divorced from meaning, not to mention taking too much time. Singling out the major tone changes (third tone rule; yi\-->yi/; bu\-->bu/) for sustained practice can arguably be a smarter choice since it focuses on the most important contextual changes while involving all the basic tones in Mandarin at the same time.

3.2.2 Vocabulary

Based on the small number of articles in *JCLTA* on vocabulary, Z. S. Zhang (2014b) inferred that there may be insufficient recognition of the problems of vocabulary instruction. Despite Zhigong Zhang's famous dictum "Vocabulary is important; vocabulary is hard" (词汇重要,词汇难, Zhang 1988), there may be an unwarranted assumption that there is not anything especially difficult about Chinese words, except for the characters to represent them. After all, with no inflectional morphology and little derivational morphology, what is so hard about acquiring Chinese words? But one cannot help but be struck by the alarmingly poor retention of vocabulary by students over time. How can this be?

One often overlooked but nonetheless basic fact is that Chinese vocabulary has no cognates with most learners' native languages, the only similarity in vocabulary stemming from the small number of borrowings, such as *kafei* (coffee). In the words of Deborah Fallows, a linguist proficient in a number of European languages but

who felt defeated by Chinese, "I didn't feel I had anything to hang my hat on with this language" (Fallows 2011).[1]

The absence of cognates is exacerbated by extreme homophony. Although the phenomenon is well-known and humorously illustrated by Chao's famous "shi shi shi shi shi" passage,[2] the effect of homophony on the learning of vocabulary may not have been sufficiently appreciated. The exaggeration "everything sounds the same in Chinese" may nonetheless contain a kernel of truth. The problem of homophony is in turn compounded by the large number of near synonyms. While near synonyms are by no means unique to Chinese, many Chinese near synonyms are simultaneously partially homophonous as well, with shared morphemes (for example 举办 and 举行). These partially homophonous near synonyms can be hard for even native speakers, who can be frequently observed self-correcting themselves after uttering the wrong word.

The neglect of vocabulary instruction is reflected in teaching materials. In many textbooks, vocabulary instruction seems to start and stop with a vocabulary list. In the absence of more sophisticated vocabulary practice, students are apt to rely on the most primitive strategy, i.e., memorizing flashcards, which are very ineffective for the long-term retention of vocabulary. The all-important vocabulary list is also fraught with problems. Zeroing in on the common format of vocabulary lists, Z. S. Zhang (2010) enumerated a litany of problems in vocabulary instruction as reflected in many textbooks produced for instruction outside China. One of the problems is that the vocabulary list is constructed with little heed to the fact that the majority of Chinese words are compounds, with component morphemes that recur in related compounds (for example: 人 in 工人、男人、女人、名人、人名 etc.). These lists blindly follow the format of other foreign language textbooks and only provide a gloss for the whole compound, and not for the component morphemes that make up the word. Not heeding the internal composition of compounds may explain the failure of glosses for "Chinese" and "change" to correctly convey the meanings of words such as 中文 and 改变, as revealed in the mistakes 中文菜 "Chinese food" or 改变尿布 "change diapers" (all actual mistakes witnessed by the author).

The whole word approach to vocabulary glosses has negative consequences for the retention of vocabulary as well. Words are retained better when they can be related to what already exists in the learners' knowledge base, either from their own language or from previous learning. Treating the word as the basic unit obscures the external connections to related compounds, thus failing to take pedagogical advantage of the frequent repetition of recurrent word components. Ignorant of the internal structure of words and unable to find cognates in their native languages, it is small wonder that students find Chinese words opaque, hard to "relate to" (pun intended) and retain.

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[1] NPR interview with All Things Considered host Mellissa Block, July 15, 2011: http://www.npr.org/player/v2/mediaPlayer.html?action=1&t=1&islist=false&id=129552512&m=129556812&live=1

[2] 赵元任:施氏食狮史

To improve vocabulary instruction, two measures seem minimally necessary. First, to wean students of their dependence on flashcards, more in-depth and varied vocabulary practice should be offered. Activities that require students to use new words instead of memorizing definitions should be employed, such as questions and answers, fill-in-the-blanks, sentence making and completion, etc. Secondly, to take advantage of the internal transparency and interconnections between related compounds in Chinese vocabulary, vocabulary lists should be designed more thoughtfully, with recurrent morphemes highlighted and cross-referenced in the manner of Mickel (1996), relating a partially new word, such as 演出, to an old word, such as 表演, instead of treating it as a completely new item. The relatedness of partially homophonous synonyms, such as 举办 and 举行, should also be highlighted with contrasts and comparisons. The same can of course be said about dictionaries, whether traditional or electronic.

3.2.3 Grammar

Although the great amount of research on Chinese grammar has contributed much to our understanding of how the language works, the most effective way to teach grammar remains far from clear. While no one disputes the importance of grammatical competence, whether to teach grammar directly or indirectly via function and communication is still very much unsettled. For many years, various communicative approaches largely supplanted the villainous grammar-translation method, with its unabashed direct approach to grammar. But as is often the case with foreign language methodology, the pendulum has swung in the other direction in recent years. After moving away from grammar, there has been a renewed call for explicit attention to grammatical form (Ellis 2003; Yuan 2006).

However the theoretical pendulum swings, in practice it seems that the most prevalent form of grammar instruction in many classrooms is drills of some kind, such as repetition, substitution, and rapid-fire questions and answers. While the short-term effectiveness of these drills is obvious, it is rather dubious how long the skills thus obtained can be retained and how transferable they are to real-life communicative contexts.

On the other hand, the opposite problem may exist for functional and communicative methods, such as task-based and project-based instruction (Skehan 2003; Yuan 2006). While such attempts to contextualize, authenticate, and integrate discrete skills can more closely emulate real world communication than drills in isolation, designing tasks and projects to effectively target specific grammatical structures is no small challenge. Due to the multitude of requisite skills in vocabulary, grammar, and pronunciation, much planning and scaffolding is needed for students not to be overwhelmed by cognitive overload and lack of guidance. Classroom management is another challenge, given the fact that task- or project-based instruction often involves teamwork.

While it may be unrealistic to expect a perfect balance between form and function, the immediate task facing the teacher is to come up with practice formats that

allow the communication of meaning and the noticing of grammatical form at the same time. How well this is done, of course, varies with the background and creativity of the individual instructor, but it is important that all teachers be able to recognize the potential and limit of different formats in terms of their contribution to the learning of form and function. For example, questions and answers, completion exercises of various kinds (filling blanks, sentence-making/completion, information gap, etc.) and guided composition at more advanced levels can attend to both form and function to some extent.

3.2.4 Characters

Chinese character instruction has been characterized as "the elephant in the room" (Zhang 2009, p. 70), perhaps for good reason, and looms large in the learning and teaching of Chinese. Almost all CFL learners find characters to be the number one difficulty in the learning of Chinese. Yet frustratingly little has been done for this hardest area of Chinese language instruction. The expression "tiger head and snake tail" (虎头蛇尾) can perhaps be used to characterize the dwindling amount of attention to characters beyond the initial stage. For many textbooks, character instruction starts and ends with a general introduction to the origin and evolution of characters and an explanation of the basic principles of character formation and stroke order.

The reason why the development of effective strategies for character instruction is so prematurely stunted perhaps has to do with a fairly wide-spread, yet thoroughly mistaken, understanding of the nature of Chinese characters, namely the pictographic/ideographic myth. Despite vigorous efforts at debunking (DeFrancis 1984), the myth is still very much alive, as evidenced by the grossly misplaced energy spent on the ever greater profusion of study aids on the market that are motivated by the singular desire to relate the graphic shape of characters to their supposedly pictographic/ideographic origin (e.g. Chineasy). However well-intentioned these efforts may be, they are bound to be thwarted very quickly, as most Chinese characters are not amenable to such simplistic treatment.

The myth may also be responsible for the insufficient attention to graphic composition of compound characters. In its extreme form, as seen in some character workbooks, the stroke is taken as the basic (and only) graphic unit, and no other sub-character components are identified. This is a natural consequence of the pictographic myth, if we think of strokes as analogous to lines in drawings. A weaker form is the simplistic binary breakdown of compound characters, neglecting the existence of hierarchical structure in graphic components.

Attention to the different types of components in compound characters is also skewed. The component that seems to monopolize all the attention seems to be the semantic radical, which is assumed to encode meaning in a more consistent fashion. While the semantic radical does have its place in character learning, it is in fact quite limited in its meaning indicating function. While semantic radicals are said to convey meaning, they in fact at best only suggest the semantic category (for example the water radical having to do with water), but nothing more substantial. So they at

best can only be used as mnemonic tips. Since radicals are not always meaningful, they may even be of limited use there as well. Semantic radicals also tend to be graphically simpler and mostly occupy spatially peripheral locations.

In contrast, the phonetic component generally has a larger graphic bulk, a more central spatial location, and more internal structure. Functionally, phonetic components are more salient, as attested by native speakers' inclination to use them in guessing pronunciation and the creation of popular and dialectal characters based on the Rebus Principle. In a recent study by Williams (2014), elementary students in Taiwan were more inclined to use phonetic rather than semantic information in guessing made-up characters. The centrality of the phonetic component is at once consistent with the universal preference for phonetic scripts in general and the psycholinguistic research that shows that processing characters cannot bypass phonological processing (Tzeng and Hung 1981). It is also consistent with Myer's (1996) observation about the graphic "head" of characters, which he proposes to be located in the right-hand and lower part of a character (for example, the head in the characters 附 and 符 lies in the phonetic component付rather than the ear and bamboo radicals, respectively). Therefore, the phonetic component should receive proportionally more attention than the semantic radical if the whole character is to get a balanced treatment. Unfortunately, while the existence of phonetic components in most characters is acknowledged, their pedagogical utility has been downplayed.

Perhaps not unrelated to the persistence of the pictographic/ideographic myth, character instruction is also behind the times in many ways. Many character workbooks go no farther than look and copy, requiring students to copy model characters over and over the way native speakers traditionally learn characters. Some traditional practices have not been critically re-examined. For instance, old radical systems (most commonly the one with 214 radicals) are often adopted wholesale without questioning their pedagogical usefulness. Although radicals used to be indispensable for looking up characters in dictionaries, with the advent of electronic dictionaries, such as MDBG and Pleco, their utility has become limited.

The default assumption that the ability to hand-write characters is necessary is also quite outdated when typing is much more attractive an option for producing characters. In this connection, a more general issue of priority-setting should be raised. The default assumption of "four skills for every learner" and "learning characters includes hand-writing them" simply is untenable given the reality of most contexts outside of China, where foreign language resources and contact hours are severely limited. Priorities thus have to be set, depending on the goals of the learners and the availability of resources (Lu and Xie 2004).

The ability to produce characters by typing has heralded in a new age with profound and welcome changes and should indeed be considered a game-changer. Many of the minutia in producing characters have become outdated artifacts tied to the process of handwriting. In handwriting a character, one needs to know not just the graphic configuration of strokes but also the number of strokes, the shape, order, and direction of each stroke. Typing reduces the complex task of writing characters to two simpler tasks, namely, phonetic spelling and character recognition, both of which are independently needed anyway for learning Chinese. Typing has also minimized the differences in producing simplified and traditional characters.

Apart from sidestepping the difficulties of handwriting characters, many other pedagogical benefits also exist that go beyond the production of characters themselves. Unlike handwriting characters, typing Chinese naturally engages the learner in an intensive character recognition and differentiation practice. Word processors, with whatever input methods, force users to devote their undivided attention to the recognition of characters. Having to choose among related characters constantly sharpens character differentiating skills.

Phonetic input reinforces the sound-meaning connection in characters, which is crucial for character and vocabulary acquisition. Handwriting characters may bypass sound. But typing with phonetic input forces one to deal with sounds. Typing can also naturally enhance the awareness of recurrent phonetic components. While not all homophones share the same phonetic components, many in fact do. In phonetic input-based typing, characters sharing the same phonetic component often end up next to each other on the selection list.

Typing may also enhance the meta-linguistic awareness of the word as the basic linguistic unit. The convention of not leaving spaces between words has fostered the misconception of treating the character, rather than the word, as the basic unit of vocabulary. Most word processors, however, encourage the use of the polysyllabic word or phrase as the unit of input in order to cut down on the number of homophone choices. When efficiency is an issue, students may be more inclined to use the polysyllabic word as the basic unit of input.

Last but not least, unlike character sheet practice, which is most likely done outside meaningful contexts, typing is rarely used to produce isolated characters. In a truly "wytwys" (what you type is what you say, 我手打我口) fashion, typing Chinese brings the communicative and character-producing processes much closer to each other, with better association of sound and meaning and better synchronization of the mental act of thinking and the physical act of typing. At a more general level, typing Chinese enables easier synchronization of oral language and literacy instruction. Characters that are harder to write are not necessarily harder to type and recognize.

Paradoxically, hi-tech tools can also be used to help the handwriting of characters. eStroke can be used not only for the dynamic demonstration of character writing, but also it does a good job of highlighting character components. Hand-written character input, now available on iPad, iPhone, and Windows 8, can supplement typing when the pronunciation of a character is unknown.

3.3 Blind Spots and CFL/NLP as Reality Check

With its non-alphabetic script, a vocabulary having no cognates in most learners' native languages, and a dearth of explicit structural markings, the Chinese language does exhibit a number of special characteristics. Unfortunately, some of the special difficulties in learning Chinese have not been adequately appreciated by native speakers, who are likely to take things for granted.

Lu and Guo (1998, p. 10) suggested using CFL and NLP (natural language processing) as a reality check: "In so far as the results of research on modern Chinese grammar, Teaching Chinese as a Foreign Language and Chinese Information Processing can be considered a mirror and a litmus test" (translation by co-author Zhang).[3] Beiyu (2009, p. 7) puts it more explicitly: "Teaching Chinese as a Foreign Language and natural language processing by the computer have one great similarity, that is, neither can 'intuit' like native speakers the grammatical rules that we thought unnecessary to spell out" (translation by co-author Zhang).[4]

3.3.1 Blind Spots in Reading

NLP can indeed reveal reading difficulties that may be overlooked by native speaker teachers and researchers. Reading Chinese has been widely acknowledged as a bottleneck in the learning of Chinese. But there seems to be a curious discrepancy between reading-related research and practice and the basic concerns of NLP. In reading-related research and practice, much attention has been paid to high-level concerns, such as strategies (top-down vs. bottom-up), while very little attention has been given to low-level difficulties (except for characters), such as word segmentation, out of vocabulary (OOV) items (abbreviations, personal/place/organization names and translations of foreign names), and the parsing of (especially long) sentences. These "low-level" difficulties are exactly the ones deemed crucial in the computational processing of Chinese. Due to the printing convention of leaving no space between words, not to mention the paucity of grammatical markers, one basic stumbling block with computational processing of Chinese text is the identification of where one word starts and ends and the identification of parts of speech. Computers also struggle with the identification of names of various sorts that cannot be found in dictionaries, which are the basis for word identification.

However, these issues are not typically addressed by researchers and teachers. For example, they are conspicuously absent in a recent survey of CFL research (Ke 2012). Are CFL learners so different from computers? The following examples from the co-author's advanced level classes show that students do have significant problems with both segmentation and OOV items. 发展中国家was translated as "develop China home" with the wrong segmentation 发展|中国|家; 前日首相was translated as "previous day prime minister" with the wrong segmentation 前日|首相; 8次大陆 in 林洋港8次大陆寻根 was translated as "8 sub-continent," with the wrong segmentation 8|次大陆. In addition to the blind spots suffered by native speakers and teachers, another reason for the neglect of the basic difficulties in reading may be the influence of reading research and practice in English and other more commonly-studied languages where these particularly Chinese problems are not so relevant.

[3] Original Chinese:对现代汉语语法研究成果来说,对外汉语教学和中文信息处理可以说是一面镜子,一块试金石。

[4] Original Chinese:对外汉语教学和计算机自然语言处理有一个很大的相似性,就是二者都不能像本族人那样"意会"我们以为根本用不着讲的语法规则。

3.3.2 Blind Spots and CFL Instruction

The insufficient recognition of difficulties in learning Chinese may account for the lackluster implementation of some pedagogical innovations that were developed for languages other than Chinese. The great demands posed by basic tasks, such as vocabulary learning and grammatical parsing, may explain why methods like Krashen's Natural Approach (Krashen and Terrell 1983) do not work well for Chinese. The Natural Approach, which may be successful in the learning of related languages, may not be applied as successfully to Chinese. Adult learners of Chinese simply may not be able to acquire new materials through extensive exposure to comprehensible input alone, as there are few cognates and structural similarities between Chinese and most learners' native languages to make the input comprehensible. Extensive scaffolding of vocabulary and grammar in carrying out communicative tasks and time lags between the introduction of new content and its eventual use may have to be expected.

4 Concluding Remarks

The recent upsurge of interest in the Chinese language notwithstanding, CFL is still very much a developing field. After all, one of the oldest journals in the field, *JCLTA*, only started less than 50 years ago, and the oldest professional association in North America, the Chinese Language Teachers Association, USA (CLTA) only recently celebrated its 50th anniversary.

CFL education at the college level is in great need of professionalization and modernization. This is true of both research and practice, both global curriculum planning and daily classroom instruction. In this chapter, we have advocated building standards-based curricula. This includes using content standards as guidelines for curricular scope and sequence and adopting proficiency standards as benchmarks for articulation and assessment. While current CFL curricula generally address instructional goals in Communication, Cultures, and Comparisons of the Five C's, there is a lack of attention to Connections and Community. In the teaching of Chinese culture, also, the focus has been much more on cultural products and practices than perspectives. We have encouraged instructors to make a conscious effort to learn about such perspectives from Chinese culture specialists and integrate them into class materials and instruction.

In terms of curricular growth and reform, we echo the MLA's 2007 recommendation on the development of interdisciplinary courses. Such courses, we believe, will be able to integrate the various components of a Chinese Studies curriculum into a coherent and intellectually rigorous whole. A curriculum of this kind will also open multiple paths for students to complete various degree requirements.

At the level of day-to-day instruction, there is also much room for improvement. First of all, there is considerable variation in the quality and style of instruction, which can perhaps be attributed to divergent beliefs and uneven preparation of the

instructor, as well as the not infrequent disconnect between theory and practice in the CFL field.

On the one hand, while increasingly greater effort has been devoted to methodological concerns, there still seems to be insufficient recognition of the characteristics of the Chinese language, including its script, lexicon, and grammar. Various kinds of misinformation, for example the stubborn ideographic myth surrounding Chinese characters, does a great disservice to effective instruction. Some instructional practices, such as the disproportionate concern with stroke order or the manual production of characters in general, may need to be reconsidered in light of recent developments in technology (see the Appendix).

There are also areas of instruction that have not been sufficiently attended to, perhaps due to unwarranted assumptions on the part of native-speaker teachers and material developers. For example, there seems to be a lack of sustained attention to pronunciation beyond the beginning level. The teaching of vocabulary, which is particularly challenging in Chinese due to the lack of cognates and the pervasive presence of homonyms and near synonyms, generally plays second fiddle to grammatical instruction. It also takes processing by the computer to reveal blind spots in reading instruction, such as word segmentation and out-of-vocabulary items (names, abbreviations etc.). Underestimation of these low-level difficulties and failure to provide the requisite scaffolding can then lead to problems in implementing task-based activities that are presumably ideal for integrating form and function.

5 Appendix

5.1 Technological Resources (Alphabetically Listed)

5.1.1 eStroke (http://www.eon.com.hk/estroke/)

eStroke creates high quality animated stroke sequences that can be exported for development use. It can convert character text to pinyin or zhuyin. It can pronounce the character and its strokes. It also shows the corresponding Simplified or Traditional variants if there is one. Finally, it analyzes characters into components, which can be color-coded. Demo Version available.

5.1.2 Google Voice Input

Google Voice Input is an alternative to inputting search terms by typing. When the language option is set to Chinese (both mainland and Taiwan), Chinese characters will be inputted into the search field. Since obtaining the right character (i.e., search results) hinges on adequate pronunciation, this function can be repurposed to check the minimal acceptability of student pronunciation. The image option for Google

search can be used at even the pre-character stage since the form of feedback (i.e., search results) is visual rather than textual.

5.1.3 MDBG (http://www.mdbg.net/chindict/chindict.php)

MDBG is a free online dictionary, which supports multiple look-up methods and both simplified and traditional characters.

5.1.4 Pleco (https://www.pleco.com/)

Pleco is an English & Chinese Dictionary application for iOS and Android devices. In addition to its large number of words, it allows multiple ways of input, including Pinyin, English, and handwritten characters, but its most innovative feature is the OCR (optical character recognition) function. If the lookup item is clearly printed and lighting is adequate, its photo can be recognized as text, which then can be annotated automatically.

5.1.5 Siri on iPhone/iPad/iOS Devices

Siri was originally intended as a natural language user interface to answer questions, make recommendations, and perform Web services. It is included on iPhone/iPad and all iOS devices. Similar to Google Voice Input, Siri can be used to gauge the minimal acceptability of pronunciation when used as an input option, in that only adequate pronunciation can bring up the sought-after characters.

5.1.6 WaveSurfer (http://www.speech.kth.se/wavesurfer/)

WaveSurfer is a free software program designed for speech analysis. Its easy-to-use pitch-tracking feature provides instant visual feedback to students' production of tones and intonation.

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