Chinese character learning with the aid of an ICT website among Mandarin Second Additional Language learners in South Africa: A case study

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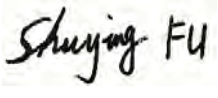
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by

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December 2021

Declaration

I hereby declare that this thesis is my original work, that I am the authorship owner thereof (unless to the extent explicitly otherwise stated) and that this thesis has not been submitted for a degree in any other university.

Signature: *Shuying FU*

Date: December 2021

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Abstract

The teaching of Mandarin as a Second Additional Language (SAL) in South African schools was only introduced in 2016. The year 2018 saw the first Mandarin as SAL National Senior Certificate examination. Little research has been done on the teaching and learning of Mandarin as a SAL subject at the high school level in South Africa. Character learning and teaching are some of the most challenging aspects of this language teaching and learning. This research sought to investigate how beginner Mandarin SAL learners can be supported by a particular Information Communication Technology (ICT) website, www.archchinese.com (Arch Chinese), in their character learning.

Learners' ability to memorise Chinese characters is of utmost importance for their success in this language learning, especially for matriculants. To support the main research goal, this study set out to investigate the requirements for Chinese character learning, the role the website Arch Chinese plays in learners' character learning and Mandarin SAL learners' experience of using Arch Chinese as a learning tool.

This research was conducted in the form of a case study within the interpretative paradigm. It adopted a questionnaire and document analysis for data collection to gain insight into the research topic. To get answers to the research questions posed above, the study analysed the Curriculum Assessment Policy Statement (CAPS) Mandarin SAL documents from Grade 4–12, the Independent Examination Board (IEB) Mandarin Subject Assessment Guidelines (SAGs), and a textbook for beginners, *Learn Chinese with me: Student's book 1* in relation to character learning. The features and functions of the website, Arch Chinese, were also evaluated and Mandarin SAL learners' answers to a questionnaire on their use of the website Arch Chinese were analysed.

The study found that character teaching and learning has not been given enough attention in the curriculum. It was only covered in the Intermediate Phase but was seldom mentioned in the Senior and Further Education and Training Phases in the curriculum. The CAPS Mandarin SAL documents do not consider the special characteristics of the Mandarin language, as this curriculum was based on the CAPS English Generic SAL document. As a result, the assessment requirements on writing (character count requirement in particular) were not realistic. The

teaching approaches promoted in the curriculum and the teaching time do not correspond well with the teaching and learning of this language.

Moreover, this study found that there was no vocabulary list prescribed in the curriculum and therefore a gap exists between the curriculum on paper and the curriculum in practice. The analysis of the IEB SAGs found that the assessments were suitable for the level of Mandarin SAL learners. This is because the IEB considered the characteristics of the Mandarin language, which is non-cognate, to the alphabet-based languages that respondents in this research spoke or were familiar with.

At the same time, the analysis of the website and the learners' questionnaire found that learners held a positive attitude towards their use of the website and that it proved to help facilitate Mandarin SAL learners in their character learning.

This study ends with recommendations for teachers, policy makers, the IEB, and character-learning websites.

摘要

南非政府于 2016 年将汉语作为第二附加语纳入中小学课程。 2018 年，汉语第一次作为第二附加语被纳入南非全国高中证书考试。

汉字教学是汉语教学中的难点之一，中学生掌握汉字书写非常重要，对十二年级毕业生取得好成绩更加重要。现有研究中有关南非中学汉语教学的研究极少。本文是在诠释原理理论框架下的个案研究。数据采集采用了学生调查问卷和文档分析。本文旨在探寻如何利用信息技术，即汉字学习网站 www.archchinese.com，帮助南非中学生学习汉字。

围绕以上研究命题，文档分析主要包括：南非四至十二年级汉语课程与评估政策纲要（Curriculum and Assessment Policy Statement）、独立考试委员会汉语评估指南 (Independent Examination Board Mandarin Subject Assessment Guidelines)中关于汉字教学及评估的相关内容，以及《跟我学汉语》学生用书第一册中的汉字教学内容。在此背景基础上，本文还分析了汉字学习网站 www.archchinese.com 的各项功能，评估其在汉语作为第二附加语学生学习汉字时发挥的作用。此外，本文还设计了学生调查问卷，对学生利用该网站学习汉字的体验进行分析。

经文档分析发现，汉字教学在课程与评估政策纲要中没有得到足够的重视。汉语课程与评估政策纲要以英语作为第二附加语的课程与评估政策纲要为依据，制定者对汉语语言的特殊性缺乏考虑。因此，其考试评估要求（特别是对写作字数的要求）不切实际。另外，文本分析还发现，课程纲要中未规定词汇表，课程纲要中倡导的教学方法和规定的教学时间不适于汉语教学。汉语课程与评估政策纲要在实际实施过程中与其书面规定不符。此外，对独立考试委员会的汉语评估指南分析发现，独立考试委员会确有考虑汉语本身的语言特征以及汉语学习者所习得的字母语言与汉语的差异，所以汉语学科评估指南适用于汉语作为第二附加语学习者的水平。

同时，本文对以上汉字学习网站的分析发现，该网站为汉语学习者学习汉字提供了逐步的详尽指导以及各种学习资源。此外，共有三十五名南非中学生参加了调查问卷，大部分学生对 Arch Chinese 持肯定的态度，其中笔画动画对他们帮助最大。总体来说，该网站有助于汉语作为第二附加语的南非学生学习汉字。参与问卷的学生也对该网站提出了一些改进意见。

本文结尾对汉语教师、课程制定者、独立考试委员会及网站设计者提出了一些建议。

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List of acronyms and glossary of terms

Arch Chinese	A Chinese character learning website, www.archchinese.com
BRICS	Brazil, Russia, India, China, and South Africa as a group of emerging economies
CAPS	Curriculum and Assessment Policy Statement
CEFR	Common European Framework of Reference
CFL	Chinese as a foreign language
Chinese characters	The writing symbols of Mandarin. They are called "square-shaped characters" as they are written in the form of a square
Components	Building units of Chinese characters that can be broken down into two or more components in a character
DBE	Department of Basic Education
FAL	First Additional Language
FET	Further Education and Training (Grades 10-12)
Hànzì 汉字	Chinese term for Chinese characters
HSK	汉语水平考试 Hànyǔ shuǐpíng kǎoshì; Chinese Proficiency Test
ICT	Information and Communication Technology
IEB	Independent Examination Board
IGCSE	The International General Certificate of Secondary Education
MALL	Mobile Assisted Language Learning
Mandarin SAL	Mandarin as Second Additional Language
NSC	National Senior Certificate
Pinyin 拼音	Chinese phonetic transcription indicating the pronunciation of a syllable. They are in the form of Romanised alphabets, and tones are added to indicate meaning, e.g. Hànzì

Pǔtōnghuà/ 普通话 Pǔtōnghuà	Chinese pronunciation for the term of Standard Chinese used as the national language in China
SAGs	Subject Assessment Guidelines
SAL	Second Additional Language
SBA	School-based Assessment
Simplified characters	Chinese writing system that has been reformed since 1955
Strokes/ 笔画 bǐhuà	The basic writing units that form Chinese characters
Traditional characters	Chinese writing system that was used before 1955
VELS	Victorian Essential Learning Standards

CHAPTER ONE

INTRODUCTION TO THE STUDY

1.1 Introduction

This chapter explains my interest and motivation in studying Chinese character teaching and learning and provides some information about Chinese language teaching from macro and micro perspectives. An overview of the study and the nature of Mandarin are also introduced.

1.2 Background to Mandarin Language Teaching

The Chinese language itself has different terms, such as Chinese, Mandarin, or Mandarin Chinese. Although they are interchangeable, there is a minor difference. According to Qi & Lemmer (2013), "in China, the term 'Chinese' is used in foreign language teaching… the term Mandarin is most often used in contexts outside of China" (p. 34). In the South African school context, this language is referred to as Mandarin and the subject is known as Mandarin as a SAL. Hence, the term Mandarin will be used in this study.

International Mandarin or Chinese education has been developing rapidly. Up to September 2021, more than 180 countries and regions around the world have established Chinese education, among them 76 countries have integrated Mandarin into their national education systems, and Mandarin courses have been offered in more than 80 000 institutions. These institutions include primary, high schools, universities, Chinese language schools and language education and training institutions. More than 25 million people are currently studying Mandarin outside China, and nearly 200 million people have been studying and using Chinese worldwide (One more country, 2021). On the African continent, as of 2016, 13 African countries have integrated Mandarin into their national curriculum as a foreign language, including South Africa, Mauritius, Tanzania, Cameroon, and Zambia (Li & Zhuang, 2020). These systems serve as useful comparisons to Mandarin teaching in South Africa.

South Africa and China have developed a close relationship in many ways. These two countries established diplomatic relations on 1 January 1998 (FMPRC, 2004). From year 2011 to 2017, South Africa had become the biggest trade partner of China, the largest importer of Chinese products in Africa as well as the largest African exporter to China (Regissahui, 2019). Moreover, South Africa became a member of the BRICS (Brazil, Russia, India, China, and South Africa) group of emerging economies in 2009. The diplomatic relations between South African and China were upgraded to "Strategic Comprehensive Partner" in the 2010 Beijing Declaration (Ross, 2016).

Teaching and learning Mandarin as a foreign language in South African schools is a recent development. The Department of Basic Education (DBE) announced the listing of Mandarin as a SAL in the National Curriculum Statement in the Government Gazette of 20th March 2015 (DBE, 2015, p. 3). The curriculum is called the CAPS Mandarin SAL (DBE, 2014, a-c). It covers three phases: Intermediate Phase (Grade 4-6), Senior Phase (Grade 7-9), and Further Education and Training (FET) Phase (Grade 10-12). In the current study, they are referred to as the CAPS Mandarin SAL documents. The subject Mandarin SAL falls into the category of non-official languages. Mandarin as a SAL became a school subject starting in 2016. The DBE intended to implement Mandarin teaching and learning in South African schools incrementally (2015, p. 3).

The introduction of Mandarin as a Second Additional Language in South African schools has been contentious. Some media referred to the teaching and learning Mandarin at schools as a "political ploy" and China was regarded as a "new colonial power" (The Conversation, 2015). It is commonly believed that there was no place for Mandarin at schools of this country as learners are still struggling with their home language and English (Nkosi, 2015). The largest teacher union, the South African Democratic Teachers' Union (SADTU) was strongly disapproving of Mandarin teaching in South African schools. SADTU believed that it was "a new form of colonization" (ibid). Mandarin as one of SAL subjects was, however, introduced in schools in this country and the IEB has been the driving force for establishing standards and assessment.

The IEB is an independent assessment body offering a range of certified assessments, including the National Senior Certificate (NSC) Examination. Although IEB operates under the private

school section, it has its own SAGs, its SAGs is based on the CAPS. The NSC examination under the IEB allows candidates to get international recognition (Botha, 2021).

Mandarin education in South African schools has been expanding gradually. Gqirana (2016) disclosed that the Minister of the DBE reported in her parliamentary written reply that 15 schools were offering Mandarin in the Western Cape, Eastern Cape, Gauteng, and KwaZulu-Natal in 2016. The department planned for 500 schools to offer Mandarin in five years. According to Nel (2016), ten schools from Gauteng introduced Mandarin in 2016. In 2018, there were reportedly 44 schools offering Mandarin (Shishenge, 2018). In 2019, 45 South African schools (both primary and secondary schools) were offering Mandarin and the number of learners taking Mandarin was over 7 100 (Ebrahim, 2019).

In contrast to the high number of learners taking Mandarin at schools (7100, cited above), the number of matriculants who wrote for the first Mandarin NSC Examination in 2018 was 16 candidates (Independent Examination Board, 2018) from private schools. In 2019, the number of Mandarin SAL candidates increased to 31, with eight candidates from eight public schools and 23 candidates from 18 private schools (Dai, personal communication, January 10, 2020). These low numbers suggest that Mandarin as a SAL is a challenge for non-native Chinese speaking students as so few of them take it to Grade 12 level. From my personal teaching experience and marking experience as an IEB Mandarin SAL Paper 2 examiner from 2018 to 2020, character writing is a difficult learning aspect and a great challenge for non-native Mandarin SAL learners.

There has been little research conducted in the field of Mandarin teaching and learning in South African high schools as the curriculum was so recently introduced. This research aimed to seek a deeper understanding of the perceptions, attitudes, and experiences of learners when they learnt Chinese characters with the aid of ICT tools. These tools could be learning applications, Chinese character learning websites, or software programmes in relation to Chinese character teaching and learning. The tool chosen for this study is from the website https://www.archchinese.com, hereafter called Arch Chinese.

1.3 Context of the Study

1.3.1 Research in South Africa on character learning at the high school level

Nel (2016; 2019) has been the main researcher of Mandarin teaching and learning in South African schools, including character learning. Nel et al. (2019) focused on three Grade 5 learners in a Pretoria school and how they learnt Chinese characters. Relevant findings from this research include the fact that learners preferred learning Chinese characters instead of Pinyin, the phonetic transcriptions in the form of Roman letters. Learners encountered many challenges when learning Chinese characters; remembering the sequence of the strokes was one of these. Chinese characters are composed of strokes, and it can be time-consuming and challenging for beginners to memorise which strokes make up the characters (Sung, 2014).

In Nel's research titled, *A comparative study on teaching and learning Chinese characters by school non-native Chinese learners in South African and China* (2019), the research respondents were all primary school pupils. However, I was not able to find research done on the teaching and learning of non-native Chinese high school learners in this country, let alone on a specific curriculum aspect. With this in mind, I conducted a case study research project among Mandarin SAL learners at a local school where I am currently teaching. Most of the Mandarin teachers in this country are dispatched from China through Confucius Institutes.

1.3.2 Role of Confucius Institutes in bringing native Mandarin teachers to South Africa

A bilateral agreement was signed between South Africa and the Chinese government in 2014 in relation to Mandarin teaching in this country. Minister of Basic Education, Angie Motshekga, disclosed to media (BusinessTech, 2016) that the Chinese government committed to "send 100 teachers and volunteers every year for the next five years from China … train 200 local Chinese teachers each year through local Confucius Institutes".

From the above-mentioned agreement, we can see that Mandarin teaching was heavily dependent on assistance from China. It was reported that Chinese textbooks and smart boards were donated to 10 schools in Gauteng by the Chinese ambassador to South Africa, Tian Xuejun. These schools were part of the Chinese language pilot programme offered by the Confucius Institutes and Confucius Classrooms (Tshipe, 2017).

The Confucius Institutes and Confucius Classrooms have been the main support for Mandarin teaching in South Africa. There are currently six Confucius Institutes and three Confucius Classrooms in South Africa. These are:

- Confucius Institute at Stellenbosch University (founded in 2004)

- Confucius Institute at the University of Cape Town (founded in 2007)

- Confucius Institute at Rhodes University (founded in 2007)

- Confucius Institute at the Durban University of Technology (founded in 2013)

- Confucius Institute at the University of Johannesburg (founded in 2014)

- Confucius Institute of Traditional Chinese Medicine at the University of Western Cape (founded in 2018)

- Confucius Classroom at the Cape Academy of Mathematics, Science and Technology (founded in 2009)

- Confucius Classroom at Westerford High School (founded in 2013)

- Confucius Classroom at the Chinese Culture and International Education Exchange Centre (founded in 2014) (Hanban, 2019)

The Confucius Institutes are mainly based at universities, while Confucius Classrooms are normally located in schools and are responsible for teaching local pupils. There are altogether 61 Confucius Institutes and Confucius Classrooms in Africa; South Africa boasts the largest number of Confucius Institutes and Classrooms on the continent. Confucius Institutes Headquarters was previously known by its abbreviation "Hanban", whose full name is Zhongguo Guojia Hanyu Tuiguang Bangongshi in Chinese. Its official English title is Office of Chinese Language Council International (Starr, 2009). In 2021 its name changed to Centre for Language Education and Cooperation (中外语言交流合作中心).

1.3.3 Micro-context of Mandarin teaching and learning

I have been teaching Mandarin in a private boarding school for girls in the Eastern Cape since January 2014. Since the school works in partnership with its adjoining brother school, both schools offer co-instruction, thus sharing teaching resources. This allows me to teach students from both schools. The school where I work is well equipped, with whiteboards, overhead
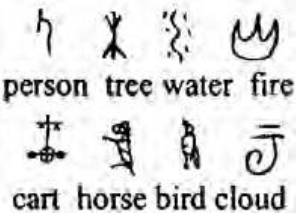
projectors, and interactive smart boards in the classrooms. The school's ICT department provides learners and staff with technical support. The programme Google Classroom has long been a part of teaching and learning as learners have their own laptops or iPads as part of their learning equipment. Restrictions brought about by COVID-19 have made ICT facilitated instruction appropriate. These features of the micro-context mean that an investigation into ICT supported learning was convenient and suitable.

In 2010, Mandarin was introduced as a half-year short course in Grades 8 and 9 for learners in these two schools. From 2016, this has gradually developed into a full subject not only as a SAL for Grades 8 and 9 but also as a First Additional Language (FAL) option that learners can take from Grade 8 to Grade 12 if they get immigration status. Our learners took part in the 2018, 2019, and 2020 Mandarin National Senior Certification examinations. In my teaching, one of the biggest challenges is the teaching and learning of Mandarin characters. Character misspelling appeared to be a common error in their writing. I have found that this issue arises repeatedly in the NSC Mandarin SAL examination each year when I mark the NSC papers as an IEB examiner of Mandarin SAL since 2018.

1.4 An Introduction to Chinese Characters

The Chinese writing system is one of the oldest writing systems in the world. Chinese characters, also called Hànzì 汉字 in Chinese, are the writing symbols of Mandarin. It can be traced back to 3 500 years ago when archaeologists discovered sheep bones carved with Chinese characters as physical evidence (Seman, 2002). These bones with characters were termed as 'Oracle bones' and were tortoise shells or animal bones. The shape of Chinese characters evolved over time. Table 1.1 on the following page explains the evolution of the Chinese characters. It is worth noting that the normalised form refers to simplified characters in this table.

Table 1.1: Historical Evolution of Chinese Characters

Major Periods		Major Forms	Most Popular Times	Characteristics	Examples
Ancient Writing		Oracle Bone Script 甲骨文	The Shang Dynasty (1711-1066 BC)	Character size and textual format are not consistent. Character form is complicated with pictographic and directive compounds.	person tree water fire / cart horse bird cloud
		Bronze Script 金文	The Zhou Dynasty (1066-256 BC)	Character size and formation are more fixed. Strokes are fuller and more rounded. Characters are more simplified.	
		Seal Script 篆书	The late Zhou Dynasty and the Qin Dynasty (221-106 BC)	Character form is more simplified. Writing method is consistent, and the character pattern is more orderly. Many of the strokes are lengthened, curved, and complicated. All characters are roughly square in shape.	
Modern Writing Period	Traditional Form	Clerical Script 隶书	The Qin Dynasty and the Han Dynasty (206 BC- 220 AD)	Characters are no longer pictographic, but more abstract ideographic symbols. Strokes are less curved, and their amount is reduced. Many of the components are simplified.	人木水火 車馬鳥雲

		Regular Script 楷书	From the late Han Dynasty to 1955	Characters strokes are straighter and smoother. Characters are clear and easy to write and read.	人木水火 車馬鳥雲
	Normalised Form		From 1955 to the present	1 027 variant characters are abolished. The number of strokes in 2 235 of the characters is simplified.	人木水火 车马鸟云

Source: Yin, 2006 cited in Wei (2014, p. 42)

As shown in the above table, the Chinese language is different from any alphabetic language as it is an *ideographic* language. Chinese characters are representations of the written language that transcribes the spoken language. A character is composed of sound (the pronunciation), a written symbol or shape, and meaning. Chinese characters are normally written within the boundaries of a square shape. Each character is composed of several different strokes that are the basic writing units. The number of strokes varies greatly with each different character, from one to 30. There are 28 types of strokes in total (Huang & Liao, 1981, as cited in Shen, 2004). However, the maximum number of strokes is as high as 31 as indicated in the following table (see Table 1.2) containing strokes (the first row in red) and example characters containing those strokes (the last row in red). Furthermore, each stroke has its own name as indicated in the middle row.

Table 1.2: Shape, name of strokes, example characters

	笔画	名　称		例字		笔画	名　称		例字		笔画	名　称		例字
1	一	横		大	11	一	横钩		你	21	亅	弯钩		了
2	丨	竖		十	12	乚	竖弯钩		元	22	乙	横折弯钩		九
3	丿	撇		八	13	㇛	撇折		去	23	㇄	竖弯		四
4	丶	点		主	14	㇙	竖提		良	24	㇈	横折弯		没
5	㇆	横折		口	15	㇗	竖折		山	25	ㄋ	横折折折钩		仍
6	㇏	捺		人	16	㇇	撇点		女	26	㇌	横斜钩		凰
7	㇀	提		地	17	㇉	竖折折钩		弟	27	㇅	横折折撇		及
8	㇆	横折钩		月	18	㇂	斜钩		我	28	㇋	竖折撇		专
9	㇚	竖钩		小	19	㇎	横撇弯钩		那	29	㇇	竖折折		鼎
10	㇇	横撇		水	20	㇟	横折提		课	30	㇜	横折折		凹
										31	ㄣ	横折折折		凸

Source: https://za.pinterest.com/pin/38139928073432340/

Non-native speakers of Mandarin are exposed to two different ways of representing the Mandarin language in writing: one is the phonetic transcription called Pinyin, which indicates the pronunciation of a syllable, while the other is characters that represent the written form and define the meaning of syllables. It is worth noting that Chinese characters form Chinese vocabulary. A character and morpheme are roughly the same. A Chinese character often represents a morpheme which is the smallest meaningful unit in a language. Most of the Chinese vocabulary is represented by one syllable. However, modern Chinese tends to have a large proportion of disyllabic words, namely, words consisting of two characters, as one character stands as one syllable. These disyllabic words are formed with different combinations of syllables (Shei & Hsieh, 2012).

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Character learning is deemed to be the most challenging part of this language learning which requires time, focus, and repetition. Statistics collected by Yang (2000) show that the average number of strokes of each Chinese character is about 12, which makes learning and retention of the characters difficult. Even for the most frequently used characters, the average number of strokes reaches eight (ibid). What makes it more complicated is the two character writing systems, namely, simplified characters and traditional characters. Simplified characters are mainly used in mainland China (the People's Republic of China), Singapore, and Malaysia. This has been the result of the writing reform initiated in the 1950s. Traditional characters are used in Hong Kong, Taiwan, and Macau (Yang & Wang, 2018). The pupils from the schools selected for this study learn simplified Chinese characters together with Pinyin.

1.5 Research Goal and Research Questions

As mentioned above, Chinese character learning is a key component in this language learning. The Mandarin writing system is completely different from the alphabetic languages that respondents spoke or were familiar with in this current study; thus, it can be challenging for Mandarin SAL learners to learn Mandarin Chinese which is a non-cognate language to them. Additionally, Chinese characters as the representation of this language are the most foreign aspect to them; however, memorising characters is key to their success in learning this language.

1.5.1 Main research question

The main research question was constructed as the following:

How can the ICT website "Arch Chinese" support non-native high school Mandarin learners in learning Chinese characters?

1.5.2 Research sub-questions

The main research question was supported by three sub-questions.

1. What are the main requirements for character learning in the classroom of the study?

This question was answered by investigating the requirements for character learning by analysing three documents. These included the CAPS Mandarin SAL Grades 4–12 documents, the IEB Mandarin SAL SAGs, and a Mandarin textbook for beginners. Requirements for character learning in the CAPS documents were scrutinised. Various components of characters,

such as stroke, stroke order, components of characters, and character writing were examined according to a Mandarin textbook, *Learn Chinese with me: Student's book 1* (Chen & Zhu, 2003).

2. What role does Arch Chinese play in character learning?

To answer this question, the features and functions of the website concerning character learning were analysed.

3. How do Mandarin SAL learners experience Arch Chinese as a learning tool in the learning of characters?

To answer this question, learners' responses to a questionnaire involving their perceptions and experience of their use of the website, Arch Chinese, were analysed.

1.6 Research Paradigm

This research focused on the character learning by Mandarin SAL learners in their use of a character-learning website, Arch Chinese. The respondents were Mandarin SAL learners from two high schools in the Eastern Cape, South Africa. Purposive sampling was adopted in this research, which was appropriate for this study. Most of the respondents were Mandarin beginners.

At the time of the survey, Grade 8 students had only been learning Mandarin for four months, and Grade 9 students for less than one and a half years. Grade 8 and Grade 9 students constituted a great proportion of the respondents.

A questionnaire on learners' experience of their use of the website was adopted as one of the research techniques. To support the main research question, the analysis of the role the website played, and the above-mentioned documents (see Section 1.4.2) related to character learning were integrated into this study. With these main data sources, the interpretative paradigm was appropriate for this research. The interpretive paradigm's position on ontology is relativism, which is the view that reality is subjective and differs from person to person (Scotland, 2012). This applies precisely to the learners' experiences and perceptions of character learning on the learning website**,** Arch Chinese**.** Furthermore, the analyses of the documents and website were also subject to personal interpretation.

Chinese character recognition, character writing, passage writing, editing hand-written newspaper, oral reading and story-telling consist of the training of learners' speaking and character application abilities (Yao, 2001, as cited in Zhao, Wang, Wu & He, 2011). Chinese character learning forms an important part of Mandarin language learning (please see detailed discussion in Section 2.5). The integration of ICT, namely, learning and teaching Chinese characters into the Mandarin language learning shifts the teaching approach from teacher-centred to learner-centred. It enhances Mandarin language learning as a whole in and outside the classroom.

1.7 An Outline of the Study

This chapter has presented my personal interest in character learning, and a general introduction to the contextual background of the thesis, the research questions, research paradigm, and the nature of Chinese characters. In Chapter Two, I present an overview of the literature regarding Chinese character learning and scrutinize the conceptual and theoretical frameworks in relation to character learning. I will explain the complex process of Chinese character learning, and how it is cognitively demanding because of the unique characteristics of the Mandarin language which is non-cognate to alphabetic languages. The Chinese language is a logographic language represented by Chinese characters. Therefore, the learning of Chinese characters involves Perceptual Learning theory, Character Standard theory, Levels of Processing Model, and dual-coding theory. These theories will be discussed as they relate to the focus of this study. In addition, visual-spatial skills and visual working memory are also closely related to character learning, which will be discussed in detail in Chapter Two. Chapter Two also presents some contextual background of the CAPS Mandarin SAL as well as the use of ICT in character learning.

In Chapter Three, I present the methodology of how this research was conducted. This research was conducted as a case study to capture, interpret, and analyse the experiences of the respondents in their use of the website Arch Chinese for character learning. This chapter gives a detailed description of the process of this research, which includes the research paradigm, data generation tools, sampling methods, and data analysis. To be more specific, document analysis and learners' questionnaires were used as data collection tools. An analysis of a set of documents, the website, and the learners' questionnaire came together to answer the main

research question. All features and functions of the website were investigated in detail. The analysis of the set of documents provided the contextual requirements for Chinese character learning for South African learners, especially for Grade 12 matriculants. A questionnaire was designed to investigate Mandarin SAL learners' experience and perceptions of the website. Finally, the ethical considerations and validity of this research are discussed.

In Chapter Four, I present research findings for research sub-question one, namely, the main requirements for character learning in the classrooms of the study. The requirements for character learning in the Mandarin curriculum and the IEB SAGs are analysed in detail. Additionally, a Mandarin textbook for beginners, *Learn Chinese with me: Student's book 1* is scrutinised for the components of character teaching and learning.

In Chapter Five, I present research findings on the role of the website Arch Chinese**.** The features and functions of the website are examined, and the role these features play in Mandarin SAL learners' character learning is analysed. The stroke animations, English-Chinese dictionary, worksheets, flashcards as well as extra information in relation to character learning are examined in detail. At the same time, data collected from the learners' questionnaire is used in this chapter to link learners' experience and perceptions of their use of this website.

In Chapter Six, I present the findings from the learners' questionnaire on their use of the website, Arch Chinese. Learners' attitude towards the Mandarin language, character learning, and the use of the website is investigated. Besides, their experience of using various features and functions of the website for character learning are probed. In this chapter, findings on challenges that Mandarin SAL learners face are also presented.

Chapter Seven draws together the main findings of the three research sub-questions. Recommendations for various parties, such as the curriculum policy makers, teachers in this country, the websites designers as well as the IEB, are made. Limitations of this study and possible ideas for future study on this topic are presented in this chapter as well.

1.8 Conclusion

This study aimed to provide some insight into Chinese character learning among Mandarin SAL learners, especially beginners at the high school level. It tried to explore how ICT can be used to support Mandarin SAL learners who were not familiar with this language. The features

of the Arch Chinese website and the role of these in the learning experience, together with an understanding of the parameters created by policy and assessment documents, and learners' responses, hopefully provided a comprehensive view of this topic. The conceptual and theoretical framework in relation to Chinese character learning is presented in the next chapter.

CHAPTER TWO

CONCEPTUAL AND THEORETICAL FRAMEWORK RELATED TO CHARACTER LEARNING

2.1 Introduction

This chapter presents an overview of the literature regarding Chinese character learning. Theories and concepts concerning character learning are discussed in detail. These include the formation of Chinese characters, Pinyin, Perceptual Learning theory, Character Standard theory, Levels of Processing Model, dual-coding theory as well as visual-spatial skills and visual working memory. Some contextual background on the Mandarin curriculum and learning characters with the aid of ICT are also presented.

Chinese characters are the representation of the Chinese writing system. Character learning is a complex learning process. First, it is cognitive learning as learners need to learn the meaning, pronunciation, and writing of the characters. Numerous repetitions are needed until one memorises writing the characters. Therefore, character dictations are a regular feature of Chinese Mandarin classrooms. The process of teaching and learning characters relates to the different above-mentioned educational theories. In addition, character teaching and learning as a foreign language or, in this current research, as a SAL in South African schools, means one cannot avoid a brief overview of the CAPS Mandarin SAL documents. More importantly, these conceptual and theoretical frameworks can be useful in Chinese character teaching and learning in and outside the classroom.

2.2 Introduction to the Formation of Chinese Characters

Chinese characters represent the Chinese writing system which "is an ideographic script in which graphic structure is directly connected to the meaning" (Seman, 2002, p. 4). Characters can be composed of six categories by the methods of character composition according to Xushen (58–147), an ancient writer during the Eastern Han Dynasty (25–220). Xu wrote a book called *Shuōwén Jiězì 说文解字* (Origin of Chinese characters), one of the oldest dictionaries

in the world. In this book, he analysed the characters and came up with six methods of character formation (The formation of Chinese, n. d.). These six methods include pictographs (象形 xiàngxíng), indicative characters（指事 zhǐshì), associative compounds (会意 huìyì), phonograms or phonetic-semantic compounds （形声 xíngshēng), mutually explanatory characters (转注 zhuǎnzhù), and phonetic loan characters （假借 jiǎjiè). The first four categories are about ways of composing Chinese characters. The last two methods refer to ways of using characters, which will be discussed in detail later in this section.

The pictographs look like drawings representing things directly, such as 山 (shān, mountain), 木 (mù, tree) and 日 (rì, sun). These kinds of characters cannot be divided into components thus, they are known as "independent characters" (The formation of Chinese, n.d.). This understanding is still applicable for current existing characters; however, it is made up of only one per cent of the characters in use today (Seman, 2002). The second category is indicative characters (指事 zhǐshì); these kinds of characters use graphics representing abstract ideas. Example characters include "上 shàng" (on, above) where the short horizontal line is placed above the horizontal line to indicate the meaning of above; "下 xià" below, under） where a dot is placed below a horizontal line to indicate the meaning of below or under. "Less than two percent of all characters fall into these first two categories (Kanji, 1999, as cited in Seman, 2002, p. 5).

The third type of character composition is associative compounds (会意 huìyì); in other words, characters are built on "two or more existing characters" (Seman, 2002, p. 5). The character "休" is a good example which is composed of "人" and "木" indicating an image of a person leaning on a tree, showing the meaning of this character: to rest. The fourth type, phonetic-semantic compound (形声字) characters make up the majority, taking up approximately 80 percent of characters (Feldman & Siok, 1999). As the name suggests, phonetic-semantic compound (形声字) characters consist of different components indicating the sound and meaning of the characters respectively.

The fifth category goes to 转注 zhuǎnzhù or mutually explanatory characters. These are characters that have the "same semantic element and are mutually explainable by comparison"

(Seman, 2002, p. 5). The last category is phonetic loan character (假借 jiǎjiè). Basically, an "existing character is borrowed to denote an unrelated word because of its similar pronunciation" (Seman, 2002, p. 6). In this way, a new meaning is added to an existing character. When we talk about the pronunciation of characters, we must talk about the phonetic transcription – Pinyin, which allows us to pronounce the characters.

2.3 The Phonetic Transcription – Pinyin

Chinese character learning involves pronunciation, meaning, and form or shape. The pronunciation is represented by Pinyin, a phonetic transcription. Chinese Pinyin is in the form of Romanised alphabets. Chinese Pinyin, whose full name is Hànyǔ Pinyin, is composed of three components. They are initials (equivalent to English consonants), finals (equivalent to English vowels), and tones. Finals can be further divided into simple finals – that is one sound – compound finals (containing two or more sounds), and nasal compound finals (sounds containing n, ng). Therefore, most Chinese syllables are composed of an initial, a final, and a tone. Besides, four tones are used to mark the syllables. Chinese is a tonal language, as the tone determines the meaning of the Chinese character. For instance, the pronunciation of character 妈 mā (mum) is composed of the initial "m", the final "a" and the tone "-". The initials are normally placed before the finals and the tones are placed over the finals. There are certain rules for tone marking as to which final should be marked over with tones (please see detail in 4.2.1).

Pinyin is in an alphabet form, which is very close to the 26 Roman alphabet. The only exception is the letter 'v' in the initials and an additional 'ü' sound in the finals (Zhang et al., 2020). The Pinyin letters correspond well to the sounds they represent and are relatively easy for English speakers to pronounce. It is believed that Pinyin is helpful in the learning of Chinese characters (Chung, 2002). There are two reasons for this claim. First, Pinyin contains phonetic components; second, Pinyin knowledge enables a person to pronounce new characters without the assistance of a teacher (ibid). The Pinyin system "has been shown to be a good system" (Tsai, 2011, p. 46). This system was adopted by the International Organization for Standardization in 1982 and by the United Nations in 1986 (Margalit, 2017). It is due to Pinyin that we can express words like Pinyin, place names like Beijing, and many others (ibid).

Understandably, all the respondents in this research preferred to answer in Pinyin instead of characters if they had a choice to answer their tests or examinations (see Section 6.6 for details).

Although Pinyin is close to alphabetic languages, it is not an easy task to learn due to the tones. In Chinese, there are four tones for character distinguishment, and mastery of tones has been indicated as a difficult learning aspect for non-native Mandarin learners. Learners are not sensitive to tones when they are absent in their home language. It is a common error that tones are not marked when respondents in the current study wrote in Pinyin which was confirmed in the research. McGuiness (1997) pointed out that most learners of Mandarin as a second language found the concept of using tones to change the meaning of a word "so far removed from their native English language experience as to render the mastery of tones problematic, neglected, or both" (as cited in Tsai, 2011, p. 44). Thus, the importance of tones must be emphasised. Like musical pitch, tones are determined by the pitch. According to the diagram below, the Mandarin pitch is divided into level 1 to 5; level 1 is the lowest and level 5 is the highest pitch.

The tones are symbolised by the pitch with " ¯ " as the first tone, the highest pitch. The second tone is marked as " ´ ", the third tone is " ∨ " and the fourth tone " ` ". Below are two illustrations of tones in a horizontal graph compared to a vertical diagram from the *Learn Chinese with me: Student's book 1* (Mandarin tones).
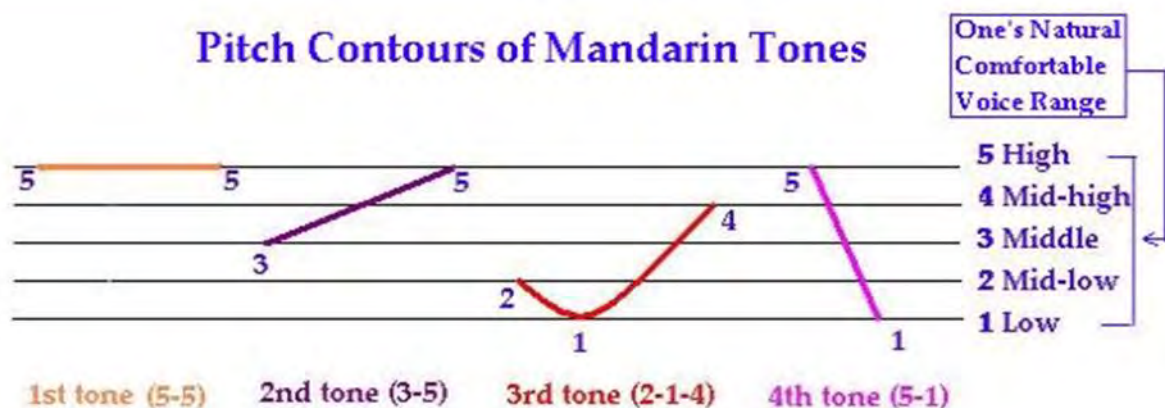
Figure 2.1: Mandarin tones (Massachusetts Institute of Technology, n.d.)
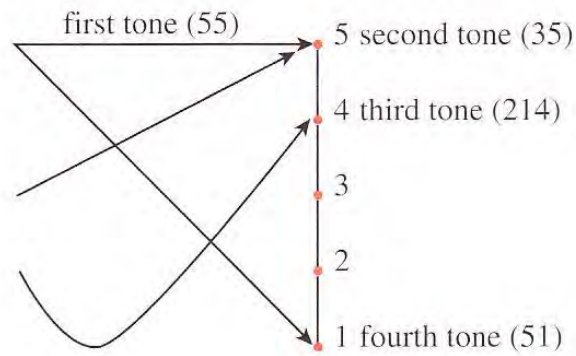
Figure 2.2: Tones from *Learn Chinese with me: Student's book 1* (Chen & Zhu, 2003, n.p.)

When teaching the tones, the tone pitch contours can be displayed by hand gestures accompanying the tones at the same time. The first tone is high and flat, with no change of pitch; the second tone is a rising tone, a similar tone when we ask a question in English. The third tone is falling and rising, a tone when you express surprise. The fourth one is falling. I always ask my learners what they would say if they were being pushed from the top of a mountain – you probably would say "aaah", a falling tone in exclamation. The table below can be a good example for explaining the tones.

Table 2.1: Mandarin tones in detailed explanation

Tone	Description	Tone depicted in Pinyin	Pinyin example	Meaning
1st	high and level	ˉ	mā	mother
2nd	rising	´	má	hemp
3rd	falling and rising	∨	mǎ	horse
4th	falling and stressing	`	mà	admonish

Source: Tsai (2011, p. 45)

These features reveal the complexity of Chinese character learning and also demonstrate how character acquisition requires a robust cognitive perceptual process which I will discuss below.

2.4 Perceptual Learning Theory

Chinese character learning is primarily a cognitive learning process that involves perceptual learning. Gibson (1971) believed that perceptual learning is "the learning of distinctive features and higher order invariants, learning progressing actively toward the most economical features and structure" (p. 1). The Chinese language has its unique writing structural features. Each Chinese character is unique, with "distinctive features" that learners need to learn. During this process, learners also need to learn the pronunciation, meaning, orthography, and semantic use of the character or combination of characters (words) in context. The process of learning Western, alphabetically represented languages, has been categorised into four features according to Gibson (1971): "phonological, graphic, semantic, and syntactic" (p. 1). A learner would need to grasp all four of these features for every word learnt. This is different from learning Mandarin characters, as is explained in the section of Character Standard theory below but provides a useful framework for understanding character learning.

When it comes to Chinese word learning, it mainly refers to Chinese character learning. Chinese characters are a combination of pronunciation, shape (the orthography or the glyph), and meaning (Ge, 2018). However, pronunciation or the phonological aspect of this language is presented by Pinyin, which is alphabetic due to the recent reform of this language in 1955. It was regarded as a part of China's westernisation scheme (Wang, 2011). The reform was a governmental move to standardise vocabulary and grammar, which was officially termed as "Pǔtōnghuà" in Mandarin, meaning "common speech" for the national language (Starr, 2009, p. 67). The reformed Mandarin language was based on northern Chinese; its writing symbols, namely characters, have since been called simplified Chinese.

Chinese characters, therefore, do not only have to be learnt for themselves, but also play a very important role in learning the Mandarin language itself. Teaching that is character-centred and integrated with words and phrases is known as character-standard teaching (Rao, 2010). This character-standard teaching is built on Character Standard theory which I will discuss below in detail.

2.5 Character Standard Theory

Character Standard theory (字本位 zìběnwèi, or Character-based theory) was first proposed by Tongqiang Xu in 1994. He proposed that the character was the most basic and important structural unit of the Chinese language. Firstly, the study of Mandarin is based on characters, which reflect the basic characteristics of the Chinese language. Moreover, the study of phonetics, semantics, grammar, and words all intersect in characters and character learning, therefore, they serve as the core and foundation of this language research.

Secondly, Xu believed that characters could form character combinations that further form sentences or form units of meaning equivalent to the Western "sentence," although not governed by rules of sequencing and grammar. This is completely different from Indo-European languages whose structural unit is the word, and the sequence of formation of language is morpheme-word-phrase-sentence-sentence groups. Below (see Figure 2.3) is a translated version of Xu's notion of language structural unit sequence in Indo-European languages and Mandarin (Chinese on the following page).
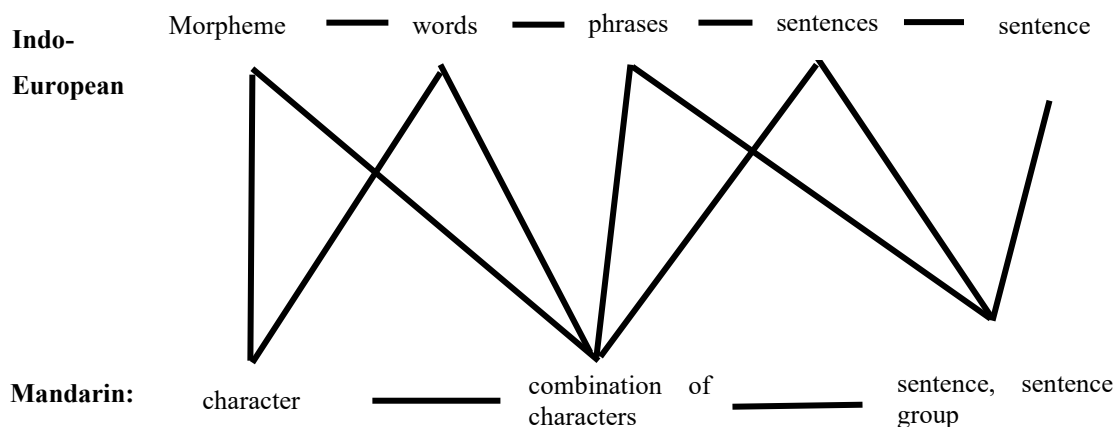
Figure 2.3: Comparison of the structural sequence of syntactic units between Chinese and Indo-European languages (Xu, 1994, p. 5)

The original diagram by Xu (1994) published in his *Syntactic structure of characters and Chinese* (字和汉语的句法结构) is included below:

印欧语：　词素 —— 词 —— 词组 —— 句子 —— 句群

汉　语：　字 —————— 字组 —————— 句子、句群
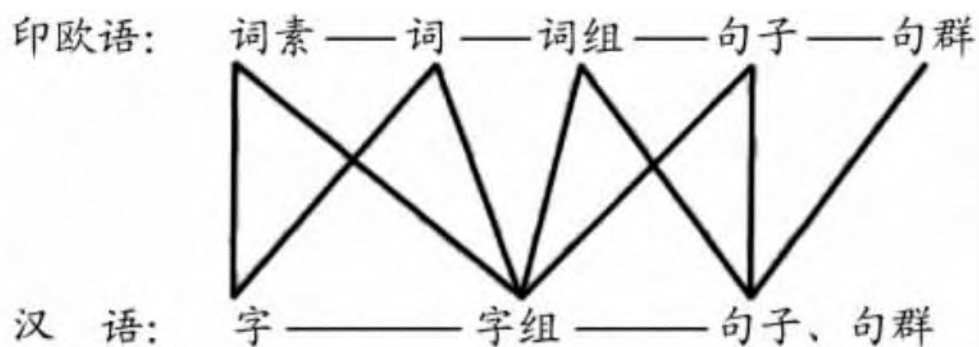
Looking at the structural sequence horizontally, in Mandarin, the boundaries of the structural units at all levels are blurred, they are continuous with each other, and there is no clear dividing line. Vertically, no structural unit of the two kinds of languages corresponds with each other. Words do not correspond exactly in Chinese. Once again, this signals the central importance of the characters to learning Mandarin Chinese.

Thirdly, the emergence of Character Standard theory also has an impact on understanding the structural framework of Chinese syntax. Xu (1994) suggested the new structural framework should be "topic-explanation", this is different from the Indo-European "subject-predicate" structural framework. The word in the Indo-European language is governed by the syntactic consistency relationship, so its grammatical function is fixed. However, Chinese characters are based on semantic laws, and have nothing to do with grammar rules, but only with units of meaning. In other words, the grammatical function of Chinese characters is analysed on a semantic rather than a lexical basis.

From above we know that according to Character Standard theory, the Chinese language can only be based on the characters. Hongjun Wang (2008) developed level divisions of characters, in which he supported Character Standard theory and proposed that Chinese characters form the units of monosyllabic speech (syllable), lexicon (morpheme), and text (in square-shaped characters) – and that these three (syllable, lexicon, text) form the Chinese language system. All these three aspects are character-based, but they are at a different levels or subsystems.

According to him, the character goes across three levels, namely, vocabulary, phonetics, and text. On the one hand, it highlights the pivotal system status of its cross-layer connection, and on the other hand, it specifically points out that a character is a unit of the lexicon. It must be pointed out that not all Mandarin linguists agree with this theory. For instance, Lu (2011) insisted that the morpheme should be the smallest unit of a combination of sound and meaning.

The explanation provided above of Character Standard theory illustrates that characters are not mere representations of Mandarin: they are integral to the language and its structure and use. Although Pinyin is provided as an alternative system to aid non-Mandarin speakers, only character learning provides access to the distinguishing features of Mandarin Chinese. Character learning is, therefore, extremely important in any curriculum and cannot be avoided for meaningful learning. In most cases, the number of Chinese learners presents a pyramid, with a great number of enthusiastic beginners, and a small tip of successful mature learners. The difficulty of character learning can be one of the contributory factors for English speakers as indicated by Hu (as cited in Yang, 2018). It is for this reason that the current study focused on character learning through the website Arch Chinese.

In this research, character learning was the focus of this study. However, the pronunciation in the form of Pinyin, characters, and vocabulary or text cannot be avoided in any way. Pinyin defines the pronunciation and characters define the meaning. Characters are the starting point of this language learning. It is of utmost importance that Mandarin learners make sure they can grasp characters, especially those who take this language up to matric level. How to achieve this goal then? Part of the work relies on teachers and the way they teach. Character Standard theory can be used or applied in character teaching and learning for beneficial results. Ding (2013) summarised a few concrete teaching methods in the application of this theory. I will discuss them below in detail.

2.6 The Application of Character Standard Theory in Character Teaching and Learning

Ding (2013) summarised several character teaching methods in the application of Character Standard theory. It includes teaching which focuses on stroke and stroke order, components, similar-shaped characters, centripetal and centrifugal expansion of characters, and cultural introduction related to Chinese characters.

2.6.1 Teaching based on strokes and stroke order

Chinese characters are composed of strokes that are written in a certain sequence (see Section 1.4). It is important to cultivate Mandarin SAL learners' good writing habits – Mandarin SAL learners need to learn the right stroke order. In general, there are some principles to follow when writing characters. These principles include "from top to bottom, from left to right" (see Section 2.9 for more detail).

2.6.2 Application of the concept of character family derived from Character Standard theory

"Character family" refers to a group of characters that have the same pronunciation and similar meanings. Taking character family as the starting point is helpful to improve students' ability to analyse and write Chinese characters; for instance, first starting with the character "工", then followed by "功" and "攻".

2.6.3 Teaching components

Components are made up of strokes and characters are composed of components. If a character is broken down into two or three components, there will be less content needing to be remembered; thus, students learn faster than if they are required to remember all the strokes. For instance, the character "明" is composed of "月" (moon) and "日" (sun). In ancient Oracle script, the character "明" was represented by a picture of a sun and a moon, which means brightness, the meaning of "明".

2.6.4 Similar-shaped characters teaching

There are different kinds of similar-shaped characters. The first type is characters with the same strokes but in different positions – for instance, "八" and "人". The second type is characters of a similar shape with different strokes. Such as "王" and "玉". The third type is characters with a similar shape and similar strokes but in different positions, for example, "土" and "工". The fourth type is characters with the same components, for example, "味", "妹", "昧". Comparing Chinese characters of a similar shape allows students to make a comparative analysis and better recognise Chinese characters.

2.6.5 Centripetal and centrifugal expansion of characters

Chinese vocabulary is based on the core character which forms different phrases through centrifugal (outward developing from a centre, that is characters which change the meaning into another concept) and centripetal (expanding, the English equivalent would be compound nouns or adjective+noun). For instance, based on 人 (people) as a central point, if combined with "好 hǎo", "真 zhēn", "大 dà" centripetally, new phrases can be formed such as "好人 hǎorén" (nice guy), "真人 zhēnrén" (real people), "大人 dàren" (adult). At the same time, it can be used the centrifugal way to form phrases like "人品" (moral standing; character), "人心" (human minds) and "人格" (personality), among others. The following Figure 2.4 on the next page displays these two ways clearly.

好 hǎo good

真 zhēn real

大 dà big

人 rén
person

好人 hǎorén (nice person)

真人 zhēnrén (real people)

大人 dàren (adult)

Centripetal

人 rén person

品 pǐn

心 xīn

格 gé

人品 rénpǐn moral standing

人心 rénxīn human mind

人格 réngé personality
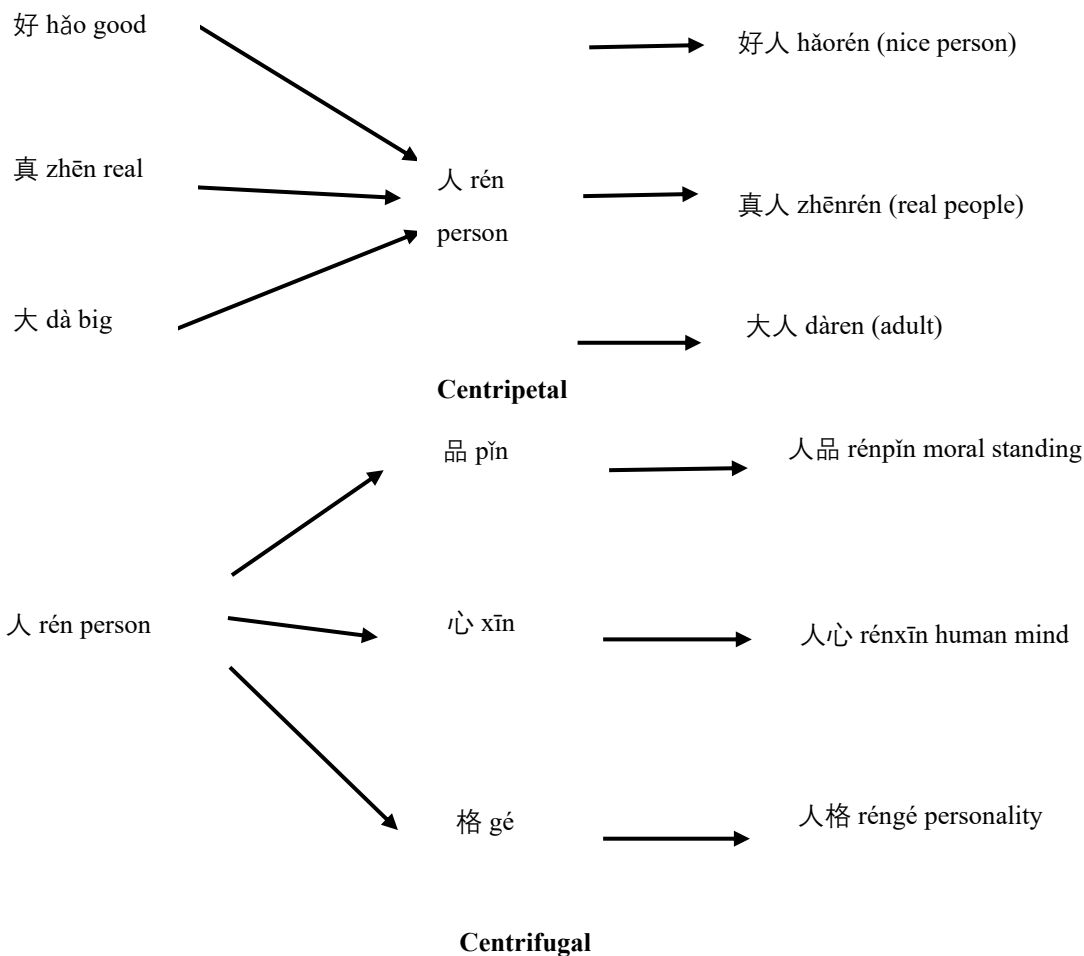
Centrifugal

Figure 2.4: Centripetal and centrifugal expansion of characters

2.6.6 Cultural introduction to Chinese characters

Chinese characters are a representation of Chinese culture, as Chinese thinking habits are reflected in the structure and use of Chinese characters. The introduction of culture to Chinese character acquisition can enrich learning. For example, when teaching the character "福" (blessing), a teacher can explain to students that Chinese people would paste this character on the door or wall during Chinese New Year and it must be put upside down. It means the blessing has arrived.

These above-mentioned teaching methods can help non-native speakers of Mandarin learn characters more efficiently and productively as this will enhance their understanding of Chinese characters and association will help them to remember that character. As the Mandarin SAL learners in this research mostly spoke English, these learners were exposed to a completely different language. The strokes and components were something wholly absent in the languages the learners in this study spoke or were familiar with (see 6.6). The character-learning process can involve word memory processing, which relates to the Levels of Processing Model.

It is worth noting that the French Chinese linguist Bellassen (1996) also advocated character-based teaching, which is not exactly the same as the Character Standard theory. Bellassen proposed that Mandarin teaching should start with Chinese characters. Chinese characters as a basic unit including "the characteristic shell (shape) of its writing symbols" is indisputably regarded as a major part of Mandarin teaching (Bai, 1996, p. 100). He believed that a separation of the spoken and written language in teaching is necessary. For him, character teaching should focus on stroke order, radicals, the components, and structure of each character as well as the source of each character – the shape change of every character from Oracle bone inscriptions to regular script, the culture in the character, the meaning and sound of each character, and the reason for character-to-character combination (Lu, 2011).

2.7 Levels of Processing Model

What makes learning and teaching Mandarin Chinese more challenging is that Chinese characters (the written form) and Chinese phonetic transcriptions (Pinyin) do not have sound-script correspondences. The retention of sound, character (graphic structure), and meaning requires both types of rehearsal strategies used for word memory processing according to Craik and Lockhart's Levels of Processing Model (Shen, 2004). To be specific, Type I rehearsal involves repetitions and rote-learning, which is a mechanical process, while Type II rehearsal is concerned with meaningful rehearsal that draws on memory and meaning making (Shen, 2004). This verbal memory processing model depends on the depth of the process (Shen, 2004).

According to this model, Type I rehearsal only allows for shallow processes in memory. That is why Mandarin SAL learners find it difficult to retain characters even after many times of writing. It is through making sentences and using characters in context (Type II rehearsal) that

students can make meaning of a character, which allows for deeper processing and better representation in their memory. Therefore, the best way of teaching is to combine these two types of rehearsal. Some empirical studies on word memorisation (Shen, 2004) suggested that learning characters as wholes, breaking them down into different components, or learning them in context, is Type II rehearsal. Components of a character normally have meanings, and in some cases, they can be independent characters. They can serve as a reminder or cue when remembering Chinese characters. Components, meanings of components, or character usage in context all belong to semantic-based encoding. Research has found that semantic-based elaboration increases retention (Zimmer & Engelkamp, 1999).

However, all the above-mentioned research or theories were focused on alphabetic writing. Shen (2004) conducted research on the effects on character learning among non-native learners of Mandarin as a foreign language by applying these levels of the cognitive process. Her research found levels of cognitive processing applied to Chinese character retention, that is to say, deeper processing (instructor-guided elaboration) enhanced retention of character learning. The Levels of Processing Model has some similarities with the dual-coding theory, which is an important theory in relation to character learning.

2.8 Dual-coding Theory and Chinese Character Learning

Dual-coding theory divides mental representation into two systems: verbal code and non-verbal code. The verbal code is composed of linguistic information, such as the meaning and the sound of the words. Non-verbal code is concerned with objects and events that are not related to linguistic information (Sadoski & Paivio, 2013). The non-verbal code mainly involves an imagery system that can be used to function for the analysis and transformation of mental images. According to Kuo (2015), characters containing radicals are more likely to evoke verbal and non-verbal activation as this differs from alphabetic languages. Radicals, a fixed structure composed of certain strokes, form a component of a character. Some radicals indicate the meaning of the characters, some function as the sound, i.e., the pronunciation. For instance, in the character "湖", the left component indicates this character is related to water, thus the meaning, so it can be called a semantic radical; the right component 胡 indicates the pronunciation of hú, so it can be called a phonetic radical. This type of character is categorised as a semantic-phonetic compound character. More than "80% of the modern Chinese characters"

learnt by the respondents of this study fall into this category (Kuo et al., 2015, p. 2). Moreover, Sadoski and Paivio (2013) further proposed that individual differences in visual skills and linguistic knowledge may also contribute to the three distinct dimensions of processing, i.e., "a) representational processing, b) associative processing, and c) referential processing" (as cited in Kuo et al., 2015, p. 4).

The frequency of occurrence of component radicals influences the time that a learner takes to learn them. If one knows the strokes comprising a certain radical, it will take less time than those one is not familiar with (Feldman & Siok, 1997). Thus, breaking Chinese compound characters down into components seems to facilitate second language learners' learning of characters. The Arch Chinese programme not only breaks the characters into animated strokes for easier memorisation but also explains the radicals and components as a further aid to memory. The website Arch Chinese provides a clear and vivid image of radicals and components as they are marked in different colours. In this way, users of this website will have a clear idea of them even though they do not have enough knowledge of the radicals and components. There are multilevel interactive activations involved in character recognition. Below is a diagram (see Figure 2.5) describing the different interactive activation levels devised by (Taft & Chung, 1999, p. 245):
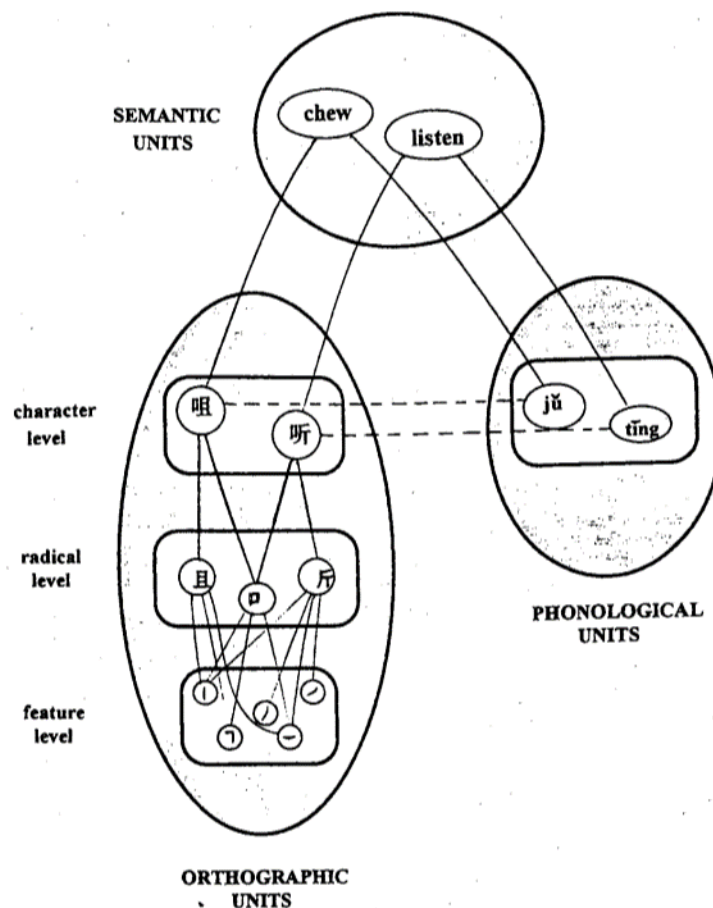
Figure 2.5: A multilevel interactive activation framework for considering Chinese character recognition (Taft & Chung, 1999, p. 245)

From the diagram above we can see that the semantic, orthographic and phonological units are all related to character recognition. The levels of activation are hierarchical and help with learning characters from different perspectives, such as radical, feature and character as indicated in Figure 2.4. Different combinations of radicals and components form various characters. They can be seen as building blocks to build up Chinese characters. Therefore, radicals play an important role in character learning.

2.9 Visual Skills and Chinese Character Learning

Due to the unique writing system of Mandarin, which is completely different from Western alphabetic languages, the Mandarin language has its own unique characteristics. Bellassen (2011, p. 4) summarised Mandarin as having the following characteristics:

- A tonal language

- A theme prominent language

- An orthoepic competence prominent language

- A language with a logographic writing system

To explain further, a tonal language refers to four tones of characters, a difference in tone means a difference in meaning. A theme prominent language is like what is discussed earlier in the "topic-explanation" structural framework in the Character Standard theory section (see Section 2.5). A language with a logographic writing system is a language in which written symbols represent the meaning instead of the sound. Chinese characters can be written in different stroke orders. There are six rules to follow in terms of character writing according to *Learn Chinese with me: Student's book 1* (Chen & Zhu, p. 70):

1) from left to right: 你 nǐ: you singular;

2) from top to bottom: 客 kè: guest;

3) middle preceding both sides, for instance: 小 xiǎo: small;

4) from outside to inside: 国 guó: country;

5) inside preceding the sealing stroke: 日 rì: sun;

6) horizontal line preceding crossing vertical or down-stroke: 十 shí: ten.

Character acquisition, therefore, also involves a complex visual process in which there are some visual skills required. I will discuss in detail various visual skills concerning character learning below.

2.9.1 Visual-spatial skills

Different writing stroke orders can be difficult for learners whose mother tongue is an alphabetic language. Chinese characters are sensitive to the position of strokes or components. For instance, a single dot added to the character 大 dà (big) can be 太 tài (too, high, or most) or 犬 quǎn (dog). The dot in different positions produces different characters. Character learning thus involves visual-spatial skills. Visual-spatial attention refers to attention given to the spatial location of a visually presented stimulus (Liu et al., 2016).

Visual-spatial skills play an important role in Chinese character recognition. Research has found that visual-spatial skills are not only important for native Chinese children in their literacy development (Liu et al., 2016; McBride-Chang et al., 2005) but also for non-native Mandarin learners (Shen, 2010; Xu et al., 2013). Chinese characters may be recognised due to their visual distinctiveness in initial character recognition (McBride-Chang et al., 2005). There can be two reasons underlying this. First, the Chinese characters are produced in square-shaped blocks, which is very different from alphabetic languages. The visual space that a character takes in the shape of a square is consistent. Secondly, the Chinese characters contain more visual information than English words (McBride-Chang et al., 2005).

Due to the complexity of Chinese characters, visual-spatial skills are needed. As discussed earlier on in the character writing structure in this section, the first stroke of a character can start from the left, top, outside or middle part of a character. This stands in sharp contrast to the alphabetic language, for instance, English, which starts writing from left to right only. Thus, visual-spatial attention may be particularly important for Chinese character acquisition as each character is written in various strokes. These strokes are in a bunch of lines like artwork. For most beginners of non-native Mandarin writing, Chinese characters are like "drawing" instead of writing (please see Section 6.5). Furthermore, there are quite a lot of characters with similar shapes, such as "土 tǔ" (earth) and "士 shì (solider), 已 yǐ (already) & 己 jǐ (self). It is obviously a demanding task for learners of non-native Mandarin to learn the stroke order of Chinese characters.

Visual-spatial attention is found to be related to success in vocabulary reading and writing for children who speak alphabetic languages (Liu et al., 2016). The same applies to Chinese

character learning. Research has found that there is a link between dyslexia in Chinese children and deficits in the visual magnocellular system (Liu et al., 2016). The visual magnocellular is believed to be the biological basis of visual-spatial attention (ibid). The study of Liu et al. (2015) supported the notion that visual-spatial attention played a role in Chinese reading. It was good to note that Liu (2015) established the association between visual-spatial attention and Chinese character reading and reading comprehension. McBride-Chang (2011) embarked on research on word reading and a task on visual-spatial skill with 215 Hong Kong kindergartners. The research found that good readers performed significantly better on the visual task than those less competent readers.

As mentioned earlier in Chapter One, Chinese characters can be written in two different versions: simplified and traditional. As the names suggest, simplified Chinese has been simplified, the number of strokes of characters are normally fewer. To be more specific, simplified characters have approximately 22.5% fewer strokes (McBride-Chang et al., 2005). How would children of native Chinese learners learning two different scripts perform in terms of visual skills? McBride-Chang et al. (2005) researched this. One hundred and eighteen Hong Kong children who learnt traditional Chinese and 96 Xiangtan children from mainland China who learnt simplified Chinese were tested for Chinese character recognition and were set a visual task involving three different visual skills. These three visual skills included visual closure, visual discrimination, and visual-spatial relationships. Research results found that visual-spatial relations had the strongest association with Chinese character recognition among children from Hong Kong and Xiangtan, regardless of the script they learnt. However, compared to Hong Kong children, the Xiangtan children learning simplified characters had significantly higher visual skills. This may be attributed to the fewer number of strokes in simplified Chinese characters. McBride-Change's (2005, 2011) research results once again confirmed the finding that the process of character acquisition can shape one's visual-spatial skills development and it is directional due to the visual complexity of the Mandarin writing system as discussed above.

2.9.2 Visual working memory

The goal of Chinese character learning is to enable learners to write the characters by rote and to know how to use them in context so that they can produce meaningful writing and understand the given texts in their senior years of schooling. Due to the visual complexity of Chinese characters, visual working memory is indispensable in character acquisition. Working memory is the ability to concurrently store and manipulate information that is necessary to perform mental tasks (Xu et al., 2020). Visual working memory allows for the storage of about three to four visual objects for a short period (Zimmer & Fischer, 2020). Due to the nature of working memory, visual working memory is assumed to have limited memory capacity. The capacity of visual working memory can be only one character (ibid). Despite this, visual working memory is considered important for word recognition among beginners of a language, which is especially true with logographic writing languages, such as Mandarin (Zimmer & Fischer, 2020).

Working memory is composed of multicomponent memory systems (Xu et al., 2020). These systems involve phonological working memory, visual working memory, the central executive system, and a newly proposed episodic buffer (ibid). To explain further, phonological working memory is a phonological loop that deals with spoken and written material. It is subdivided into the phonological store (which holds information in a speech-based form) and the articulatory process (which allows us to repeat verbal information in a loop). Visual working memory is also known as a visual-spatial sketchpad. It works for immediate maintaining and processing of visual non-verbal information, such as visual features and spatial analysis (Xu et al., 2021). The central executive system makes working memory and long-term memory work together while episodic buffers can link information together to create integrated units of visual, spatial, and verbal information with time sequencing (Baddeley, 2011). It is perceived to be related to long-time memory and semantic meaning (Baddeley, 2000).

All these components form a complete system that is effective in explaining reading and other cognitive processes (Zimmer & Fischer, 2020). Visual working memory can be seen as the first step towards character memorisation in long-term memory. As we know, Chinese characters are comprised of strokes and components are composed by strokes – these strokes and components in characters serve as visual word form representations. The items or material can

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be divided into chunks or units for memory. In terms of character acquisition, if one is familiar with the components or radicals of a character, these radicals or components can be chunked as units for memory. This will make character memorisation and recognition easier. If someone does not know the radicals or components, the character will be studied as one chunk; if it is a character with many strokes, it will increase the difficulty of memorising the character.

How these visual representations are cognitively processed can be individually different. A character can be represented as a perceptual token of word form type. This token is created through interactive activation of perceptual output and representations of the orthographic word forms in long-term memory (Zimmer & Fischer, 2020). To be more specific, the orthographic features, like the number of strokes and stroke patterns, are all involved in the perception process. Research findings confirm that the more familiar people are with the items they are to remember, the more capable of their working memory (Zimmer & Fischer, 2020).

Retrieving the sound, the shape (the orthography), and the meaning (semantics) of a character all contribute to the learners' difficulty in character learning for non-native Mandarin learners (Shen, 2004). Using modern technologies can facilitate character acquisition of non-native Mandarin learners, such as using stroke sequence animation programmes (Xu et al., 2013). Animations provide the pronunciation and meaning, but more importantly, they show the compositional visual chunking (radical/ component formation) one by one in a dynamic, visual way. Jin (2006) conducted research comparing three kinds of multimedia presentations focusing on radical presentations, stroke sequences, and pronunciation. The research found that radical formation was more effective than stroke sequence presentation in character acquisition. When learning Chinese characters, either by handwriting or practising via animation, Mandarin SAL learners can identify these radicals or components as visual inputs.

This may explain earlier the discussion that the visual chunking unit in visual working memory works better than stroke sequence in character acquisition among non-native Mandarin learners. This is the why the use of a character-learning ICT programme such as Arch Chinese was considered for research in terms of learners' experience and attitudes, due to the limited teaching time allocated to character teaching and learning in the curriculum.

2.10 Character Learning and the IEB and the CAPS Curricula

The South African Mandarin curriculum, officially known as the CAPS Grades 4–12: Mandarin SAL (DBE, 2014a-c) was first published in 2014 by the Department of Basic Education. Mandarin as a SAL is introduced in the Intermediate Phase (Grades 4–6), Senior Phase (Grades 7–9) and FET Phase (Grades 10–12). Languages in South African schools are offered at three different levels, namely home language, FAL, and SAL levels.

Mandarin as a non-official language, falls into the category of SAL level. The language focus of the CAPS Mandarin SAL documents is emphasised in stages. The focus in the Intermediate Phase is to build oral and literacy skills. Listening and speaking skills will be strengthened and their reading and writing skills will be developed in Senior Phase. Communicating in Mandarin at both interpersonal and social levels is expected in the FET Phase. By the time learners enter their matric year, proficiency in all aspects of language skills, including listening, speaking, reading/viewing, and writing/presenting the Mandarin language are expected (DBE, 2014, p. 11).

However, it must be noted that the CAPS Mandarin SAL documents are based on the curriculum of the South African English generic SAL curriculum. This applies to all the SAL curricula in South Africa and creates problems, especially with non-cognate languages. In this case, the Mandarin language has its own unique features that are different from English. This is because English and Mandarin belong to unrelated language families. "English is from the Indo-European language family and Mandarin Chinese is from the Sino-Tibetan language family" (Simons & Fennig, 2017, as cited in De Man, 2017, p. 32). It is said that the Mandarin writing system presents the highest contrast to languages such as English (Xu et al., 2013).

As mentioned above, due to the great differences between Mandarin and the languages South African learners speak or are familiar with, De Man (2017) pointed out that the concepts such as "transfer and skills mix approach" cannot, therefore, apply in the South African context, due to the non-cognate nature of Mandarin. More explicitly, the reading and writing skills Mandarin SAL learners have acquired in their Home Language or FAL cannot be transferred to their Mandarin SAL learning. In this case, Cummins' Common Underlying Proficiency theory, the basis of the CAPS language programme which promotes additive bilingualism, is not applicable. Besides, the CAPS Mandarin SAL documents do not take the complexity of

Chinese characters (detailed above) into account or allow for the extra time needed to learn them.

According to the Grade 4–6 CAPS Mandarin SAL document, although passages or formal assessment tasks can be written in Pinyin, a small number of characters still need to be learnt. Character writing is introduced in the first term of Grade 4, to be more specific, one to two characters are to be learnt in every two-week cycle and vocabulary is to be learnt in context (DBE, 2014a, p. 38). The time allocated to writing and presenting this section takes up only 35 minutes of each two-week cycle, accounting for 20% of the total time in the two-week teaching cycle (DBE, 2014a, p. 18), while listening, speaking, and reading take the majority of the teaching time (70%). The teaching and learning time of writing and presenting is further reduced to 20% in the Senior Phase (Grade 7–9) (DBE, 2014b, p. 15) and FET Phase (Grade 10–12) (DBE, 2014c, p. 20). There is no character-learning time mentioned in the curriculum from Grade 9 onwards, but learners are expected to supply characters for writing in these phases in summative assessments. For formative assessments in the Senior Phase, characters are preferred, and Pinyin could be used if needed (DBE, 2014b, p. 39).

Further complexity is introduced by the fact that South African languages are based on letter-sound correspondence while the Mandarin language has its phonological (Pinyin) and writing (characters) representations independent of each other. This means that there is no sound-script correspondence as explained earlier. Thus, learners' speaking and listening skills, which in the CAPS Mandarin SAL documents are developed first, do not help learners' reading and writing skills, and vice versa. The generic SAL programme aims to develop writing and presenting skills alongside listening, speaking, reading, and viewing skills. Another issue for learners of Mandarin as a SAL is that initially, they learn Pinyin and then gradually transition to character learning. This means that learners are taught two scripts (Pinyin and characters) for some time.

From my seven years' Mandarin teaching experience, it is evident that there is a gap between the curriculum on paper and the curriculum implemented. The CAPS Mandarin SAL document for Grades 4–6 (DBE, 2014a, p. 18) stipulates that each learner should be equipped with:

- An approved language textbook

- A reader/readers containing the following genre/text types:

  Stories

  Poetry

  Information texts

  Social texts

- A dictionary or word list.

- Access to a range of reading material to accommodate different reading levels e.g., a selection of readers with sufficient copies of texts at each level in a class and school.

- Texts for shared reading in Grade 4. These may be books or other enlarged texts or the prescribed textbook or readers.

The reality is that there was no approved language textbook except for the IEB prescribed work at the time this thesis was written and there was also no vocabulary list prescribed. The two schools involved in this study are both private schools, and students write their final year examination papers set by the IEB. Although the IEB has its own assessment guidelines, the approaches or principles underlying the guideline assessment document are the same as the CAPS Mandarin SAL documents, which is a communicative approach blended with text-based learning. Grades 8–11 have no curriculum requirements in IEB schools and teachers make their own decisions about content and textbooks. Many schools use textbooks imported from China as no textbooks are currently produced in South Africa. At a Grade 12 level, teachers must follow the SAGs and teach prescribed work provided by the IEB.

The complexity of Chinese characters poses a challenge for learners who are used to alphabetic languages. This has an impact on the pedagogy, especially when the teaching time allocated is insufficient. Mandarin SAL is an optional subject, and although Mandarin is offered from Grade 4 onwards in the curriculum, most Mandarin SAL learners only start learning this

language in Grade 8 due to the policy-practice gap (de Man, 2017). This applies precisely to the two schools of the current research and means that the pace designed in the curriculum cannot be followed. This puts students who take Mandarin SAL to Grade 12 under huge pressure.

Being able to grasp characters is also a prerequisite for matriculants to achieve good grades in their Mandarin SAL NSC examination. In their final year at high school, except for the oral portfolio, which is assessed internally but moderated externally, Mandarin SAL learners are expected to produce all their written work in characters. Their SBA portfolio prescribed by the IEB requires four pieces of essay writing, two written tests, and the preliminary Paper 1 and Paper 2 examinations in the recent two years (2020–2021). In addition, the year-end Paper 1 and Paper 2 examination papers are set and marked externally. Paper 1 and Paper 2 are presented in characters and Pinyin, but questions must be answered in characters. While Paper 1 concerns reading for meaning, Paper 2 involves various types of writing: essays, transactional texts, and reformulation of given texts. It is so important for Mandarin SAL learners to learn characters and to be fluent and confident when using them. As one of the examiners and chief markers of the Mandarin papers, I have found that character misspelling appeared to be one of the main causes of errors in the past years.

For learners of Mandarin to memorise characters, dictation has been part of character teaching and learning. For students who take Mandarin in their FAL timetable, new words dictation has been an indispensable part of teaching and learning in my class. Recent studies have found that regular dictation can improve second language learners' overall language competence and vocabulary accuracy in the long run (Li, 2020). Dictation involves listening, phonetically processing the vocabulary, and spelling accuracy. Non-native learners need to first distinguish the sounds, then select the words, and combine the sound and character. This is based on the learner's internalising the information and recording the speech in written form within a limited time.

It involves "an active analysis by synthesis process during dictating" (Li, 2020, p. 101). Due to the inconsistency between sound and character in Mandarin, dictation is particularly purposeful for "learning language in which the relationship between the sound system and the spelling is complex" (Davis & Rinvolucri, 1988, as cited in Li, 2020, p. 101). Dictation can improve

orthographic accuracy, raise learners' awareness of the composition of characters and become sensitive to the sound-form relationship.

2.11 ICT and Character Learning

Traditionally, memorising characters requires copying them repeatedly many times, which is tedious as well as time-consuming. Constant drills and numerous repetitions can reduce enthusiasm for learning a new language. Earlier research found that the most common character-learning strategy among non-native Mandarin learners involves repeatedly writing, using flashcards, and breaking down the compound characters into radicals and components (Shen, 2005). In other words, rote memorisation, graphic cues, context cues, and knowledge of radicals are all used in learning characters (Shen, 2005). While most character learning focuses on the three elements of character, that is, pronunciation, shape, and meaning, other than these, on the Chinese character acquisition level, Lin (2004) proposed four forms: namely, phonological comprehension, graphic comprehension, phonological production, and graphic production; these four forms are processed in the above sequence.

For character recognition, Jin (2006) found that learners focusing on the strategy of radicals outperformed learners focusing on character stroke sequence and studying Pinyin pronunciation in a post-processing Chinese character recognition test. However, ICT provides an exciting new way of learning Chinese characters, and it has been used more and more in character teaching and learning. In the computer-based character-learning strategies, including translation, verbal mnemonics, visual mnemonics, dual-coding mnemonics, or self-generated mnemonics, learners who adopt self-generated mnemonics strategies yield the best character recognition learning results (Sung, 2014).

Eady and Lockyer (2013, p. 7) defined technology tools as:

> Digital learning resources support information processing by helping students to develop mental representations through the mix of media elements presented to them. Digital learning resources include content and sometimes learning activities. They combine multimedia elements, including text, image, video and audio to present information.

The benefit of integrating ICT into teaching and learning Mandarin as a foreign language has been acknowledged. As Lin (2015) stated, technology integration has gradually gained

prominence in Chinese as a foreign language (CFL) programme, since computers and the internet, being free of many time and location constraints, have proven to be "highly convenient facilitators of CFL learning" (p. 1).

As well as allowing a great deal of repetition, the technology, including the website in the current research, Arch Chinese, allows students to engage with the characters by tracing and practising the stroke order of Chinese characters in a more interactive learning environment. Students can see the components and structure of the characters, and more importantly, it enables them to imitate and observe the writing process as many times as they wish. The programme chosen for this study, Arch Chinese, also provides a dictionary function and home language Mandarin pronunciation, demonstrating the stroke order and enabling the learner to practise writing the character with a finger. It offers a phrase or sentence which contains the syllable for practice. The potential benefits of these additional features to learners are to be further discussed in response to the research sub-question 2 in Section 5.4.3.

With all the features discussed above, learning of characters for non-native Mandarin learners is a complex process which involves many factors. While one can admit the fact that character acquisition is cognitively demanding, it is not an impossible task to achieve when the theories mentioned above are applied. Learners will benefit from the accelerated practice of the kind provided by an ICT tool if they want to achieve fluency and automaticity when reading and writing. With this theoretical framework in mind, in the next chapter, I turn to the research design decisions that were made to answer the research questions posed in this research.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents the methodology of this research and how it was conducted. The research was conceptualised as a case study within the interpretive paradigm. Detailed discussion on this research paradigm, the associated data collections tools, the data analysis as well as ethical and validity issues are provided below.

To seek an understanding of the Chinese character learning of Mandarin SAL learners with the aid of ICT, three sub-questions were proposed as follows:

Research Question One: What are the main requirements for character learning in the classroom of the study?

Research Question Two: What role does Arch Chinese play in character learning?

Research Question Three: How do Mandarin SAL learners experience Arch Chinese as a learning tool in the learning of characters?

Research Question One was answered by the investigation of a set of documents. These included the CAPS Mandarin SAL documents, the IEB Mandarin SAL SAGs, and a Mandarin textbook called *Learn Chinese with me: Student's book 1* for beginners.

Research Question Two probed the website and the role it played in Mandarin SAL learners' character learning.

Research Question Three sought an understanding of how Mandarin SAL learners experienced the website, and this was addressed in the learners' responses to a questionnaire. The findings to these questions could result in recommendations to teachers for character learning, both in terms of methodology and assessment. All of these research questions are related to an interpretive paradigm, which I will discuss below in detail.

3.2 Research Paradigm

As mentioned in the introduction of this chapter, this research adopted the interpretive paradigm, one of the research approaches used in social sciences, typically in the field of education. The main focus of the paradigm is on "how people make sense of their worlds, and how they make meaning of their particular actions" (Bertram & Christiansen, 2014, p. 26). The main focus of this study was on the Mandarin SAL learners and how they made sense of a character-learning website Arch Chinese.

3.2.1 The reality theory (ontological) of interpretivism

Interpretivists believe that "there is no single reality or truth about the social world, but rather a set of realities or truths which are historical, local, specific and non-generalisable" (Guba & Lincoln, 1994, Habermas, 1988, as cited in Bertram and Christiansen, 2014, p. 26). This means realities are subject to human interpretations and personal experiences. In this study, learner respondents' experience of their use of the ICT programme Arch Chinese varied due to their own behaviours and perceptions. This confirmed the interpretivist belief that reality exists in the human mind, and thus is socially constructed.

3.2.2 The theory of knowledge (epistemology)

According to interpretivism, knowledge is created through interpretation. "Interpretation of reality are culturally derived and historically situated" (Moon & Blackman, 2014, p. 3). Knowledge is determined by how people perceive and understand reality (Moon & Blackman, 2014). Reality is therefore subjective not objective. The epistemological position of interpretivism holds that "the world does not exist independently of our knowledge of it" (Grix, 2004, as cited in Scotland, 2012, p. 11). Knowledge and meaningful reality are constructed through the interaction of people and their world – they are developed and transmitted in a social context (Scotland, 2012). This is relevant to the current study as I, as the researcher, needed first to understand what the learner respondents meant in their responses to the questionnaire. How they responded to the questionnaire depended on their individual experience that shaped their perceptions of that website. Furthermore, the interpretation of the website Arch Chinese, the Mandarin CAPS, IEB SAGs, and the Mandarin textbook *Learn Chinese with me: Student's book 1* might lead to multiple meanings.

3.2.3 Theory of method

Interpretivism distinguishes itself from focusing on an individual case (Scotland, 2012). The methods it adopts "yield insight and understandings of behaviour, explain actions from the respondents' perspective, and do not dominate the respondents" (Scotland, 2012, p. 12). The methods can include open-ended interviews, focus groups, open-ended questionnaires, open-ended observations and so on. This study adopted a semi-structured questionnaire where most of the questions were either open-ended questions or multiple-choice with an invitation to respondents to explain their choice. Another method was document analysis concerning character learning, using the documents mentioned earlier in the introduction of this chapter, IEB SAGs, the Mandarin CAPS, a Mandarin textbook, *Learn Chinese with me: Student's book 1* and the website Arch Chinese. Within an interpretive this research, therefore, presents as a case study, the case in question being the learning experiences of a group of learners and their responses to a particular teaching tool.

3.3 Case Study

This research will be conducted as a case study to capture, interpret, and analyse the experiences of the respondents in their use of the website Arch Chinese for character learning. This resonates with the definition of the case study which is "a systematic and in-depth investigation of a particular instance in its context in order to generate knowledge" (Rule & John, 2011, p. 3). In this case study, character learning was investigated from different perspectives, namely, the perspective of learners, analysis of the website Arch Chinese and documents studied in relation to character learning and teaching. This, likewise, echoes the characteristics of the case study that Yin (1983, as cited in Hamilton & Corbett-Whittier, 2012) identified: exploratory, descriptive, and explanatory. This case study for my research was exploratory as it explored ways that can help learners learn characters effectively as well as improving my teaching competence in terms of character teaching. In the meantime, the qualitative and interpretative aspects of the case study were also reflected in this research. The learners' questionnaire, analysis of the website Arch Chinese as well as the study of the policy documents were qualitative and interpretative concerning character learning. This echoed Robert Stake's emphasis on the qualitative and interpretative aspects of the case study (Hamilton & Corbett-Whittier, 2012).

While the case study approach is broadly exploratory this interpretive methodology also requires descriptive and explanatory layers. The data collected from the questionnaire were descriptive as Mandarin SAL learners described their experience and perceptions of their use of Arch Chinese, as were the analyses of the research questions and the findings. This study described Mandarin character learning in South Africa and explained the difficulties that Mandarin SAL learners had when learning Chinese characters.

3.4 Purposive Sampling

I am the only Mandarin teacher at the school where I am working, and to my knowledge, there are only two schools in the Eastern Cape that offer Mandarin to its learners. Other than the one where I am working, the other school is a private boarding school for boys in the immediate vicinity (please see detail in 1.3.3). This research, therefore, used purposeful sampling for data collection. The respondents were the members of the Mandarin SAL and FAL classes I taught in 2021. The respondents were from two schools, a private boarding school for girls and a private boarding school for boys (please see detail in 1.3.3). Respondents came from six classes altogether: two Mandarin SAL classes, one for Grade 8 and one for Grade 9, the rest four were Grade 8, 9, 11, and 12 FAL classes.

Purposive sampling is suitable for case study research. As its name suggests, purposive sampling is directed by a particular purpose (Cohen et al., 2000, p. 156). This search, in the case of the teaching and learning of Mandarin characters through a website, in this case, Arch Chinese. In most cases, purposive sampling is used in relation to access to "knowledgeable people" (Ball, 1990, as cited in Cohen et al., 2000, p. 157). Depending on the grade, the time the learner respondents spent on this website varied, therefore, they all had some knowledge of how to use it. The advantage of using purposive sampling is that it provides depth to the study, while the disadvantage is that it can reduce the scope of the study, according to Teddlie and Yu (2007, as cited in Cohen et al., 2000, p. 156). Finally, purposive sampling fitted well with the interpretive paradigm and the data of this study was qualitative (Bertram & Christiansen, 2014).

There were altogether 47 learners taking Mandarin from both schools in 2021. In order to get as much data as I could, I hoped to get as many respondents as possible. To achieve this, I made a presentation to all the Mandarin SAL learners in class. The presentation included what my

research was about and what their involvement in the research would be. The headmasters of both schools were aware of the research being conducted at the school sites and permitted me to proceed in the written form (please see Appendix A). I showed the Mandarin SAL learners the signed permission letters of the headmasters as proof. Afterwards, I explained to them what the research ethical considerations were and how their identity was going to be protected. I showed them the assent form that they needed to fill in and the consent permission for their parents that needed to be signed. Students were confused about why they would use a pseudonym, but I explained the ethical considerations of conducting research and that my thesis would be made available to other researchers. Their words could be cited, and they would not necessarily want their identity to be revealed to people they did not know. The learners and parents were very supportive of this research project.

Out of the 47 potential respondents, 35 Mandarin SAL learners chose to participate in this research. These learners did not have any prior knowledge of Mandarin prior to starting Grade 8. For the SAL class, they normally have two lessons per week, but in 2020, due to the COVID-19 pandemic, they were allocated only one hour per week – imposing a greater challenge on them to learn this language, especially its characters. This was the reason why I chose this research topic, as I intended to find an alternative way of enhancing their learning, especially their character learning.

3.5 Data Generation Techniques

3.5.1 Data collection tools

To answer the research questions, this research adopted two data collection methods, namely, a questionnaire for students and document analysis. Each method will be discussed below.

3.5.1.1 Questionnaire

The questionnaire was designed to answer Research Question Three, as its purpose was to discover learners' experience of their use of Arch Chinese for character learning. The questionnaire contained two parts and consisted of 20 questions in total. The first part of the questionnaire contained five questions regarding learner respondents' background, for instance, their grade, gender, languages they were able to speak, and whether they took Mandarin as their SAL or FAL subject according to their timetable. Some of this information was collected

in order to provide a contextual description, but also to interpret the data, if, for example, learners had shown strong preferences. The second part of the questionnaire (15 questions) mainly asked for the experience of learner respondents in their use of the website Arch Chinese. This semi-structured questionnaire was a mixture of 15 open-ended, multiple-choice and closed questions that aimed to explore students' experience of learning characters when using Arch Chinese. Open-ended questions allowed respondents to give as much information as they would like, thus enabling me to get in-depth responses. There were also some closed and multiple-choice questions where respondents needed to explain their choice. In this way, the data generated were prevented from having little in common and being difficult to code and classify (Cohen et al., 2000).

Some of the multiple-choice questions also provided an option to give their own answer if there were no options applicable. In doing so, it allowed respondents to give their true opinions. In addition, it allowed respondents to select the choices that closely represented their views or experience. There was also one rank order question. Although this type of question was similar to a multiple-choice question, it provided more information in terms of priorities. It required respondents to value the importance of all options. Thus, all options needed to be considered to be ranked and the respondents needed to put all the options provided in rank order. The number of options for a rank order question suggested by Wilson and McLean (1999, as cited in Cohen et al., 2000) should be no more than five, in order to avoid respondents being overwhelmed. Thus, the rank order question in this questionnaire contained five options. In summary, this is consistent with the qualitative research design, as a semi-structured questionnaire enabled respondents to share their thoughts and personal experiences.

3.5.1.2 Piloting of the questionnaire

Before the questionnaire was administered to the Mandarin SAL learners in class, it was piloted among five learners from Grade 8 to Grade 12. A pilot of the questionnaire served to increase the reliability, validity, and practicability (Cohen et al., 2000). To be more specific, a pilot could help:

- to check the clarity of the questionnaire items, instructions and layout;

- to gain feedback on the validity of the questionnaire items, the operationalization of the constructs and the purposes of the research;

- to eliminate ambiguities or difficulties in wording;

- to check readability levels for the target audience;

- to gain feedback on response categories for questions and multiple-choice items, and for the appropriateness of specific questions or stems of questions;

- to gain feedback on reading questions (Cohen et al., 2000, p. 402).

This questionnaire was administered to Mandarin SAL learners in class at the girls' school mentioned earlier. The respondents handed it in after completion. This ensured a 100 per cent return rate of the questionnaires. In this way, respondents could ask questions if there was anything they were not sure about. Before administering the questionnaire, the respondents were again provided with an explanation of the purpose of the questionnaire and were assured that their identity would be kept confidential. They could, however, provide a pseudonym to be used in this thesis. I kept a reference list of the pseudonyms so that, if the questionnaire was illegible, provided contradictory data, or data that suggested further investigation, it could be followed up.

3.5.2 Document analysis

Besides the above-mentioned method, artefacts provided another source of data and in this case, study artefacts consisted of documents. Qualitative document analysis is defined as a research method for rigorously and systematically analysing the content of written documents (Wach & Ward, 2013). According to Bowen (2009) document analysis is a "systematic procedure for reviewing or evaluating documents – both printed and electronic (computer-based and Internet-transmitted) - material" (p. 27). "Documents of all types can help the research uncover meaning, develop understanding, and discover insights relevant to the research problem" (Merriam, 1988, as cited in Bowen, 2009, p. 29). Document analysis was used to answer Research Questions One and Two. To answer Research Question One, relevant policy documents such as the Mandarin CAPS from different phases (from Intermediate Phase: Grades 4–6 to FET Phase: Grades 10–12), the IEB SAGs for Mandarin, and a textbook for beginners called *Learn Chinese*

with me: Student's Book 1 were analysed. To answer Research Question Two, the website Arch Chinese was analysed to identify possible benefits, opportunities, or constraints when learners used it for character learning. This analysis assessed how these related to the recommendations in the policy.

Document analysis used in the interpretive study has serval functions. Bowen (2009) summarised five functions of document analysis. Firstly, the documents can provide data on the context. It helps the researcher get a better idea of the historical background of special issues. Secondly, the information contained in the documents could supply some answers to questions a researcher has asked. Thirdly, documents supply supplementary data for research. Information and insight derived from the documents can be valuable additions to the knowledge base. Fourthly, documents provide a means of tracking change and development. Fifthly, documents can be analysed to "verify findings or corroborate evidence from other sources" (Bowen, 2009, p. 30).

While document analysis can be used as a complement to other research methods, it can also function as an independent data collection tool. In my research, a questionnaire and document analysis were used as two separate instruments; yet, they supported each other, were intertwined, and served the main research question, namely, how Mandarin SAL learners could best learn Chinese characters. The next section focuses on how the document analysis was conducted.

3.6 Data Analysis

Qualitative data can be thick and lengthy due to its descriptive nature, but it must make sense. According to Cohen et al. (2000), there are seven ways of organising data analysis: two methods by people; two by theme or issue; one by instrument; one by case studies; and one by narrative account. The data analysis adopted in this study was organised initially by research instruments, especially as each instrument was also designed to answer a particular research sub-question. However, as the comments of the learners were pertinent to my analysis of the website, I included their comments in Chapter Five. Otherwise, the questionnaire data, the data generated in response to the website Arch Chinese, and the document analysis of the documents concerning character learning, have been organised and presented separately in three short chapters (see Chapters Four, Five and Six). The benefit of this data analysis method is that "this

approach retains fidelity to the coherence of the instrument and enables the reader to see clearly which data derive from which instrument" (Cohen et al., 2000, p. 552). However, to get a comprehensive response to the research question, this data analysis approach worked in conjunction with an analysis that focused on data provided by people, in this case, the learners of Mandarin SAL, and on the issue, which in this case was learning through ICT. Data collected from learners' questionnaires were analysed to answer Research Question Two and Three, while Research Question Two was answered by analysing data generated from an analysis of the website Arch Chinese, together with the learners' responses in the questionnaire as mentioned earlier. Further, the website analysis was not only used for Research Question Two but also for Research Question One where necessary. Thus, data were interwoven in this study.

3.6.1 Questionnaire

The questionnaire copies were numbered, and respondents were called by the pseudonym of their choice. Therefore, a list of respondents was made for data analysis. The following coding system was used for the method of data collection and respondents:

Table 3.1: Coding system for respondents

Type of data	Code
Learners' questionnaire	L-Q-1 （pseudonym）….

Questionnaire data were processed first. All responses of respondents were taken down and typed as raw data for each question on my laptop for further analysis. Data collected from the questionnaire were analysed through an inductive approach so that themes and patterns were identified. As Rule and John (2011, p. 75) pointed out, data analysis allows us to "construct thick descriptions, to identify themes, to generate explanations of thought and action evident in the case, and to theorise". It was through coding that themes or categories were identified. Kerlinger (1970) defined coding as "the translation of question responses and respondent information to specific categories for the purpose of analysis" (as cited in Cohen et al., 2000, p. 559). Coding enables the researcher to find similar information; it can be seen as a

categorising system where all related data can be included in the category or theme. A code can be a word, phrase, or short abbreviation as long as it makes sense to the researcher.

In this study, themes were identified through open coding for the questionnaire. Open coding creates "categories and defines their properties (the characteristics of a category or phenomenon or its attributes) and dimensions (the location of a property along a given continuum)" (Cohen et al., 2000, p. 561). These properties and dimensions can be marked in different colours, and I found this a useful initial device. Coding is a process of breaking down segments of text data into smaller units (ibid.).

Three steps were used to analyse collected questionnaire data: "describe, compare, relate" (Bazeley, 2009, p. 10). The respondents' background, such as their grades and the languages they spoke were described and analysed. Other than that, respondents' responses regarding their experience of using the website Arch Chinese were analysed through open coding to identify SAL learners' perceptions or attitudes towards character learning.

3.6.2 Document analysis

This section will discuss the process of document analysis. First, it started with a sample of texts. Document analysis as an instrument was used to answer two research questions, namely, Research Question One (What are the main requirements for character learning in the classroom of the study?) and Research Question Two (What role does Arch Chinese play in character learning?). In response to Research Question One, the Mandarin CAPS documents, IEB SAGs and textbook *Learn Chinese with me: Student's book 1* were analysed. For Research Question Two, the features of the website for Chinese character learning, Arch Chinese, were analysed to identify opportunities or constraints they provided for character learning. All of these were authentic materials that were in the public domain.

Document analysis involves finding, selecting, and synthesising relevant data in the documents and then identifying themes, categories and so on (Bazeley, 2009). It fits well into case study research. This is because "document analysis requires that data be examined and interpreted to elicit meaning, gain understanding, and develop empirical knowledge" (Bowen, 2009, p. 27). Document analysis involves skimming (superficial examination), reading (through examination), and interpretation (Bowen, 2009). Therefore, I first started with reading the

above-mentioned written documents as a whole, while browsing the website Arch Chinese. Afterwards, I read them again and again and looked for relevant texts that were related to character learning. Themes emerged after careful, focused reading and re-reading of the documents. "Thematic analysis is a form of pattern recognition within the data" (Bowen, 2009, p. 32). They were identified through coding and category construction. Document analysis as a method is a method of "systematically querying the data" (Altheide et al., 2008, p. 148). Analysis of initial documents led me to discover themes, which prompted me to conduct more searches for literature concerning the relevant themes. Various themes emerged concerning character learning and teaching of Mandarin SAL.

Even though documents can be a rich resource of data, select words and passages from the available documents should not just be lifted to fit into the research report. Documents should be examined as a whole, considering their original purpose when they were written, the audience they addressed and so on. The researcher should establish the meaning of the documents and their contribution to the issues being explored. The process of document analysis should be a process of developing understanding and empirical knowledge, and "the researcher should strive for objectivity and sensitivity" (Bowen, 2009, pp. 33–34). During the process of this research, my understanding of the CAPS Mandarin SAL documents from Grade 4–12, the IEB assessments, and character teaching with the aid of ICT was deepened. Through reading and analysing these documents and the website as one of the ICT learning tools, my knowledge was expanded. The empirical knowledge was presented as an account of the history of Mandarin teaching in South Africa in Chapter One. During the research process, Mandarin learners who were minors were involved; I was fully aware of their position and sensitive to their identity. Section 3.6 below explains in detail how I addressed these issues. Therefore, the comments and opinions they expressed and the experiences they shared in the questionnaire were true reflections from respondents so that objectivity and sensitivity can be achieved.

Qualitative data analysis requires a process of interpretation when interacting with data (documents). All data, data generated by the learners' questionnaire and document analysis, were analysed systemically with comparisons across the three data sets: the policy recommendations, the Arch Chinese website, and the learners' responses. These provided answers to the research questions mentioned above in Section 3.1.

3.7 Ethical Considerations in this Research

Ethics is an important consideration in research, especially when research involves respondents who are minors. In this study, the questionnaire respondents were all underage. There were three ethical principles that needed to be followed, namely autonomy, non-maleficence, and beneficence (Bertram & Christiansen, 2014). As mentioned earlier in Section 3.3, Mandarin SAL learners from all grades were informed of the aim, goal, and process of this research in a brief presentation made in class. I explained my role as a researcher to the students and their involvement in this research, namely, answering a questionnaire concerning their experience of using the website Arch Chinese. Questions were answered and issues were clarified in that presentation. I stressed that they were free to participate and also to withdraw from the research project at any time. I explained that it was also completely fine with me if they did not feel like participating. I believed that being honest and transparent was the best approach and their decision was respected whether they participated or not.

After receiving an approval letter from the Education Faculty Research Ethics Committee of Rhodes University, the following permission letters were sent, and permissions were obtained. These forms included:

1) Letter to the principals of the two schools requesting permission for learner respondents to get involved in this research. The letter similarly included a declaration form for signature.

2) Letter requesting parent/guardian permission for learners to participate in a Mandarin learning project. This letter included a declaration form where the parent or guardian could sign and give their permission.

3) Learner respondents' assent form for learners' signature (please see Appendix A).

Another ethical principle, non-maleficence, which means "do no harm", was taken into consideration. When involving minor students, what was of utmost importance was to make sure their personal information was not made public. I explained to the respondents that my research thesis could be published. It was made clear that their identity and privacy was to be protected, and that they were only identified on the questionnaire scripts by a pseudonym of their choice. The information they disclosed in this study would be kept confidential. Besides,

the content of the questionnaire the respondents answered did not involve respondents' performance or evaluation of teaching, but merely their experience of using the Chinese character learning tool, Arch Chinese. There were no right or wrong answers. The open and detailed responses of learners showed the extent to which they felt comfortable with this information. Lastly, the time I chose for the questionnaire to be answered was during school time. This ensured that students who did not participate were occupied and did not feel excluded. As the data collection tool involved written answers and was administered in a familiar setting, there was little chance of any physical, emotional, social, or other harm to any respondent.

Despite the above-mentioned measures, the learner respondents might still feel vulnerable. My position as their teacher might have made the learner respondents feel obliged to participate and respond to the questionnaire questions in the way they thought I would like them to be answered. While thanking them for their contribution, students were assured that there were no consequences if they refused to participate or withdrew after participating. All learners were treated with respect and dignity. The questionnaire aimed to find out how learners experienced the website Arch Chinese when they used it to learn Chinese characters. The learners had been exposed to Arch Chinese for their character learning for some time and some of them had been using it for more than a year. Therefore, they knew how to use it and they were aware of the features the website provided. It is worth noting that the questionnaire was not a test of their ability to write characters and that this was not assessed for the study. For the same reason, I chose not to use their marks and anonymised their questionnaires by asking them to use pseudonyms of their choice. I believed that learners would be reassured by this.

The last principle is that research should be beneficial. This research would firstly benefit me as I would be able to get a better understanding of the curriculum and how to teach Chinese characters more effectively with the aid of Arch Chinese. Additionally, this research would be beneficial to the learners who would work closely with the website and were more cognisant of its features. More importantly, from the research perspective, the subject Mandarin as a SAL was only introduced to South African schools in recent years. I was not able to find research conducted on the teaching and learning of non-native speakers of Mandarin at the high school level, or on a specific learning aspect of the curriculum. This research on character learning and teaching is probably the first of its kind at a high school level in this country. ICT could be

used as a useful tool to help learners mitigate the difficulty of learning characters and reduce the tediousness associated with the necessary repetition. Furthermore, this was an opportunity to research appropriate methodologies in a growing field of language learning.

Findings would not only impact my own teaching but would also be disseminated among the small group of colleagues who currently teach Mandarin in South Africa. In my role as an IEB examiner, I would be able to use the findings of the study to understand aspects of the examination papers that learners find particularly difficult. Finally, in the context of the pandemic, which may restrict face-to-face learning for some time, and also in the context of the move towards the increased use of technologies, an exploration of the possible uses and challenges of ICT tools would have lasting value. Finally, findings may resonate with other languages which also have different alphabets, such as Arabic, Hebrew, and Hindi, which are also currently taught in South African schools.

3.8 Potential Limitations and Validity of This Research

This research study employed limited research methods as it only used a questionnaire and document analysis. More comprehensive data might have been generated if observation or interviews were included in the methodology. The consideration of not including these two instruments was because of the uncertainty caused by the COVID-19 pandemic. The students had online lessons during most of 2020. By the time I finalised the research proposal, it was not clear what the pandemic situation would be and how it would affect schooling in 2021. Despite this disadvantage, this research remains reliable and trustworthy due to the following reasons discussed below.

3.8.1 Validity in data collection

Questionnaire and document analysis enabled the main question to be answered from different perspectives. This research aimed to meet Guba and Lincoln's four criteria on validity and reliability, which are "credibility, transferability, dependability, and confirmability" (1994, as cited in Bertram & Christiansen, 2014, p. 188).

Document analysis can be used with other qualitative methods to enhance reliability. By triangulating data, findings can be verified across data sets and thus reduce possible bias. As Patton (1990, as cited in Bowen, 2009, p. 28) suggested, triangulation "helps researchers guard

against the accusation that a study's findings are simply an artefact of a single method, a single source, or a single investigator's bias". This method of document analysis applies to qualitative case studies according to Stake (1995, as cited in Bowen, 2009). There were several documents included in the document analysis, including three phases of the Mandarin CAPS (from Grade 4–12), the IEB SAGs and a Mandarin textbook – altogether, five documents were used to address Research Question One, namely, to identify the requirements for character learning in the classroom. The same instrument was used to respond to Research Question 2 to determine the role that the website Arch Chinese played in character learning.

3.8.2 Validity in data analysis

Because this qualitative research was by nature an inquiry, there would be no correct answers to this research question. This study was, however, exploratory, descriptive, and explanatory as a case study should be. In this research, the exploratory nature of the study was to find out how Mandarin SAL learners could learn Chinese characters more effectively. The questionnaire data and data analysis to answer the sub-research questions were descriptive, while the analysis of the documents and website involved in this study was explanatory.

Maxwell (2012) also pointed out that there were three types of validity, namely descriptive validity, interpretive validity, and theoretical validity. First, descriptive validity refers to the "factual accuracy of their account" (Maxwell, p. 134). This means the description of data must be faithful to what it is. Interpretive validity mainly involves "respondents' perspective" (Maxwell, p. 138). According to Maxwell, the meaning of respondents' responses is always inferred by the researcher based on respondents' accounts. This relates to the data analysis as to how the data collected was to be interpreted. For findings to be valid readers need to be convinced that the researcher's inferences are feasible and believable. In order to achieve this, I read as much as possible so that claims were valid and feasible arising from the data and data analysis. Questionnaire data were examined numerous times to ensure its accuracy. The data were believed to be a true representation of learners' experiences and opinions concerning character learning because they answered under circumstances of anonymity so that what they had said in the questionnaire could not be traced back to them, even though they selected a pseudonym of their own choice.

When it came to the document analysis instrument, the documents were already existing. The key element was how to interpret the data. Altheide et al. (2000, p. 137) maintained that the following process could ensure the reliability and validity of the research when using data analysis as the research method:

> Interpretation in qualitative data analysis emerges as the researcher is *immersed i*n the community of documents, as he or she *converses* with them by considering them together as a community that can speak, and as he or she *tracks* his or her emerging interpretations in this very community of documents. Thus a nonlinear hermeneutic develops focusing on returning again and again to the community of documents.

This was what I did as well. I repeatedly went back to the Mandarin CAPS, the IEB SAGs, the Mandarin textbook *Learn Chinese with me: Student's book 1*, as well as the website Arch Chinese to make sure that the categories and findings were true representations of the data.

3.9 Conclusion

This chapter presented interpretivism as the guiding paradigm in the choice of methodology, a questionnaire and document analysis. It covered the issues of methods, data analysis, ethics, limitations, and validity of this research. The discussion provided a linear direction of how the research would be proceeding. In the next chapter, I present the first set of data gathered through curriculum and assessment documents and the Mandarin textbook to answer Research Question One, i.e., the main requirement of character learning in the classroom of the study.

CHAPTER FOUR

THE MAIN REQUIREMENTS FOR CHARACTER LEARNING IN THE CLASSROOMS OF THE STUDY

4.1 Introduction

This chapter focuses on the data analysis to answer the first research question, the main requirements of character learning in the classroom of this study. This section analyses a set of documents and a Mandarin textbook in terms of what the main requirements for character learning are, in the classroom of the study. The documents include the CAPS Mandarin SAL (Grades 4–12) and the IEB Mandarin SAL SAGs. The Mandarin textbook analysed for character learning was *Learn Chinese with me: Student's book 1*. Over the years of teaching Mandarin in South Africa I have found this text the most helpful for character teaching and therefore, chose it as an example to review. The learning aspects concerning character learning involve Pinyin, meaning, stroke, stroke order, components, and character writing. All these aspects are discussed in this section.

4.2 Requirements for Character Learning in the CAPS Mandarin SAL (Grade 4–12)

The CAPS documents focus on the development of learners' listening and speaking, reading and viewing, writing, and presenting skills. In the Intermediate Phase (Grade 4-6), the Mandarin SAL document puts forward specific requirements for Chinese characters learning in Section 3, "Overview of skills, content and strategies" (DBE, 2014a, p. 22). The requirements include:

1) Basic character writing with correct strokes and stroke order

2) Word writing e.g., lists

3) Sentence writing

4) Paragraph writing

Character writing is introduced from the first term in Grade 4. One to two characters are expected to be learnt every two-week teaching cycle and vocabulary is to be learnt in context (DBE, 2014a, p. 38). Other than that, basic words, or most frequently used words, such as pronouns like I (我 wǒ) and you (你 nǐ, singular) can be written in Pinyin. At the same time, Pinyin is introduced so that learners acquire the basic phonic knowledge of simple finals. Finals and other characteristics of Pinyin are discussed in detail in Section 2.3. Although the CAPS Mandarin SAL introduces Pinyin and characters at the same time, Mandarin reading and writing are mainly in Pinyin (Depart of Basic Education, 2014a, p. 34). It does not specify in the curriculum whether the texts to be learnt are in Pinyin or characters only, or in both scripts, which can be an issue for both teachers and learners.

4.2.1 Introduction to Pinyin and characters at the same time

Introducing Pinyin and characters at the same time to learners who learn the Mandarin language as a third or fourth language in this country can be problematic. As mentioned in Chapter Two (see Section 2.5), this language is completely different from the language(s) they spoke or were familiar with. Learners can be overwhelmed when they are faced with two completely different scripts at the very beginning of Mandarin language learning as these two scripts are wholly independent of each other. Each of them needs a fair amount of teaching and learning time. Even for native Chinese children, Pinyin is first introduced in mainland China at the beginning of Grade 1. It takes up to six weeks (one hour a day) to teach all Pinyin sounds (Ministry of Education, 2011, as cited in Zhang et al., 2020). Learners cannot pronounce the words or characters until they can sound out all the individual Pinyin sounds. The main purpose of the introduction of Pinyin is to help Chinese children to pronounce and recognise new characters (Zhou, 1958). However, it benefits non-native Mandarin learners a great deal when learning this language. This is because Pinyin is in the form of an alphabet, which is familiar to learners whose mother tongue is written alphabetically. It is exactly the case in this current study (see Section 6.6). Using Pinyin to introduce this language will be more easily accepted by SAL learners. A new character is normally presented with Pinyin on top of the character. As the Chinese characters are complex (as indicated in Sections 2.3, 2.4, 2.5, 2.7, 2.8), and the lack of sound and script consistency makes character learning a difficult task, Pinyin bridges "the gap between phonology and orthography in Chinese" (Wang et al., 2014, as cited in Zhang et al., 2020, p. 477). Therefore, my personal choice would be to introduce Pinyin first and then start

with character learning. This is possible in my own practice at a private school, but CAPS recommends that both are learnt simultaneously.

4.2.2 Limited teaching time allocation for writing in the curriculum

The CAPS Mandarin SAL is based on the CAPS English Generic SAL, and the time allocation is four hours per week and eight hours in a two-week cycle. Writing and presenting account for 25% of the total time allocation (DBE, 2014c, p. 20). The curriculum does not consider the characteristics of the Mandarin language or accommodate the time needed to meet the proficiency level expected in the curriculum. When it comes to the curriculum in practice, it is another picture. First, Senior Phase Mandarin learners in this current research started the subject from scratch in Grade 8, as they did not have prior Mandarin knowledge. This meant that they did not have the knowledge and skills prescribed for the CAPS Mandarin SAL Intermediate Phase (Grade 4–6). This put significant constraints on teaching time. The dilemma in this case, was how to meet the required level of proficiency when at least three years of teaching time was absent (see Section 2.10).

Secondly, in the school timetable, the Grade 8 and 9 learners only have two periods per week allocated to SAL subjects. The SAL subjects (Mandarin, Spanish, Latin, French, and isiXhosa are offered all as SAL at the schools of the research), and are not regarded as core subjects, but rather, knowing the language is regarded as a skill that can be used by learners to apply for the President's Award. Learners will stop studying the SAL languages when they enter Grade 10. Only those who get immigration status can take Mandarin until their matric year. These learners will have four hours per week as they take Mandarin SAL as a replacement for their FAL subject. Thus, they have Mandarin according to their FAL timetable, even though they will write the subject as a SAL in their final year in the IEB examination. The shortage of teaching time puts pressure on them.

4.2.3 No vocabulary list provided by the curriculum

In the FET Phase, word count (numbers of character) requirements for various types of writing are prescribed in the curriculum. For essays, Grade 10s should write between 200–300 characters, Grade 11s should write 250–300 words and Grade 12s should write 300–400 words. For longer transactional texts, Grade 10–12 learners should write between 120–150 characters for content only, while for short transactional texts they should produce 70–100 characters. The

word count requirement applies to all SAL subjects due to the requirement's generic nature but is calculated according to the English requirement. Note that this refers to words, not characters. In Mandarin, a word can be a character, two characters, three or even more characters.

In the CAPS Mandarin SAL Grade 10-12 document, the most relevant part is the "expression used in conversation – Reference List 1" (DBE, 2014c, p. 26), "language structure and conventions" (DBE, 2014c, p. 43), "Pinyin-reference list" (DBE, 2014c, p. 49), "the Chinese writing system: Character (stroke chart) and frequently used radicals" (DBE, 2014c, p. 52). It is a pity that no vocabulary list is provided in the three CAPS Mandarin SAL documents. Understanding the vocabulary range required at the teaching level is an essential guide to learning Mandarin which is omitted from the curriculum, as discussed in this section.

To have a comprehensive view on vocabulary requirements, I investigated the vocabulary requirement from other regions, such as Australia, the EU, International General Certificate of Secondary Education (IGCSE), and Chinese Proficiency Grading Standards for International Chinese Language Education (国际中文教育水平等级标准). When comparing the CAPS Mandarin SAL to Mandarin curricula or syllabi in other countries or regions, the absence of a vocabulary list is a major gap in the CAPS Mandarin SAL. In Australia, for instance, in the State of Victoria, the Victorian Essential Learning Standards (VELS) specified that Mandarin students are required to know "415 basic characters and 32 special terms or proper nouns" by the end of high school (Victorian Curriculum and Assessment Authority [VCAA], 2004, as cited in Liu & Bianco, 2007, p. 101). The curriculum design document separates languages according to different categories, and expected outcomes vary accordingly in the VELS. The dividing criteria are based on the nature of the language, namely, the orthographic systems, Roman alphabetic, non-Roman alphabetic, and character based (VCAA, 2004 as cited in Liu & Bianco, 2007). A comparison suggests that the South African CAPS Mandarin SAL is too generic: one generic CAPS English SAL fits all SAL languages, regardless of the special features of the language.

The same statements apply to the EU Common European Framework of Reference (CEFR), covering languages training and teaching in 47 European countries, which also provides a detailed vocabulary grading – it was even compared to the Chinese Proficiency Test (HSK《新

汉语水平考试大纲 Xīn Hànyǔ shuǐpíng kǎoshì dàgāng》) from China. Below is Table 4.1 showing vocabulary requirements at different language levels (Bellasen, 2011, p. 5).

Table 4.1: Vocabulary grading requirement of CEFR and HSK

Niveau HSK level 等级	Niveau de compétence CEF Level of CEFR competence 欧洲语言框架	Nombre de mots Number of words 词汇量	Duréed'étude Study duration 学习时间	Durée de l'épreuve Test duration 考试时间	Score 合格/总分
1	A1	150	1 semestre 学期	35 min/分钟	120/200
2	A2	300	2 semestres 学期	55	120/200
3	B1	600	3 semestres 学期	1:25	180/300
4	B2	1200	4 semestres 学期	1:40	180/300
5	C1	2500	>4 semestres 学期	2:05	180/300
6	C2	5000		2:20	180/300

Source: Bellasen (2011, p. 5)

The UK Cambridge IGCSE Mandarin Chinese is at a similar level to the CAPS Mandarin SAL in South Africa, as Mandarin is regarded as a foreign language at the high school level. A detailed vocabulary list has been provided under specific topic headings (Cambridge International, 2019).

The Chinese Proficiency Test (Hànyǔ Shuǐpíng Kǎoshì (HSK), 汉语水平考试) of Mainland China is the standardised test for non-native speakers, such as foreign students and overseas Chinese. This test gives proof of Standard Chinese language proficiency. The test is administered by the Hanban, whose name has changed to the Centre for Language Education and Cooperation (中外语言交流合作中心). Due to the recently published (23 March 2021) Chinese Proficiency Grading Standards for International Chinese Language Education (国际

中文教育水平等级标准) by National Language Working Committee of the Ministry of Education of the People's Republic of China （中华人民共和国教育部国家语言文字工作委员会） (Ministry of Education, 2021), HSK tests now have upgraded from Level 1–6 to Level 1–9. Each test level prescribes a detailed vocabulary list.

One might say that the Mandarin curricula or syllabi of Cambridge, Australia, EU, and China are already well developed and have been running for many years and that this is the reason why they are comparatively well conceptualised. However, on the African continent, the recent Syllabus Modern Chinese Teaching and Learning Grades 1 to 6 from the Republic of Mauritius (Mauritius. Department of Education, 2015) does specify a vocabulary list. A vocabulary list is provided in each grade and learners are expected to grasp a total of 600 words and phrases by the end of Grade 6. Chinese textbooks are also available (Mauritius. Department of Education, 2015). It is a pity that I only found a Grammar Syllabus for Modern Chinese Grade 7 to 9 in Mauritius as I would have found a full, detailed curriculum useful. It seems that the Mandarin curriculum in Mauritius is still in the process of being developed for high schools, however, the primary school curriculum provides a good foundation for its future curriculum. In the South African CAPS Mandarin SAL documents, a lack of vocabulary provides little guidance for character teaching, and although an investigation of curricula from other education systems is informative, these cannot be used as a guide. Only the CAPS Mandarin SAL documents can make recommendations on vocabulary range. Moreover, the communicative, text-based teaching approaches promoted in the curriculum neither provide examples nor help much in character learning. The teaching approaches in the CAPS Mandarin SAL documents are discussed in further detail in the section below.

4.2.4 Mandarin language teaching approaches prescribed in the curriculum

The CAPS Mandarin SAL document (Grade 10-12) requires learners to know the basics of the language, such as grammar, vocabulary, spelling, and punctuation (DBE, 2014c, p. 14). The aim of Grade 10–12 teaching continues to focus on listening and speaking; at the same time, vocabulary, sentence and paragraph construction, and grammar is further developed, and learners get ready for the examination at the end of Grade 12 (DBE, 2014c, p. 15). According to the curriculum, it is through the following teaching approaches to achieve this goal, which will be discussed below in detail.

In South Africa, the language teaching approaches are text-based, communicative, integrated, and process-orientated (DBE, 2014c, p. 19). I will first start with a text-based approach. Mohlabi-Tlaka (2016) defined a text-based integrated approach as "the teaching of language built on the exposure to, and the handling and manipulation of different text types" (as cited in Mumba & Mkandawire, 2019, p. 3). A text-based approach enables the learner to develop communicative competence through mastering different types of texts (Mumba & Mkandawire, 2019). This teaching approach focuses on the teaching of all four language skills (speaking, reading, writing, and listening). This is the same in the CAPS Mandarin SAL. The South African Mandarin SAL curriculum documents do not acknowledge perceptual learning. However, in this study, perceptual learning is found useful in this language learning.

With these teaching approaches, teachers are expected to integrate all language skills in teaching. The text-based approach (which is also theme-orientated) and the communicative approach both use a range of texts. The texts learners work with should be authentic texts. They can be literary and non-literary, written, or visual texts. At the FET Phase, "intensive reading comprehension at sentence and paragraph level" is expected from learners (DBE, 2014c, p. 32). The benefit of studying texts is that the meaning of the characters or phrases can be understood in context, and it helps learners to develop their reading skills. This is confirmed by what Tingting (2011) proposed – that new words, such as the meaning of the words and the "typical language environment from the texts" can be learnt through reading texts (as cited in Mumba & Mkandawire, 2019, p. 3).

The text-based approach is also a traditional Chinese language instruction method and the understanding of a prescribed list of texts is the main purpose (Han, 2000, as cited in Lau, 2007). As mentioned earlier, the CAPS Mandarin SAL documents emphasise the use of authentic texts. However, if texts are authentic, they will be only in characters. A prerequisite for students to learn a text in characters is to at least recognise Chinese characters and understand their meaning. In practice, Mandarin SAL students would struggle if texts were presented in characters only, as character learning is cognitively demanding as stated in 2.2, 2.3, 2.4, 2.5, 2.7, 2.8. It requires the application of theories like the Levels of Processing Model and dual-coding theory. The CAPS Mandarin SAL documents seem to have overlooked the time needed and challenges students face in the acquisition of Chinese characters. For this

reason, the IEB Mandarin paper provides both Pinyin and characters in the NSC examinations; such an approach is worthy of recognition.

The communicative approach is also promoted in the CAPS Mandarin SAL documents. This approach puts great emphasis on learners being exposed to "the target language and many opportunities to practise or produce the language" (DBE, 2014c, p. 19). Learners learn through a great deal of reading and writing. A communicative teaching approach suggests two aspects; one is to learn the meaning of a language and the other is to learn the communicative function of a language in order to learn the language (Adil et al., 2020). Thus, the function of communication is stressed. In this case, the teacher takes the role of facilitator. For non-native Mandarin learners learning in the absence of Mandarin language speaking environment, the opportunities for them to use this language outside the classroom are very rare. I might be the only person they can practise their Mandarin language with. It would be such a joyful event if they could speak Mandarin with someone in real-life. I still remember one of my students excitedly sharing her experience of speaking Mandarin with a Chinese person in Johannesburg. For students in a boarding school in a small town, such an opportunity does not come easily.

On the other hand, if there is too much emphasis on the function of a language, it might leave a gap in their knowledge of the formal aspect of the language (Swan, 1985). Reverting to Mandarin teaching, the development of speaking and listening skills of Mandarin SAL learners does not necessarily lead to their development of reading and writing skills. Although studies show that listening skills have a strong association with reading skills among Western learners who study alphabetic languages, the link in Mandarin is not the same (Tan et al., 2005). This is because Mandarin is a logographic language and is based on meaning (characters), not phonology as in alphabetic languages, which is explained in 2.1, 2.2 and 1.4. Instead, the reading ability of Mandarin learners is strongly related to their writing skills. Furthermore, the concept of transfer, namely that the skills acquired in one language can be transferred to another language, according to Cummings' additive bilingualism, does not apply in Mandarin. To be more specific, his common underlying proficiency proposal suggests that skills, concepts, and learning strategies can be transferred across languages (Cummins, 2016). The benefit of this is that instruction time for a second, third, or fourth language will be less. In the case of Mandarin learning, because it is non-cognate from languages the learners in the current study spoke, the reading and writing skills they had acquired from their home language, or their second language

could not be transferred to their Mandarin learning. De Man (2017) proposed a similar view on this issue (see 2.10).

4.2.5 Gap between curriculum on paper and curriculum in implementation

There is a gap between curriculum on paper and curriculum in implementation. There are no prescribed textbooks and other resources stated in the curriculum available to Mandarin teachers and learners in this country, although textbooks are mentioned in the curriculum as required resources. The choice of the textbook is made at the discretion of teachers except for the prescribed work from the IEB for Grade 12. Textbooks are normally delivered from China as no Mandarin textbooks are currently available in this country. Because of this, the material used for teaching varies at schools, and this can cause an unevenness in teaching and learning. What makes it worse is that teachers are not sure how many characters learners are expected to master and what specific characters should be grasped due to the absence of a vocabulary list in the curriculum. This situation also puts pressure on the Mandarin examiners. I have been an examiner of Paper 2 IEB Mandarin NSC examination from 2018 to 2020 and have been an examiner of Mandarin Paper 1 from 2021 to 2023. The same problem exists when setting the paper as I do not know whether a particular character or word is new to the candidates as I have nothing to refer to.

4.2.6 Unrealistic requirements in the assessment

As mentioned above, the curriculum is translated from the CAPS English SAL document. Because of this, the curriculum design, such as the pace, and more precisely, the teaching plan and the desired level of proficiency in all the language skills are all based on English. As indicated in 2.2, 2.3, 2.5, the Mandarin language has its own unique characteristics, which are complex, cognitively demanding, and time-consuming. Based on these, as a teacher and examiner of Mandarin Chinese, I find the formal examination requirement in the CAPS, shown below, unrealistic.

Table 4.2a&b: Format of Examination Papers 1 and 2

PAPER	SECTION		MARKS		TIME
1. Language in Context	**A: Comprehension** (A range of texts can be used including visual and or graphic texts) Length of texts to be used		(30)	120	Grades 10 –12: 2 ½ hours
	Grades	**Length of text (characters)**			
	10	300–400			
	11	400–500			
	12	500–600			
	B: Summary: Grades 10–12: 60–80 characters The passage should not come from the comprehension text. Length of the text:		10		
	Grade	**Length of text (characters)**			
	10	approximately 200			
	11	approximately 250			
	12	approximately 300			
	C: Language structures and conventions (assess in context) Vocabulary and language use Sentence structures Critical language awareness		40		

	Editing			
	D: Literature	40		
	Any ONE of the following:			
	Short stories (contextual questions on two stories)	(2×20)		
	OR			
	Poetry (contextual question on two seen poems)			
	OR	(2×20)		
	Short novel (contextual questions)			
	OR	(40)		
	Short drama (contextual questions)			
		(40)		

PAPER	SECTION	MARKS	TIME
2. Writing	**A: Essay** – One essay Narrative / descriptive Length of essay: **Grades** / **Length of text (characters)** 10 / 200-250 11 / 250-300 12 / 300-400 **Assess the following:** • Content & planning (60%) • Language, style & editing (30%)	40	

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	• Structure (10%)			
	B: Longer Transactional text- One text Friendly / formal letters (request / complaint / application / thanks / congratulations/ sympathy) / short report / review / speech / dialogue Length of text:		80	Grades 10–12: 2 hours
		Grades	**Length of text (characters)**		
		10–12	120–150 – content only	
	Assess the following: • Content, planning & format (60%) • Language, style & editing (40%)		20	
	C: Shorter transactional text – One text Advertisements/ Diary entries/ Postcards/ Invitation cards/ Instructions/ Directions/ Flyers/ Posters/ Filling in forms Length of text:			
		Grades	Length of text (characters)		
		10-12	70-100 – content only	
	Assess the following: • Content, planning & format (60%) • Language, style & editing (40%)		20	

Source: CAPS Mandarin SAL Grade 10–12 (DBE, 2014c, pp. 95–97)

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The above Table 4.2a&b indicate the aspects related to character requirements in the CAPS Mandarin SAL documents. As I am a high school Mandarin teacher, my discussion has mainly focused on the curriculum in the FET Phase (DBE, 2014c). Luckily, the Mandarin SAGs established by the IEB considered the special features of the Mandarin language and made some adjustments, which I will discuss below.

4.3 Mandarin SAL Subject Assessment Guidelines

The IEB is a South African independent assessment agency. It offers examinations for its client schools, which are mostly private. The main work of the IEB is to set NSC examinations for Grade 12 matriculants who write at the end of the year. The Subject Assessment Guidelines (SAGs) for Grade 12 divides assessments into two categories; one is the school-based assessment, which is assessed internally, but externally moderated by the IEB; the other is the examination requirement, namely, the NSC set and marked by the IEB. As I explained in 2.10, Mandarin SAL has been one of the IEB subjects since 2018 which saw the first Mandarin SAL examination in South African history. At the moment, all non-official language examination papers for NSC are set by the IEB and purchased by the DBE. This ensures that non-official language subject papers are written nationally, including Mandarin SAL papers.

4.3.1 Simplified and traditional writing versions for examinations

The IEB Mandarin SAL Paper 1 and Paper 2 are available in Simplified and Traditional Chinese versions, however, the examination content is the same. This is not only standard international assessment practice for Mandarin but also takes into consideration the diverse backgrounds of candidates and schools that have taught in different scripts. The examination papers clearly indicate the writing style version on the cover page. Both versions of the examination papers are sent to schools and candidates can choose the writing script (Traditional or Simplified) which they have studied.

4.3.2 The examination requirements on character writing

The IEB Mandarin SAL SAGs specify the number of characters candidates should know for Paper 2 as well as the text length in Paper 1. As mentioned earlier, the requirements have been adjusted according to the complexity of the Mandarin language. The IEB hosted a Mandarin SAL National Subject Forum meeting on the 26th of August 2015 to discuss how to apply the

CAPS document to the IEB SAGs. I attended the meeting at which the Mandarin SAGs were finalized. The current character count requirements were the result of consultation in that meeting. Below are the detailed examination requirements of the NSC Mandarin Paper 1 and 2 in Table 4.3a&b.

Table 4.3a&b: IEB Mandarin NSC examination Paper 1 and 2 requirements

PAPER	SECTION	MARKS		TIME
1. Reading and viewing language	**A: Reading for meaning: Unseen texts** (A range of texts can be used including visual and or graphic texts) Length of texts to be used:	60		
	Length of text (characters)			
	It did not specify (CAPS: 500–600) This section is testing comprehension only, not the ability to express in the language. Understanding of the passage, grammar, punctuation, and vocabulary is required. In the past examination papers (2018–2021) four unseen texts were set in this section.			
	B: Prescribed Texts The texts in this section are texts that have been prescribed for study for Grade 12 by IEB. Questions must be answered in Mandarin (in characters specifically) Length of the text:	40	100	Grades 12: 2 hours
	Length of text (characters)			
	Length of text did not specify.			

PAPER	SECTION	MARKS		TIME

| | Contextual questions were tested in two texts (one poem and one story) in the examination from 2018 to 2021. | (2×20) | | |

PAPER	SECTION	MARKS		TIME
2. Writing	**A: Essay** – One essay Narrative / descriptive Length of essay:	30	100	Grades 12: 2 hours
	Length of text (characters)			
	80-120 characters (CAPS 300-400)			
	Essay is expected to be written in Chinese characters.			
	B: Transactional texts – 3 out 4 texts Advertisements/ Diary entries/ Postcards/ Invitation cards/ Instructions/ Directions/ Flyers/ Posters/ Filling in forms Length of text:	30		
	Length of text (characters)			
	±100 characters (in the exam 120 characters in total, 40 characters for each text） (CAPS: 70-100 content only)			
	Texts are expected to be written in characters.			
	C: Language in Context- 1-2 texts **(Given texts' word count not exceeding 350 characters)**	40		

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	Length of text (characters)			
	Length of text did not specify for the answer in Mandarin SAGs; However, in the Paper 2 examination (2018-2020), there were two texts for reformulation tasks, 80-120 characters were required to produce for each task.	(2×20)		

Comparing tables in Table 4.3a&b for IEB Mandarin NSC examination requirements and tables in Table 4.2a&b for CAPS Mandarin SAL Grade 10–12 assessment requirements, it is easy to see that the main change is the character count requirement, which has been decreased in the IEB assessment. Some content in the CAPS Paper 2, such as the longer transactional text, is not included in the IEB NSC Paper 2 examination. The mark and time for Paper 1 and 2 for the IEB NSC examination are equally allocated, both 100 marks and two hours, whereas the allocation of time and marks for the CAPS Mandarin SAL Paper 1 and Paper 2 is the opposite. In the CAPS Mandarin SAL requirement, Paper 1 lasts two and half hours for 120 marks and Paper 2 two hours for 80 marks.

Apart from the external year-end examination in the IEB SAGs, a school-based assessment portfolio of prescribed tasks needs to be compiled and be ready for external moderation by end of October or November of the year. School-based assessment (SBA) was initially composed of 10 tasks comprising three sections. Section A consists of five writing tasks, which are divided into two subgroups. Subgroup One is composed of three written essays under test-controlled conditions and 80–120 characters for each piece are expected. The second subgroup includes two extended, or longer written essays and the length of the text is 150–200 characters. Candidates first write a draft which is assessed by the teacher. However, the teacher can only assess the draft with errors underlined and marked with correction codes, such as "GR" for grammatical errors. Essay writing is heavily weighted in the SBA portfolio. In total, it accounts for 60 marks (40 marks for three controlled pieces of writing and 20 marks for the two extended writing pieces). Section B consists of three tests and the total marks for this section are 20 marks. Meanwhile, Section C includes the preliminary examinations at school, which normally take place at the end of the second or third term in the Grade 12 year. This section accounts for 20 marks. Because of the outbreak of the COVID-19 pandemic in 2020, the IEB amended the

number of SBA tasks. One controlled piece and one test were deducted, bringing the number of tasks to eight instead of 10 in 2020 and 2021.

The IEB SAGs is based on the CAPS, thus the principles, such as text-based, communicative, process approaches are all equally applicable (please see Section 4.2.4). For instance, Mandarin Paper 1 is text-based as indicated in Table 4.3; Paper 1 mainly checks for contextual understanding. Although there is also an emphasis on the use of authentic texts, the IEB Mandarin NSC examination paper does include Pinyin with characters in the texts. This can be a great help to non-native Mandarin learners. This is not only because Pinyin is close to English alphabets that non-native Mandarin learners are familiar with, but also because providing Pinyin to the presented characters "reduces the interference caused by the prompts and enhances learning" (Chung, 2002, p. 15). Chung's research found that when Pinyin and English are presented as feedback seconds after the presentation of a character, learning the meaning and pronunciation of characters is more effective (2002). Pinyin will be further discussed in the analysis of a Mandarin textbook below.

Moreover, extended writing is a typical process approach where learners are allowed to write a draft first. In the drafting process, learners are allowed to check vocabulary and refer to similar texts. Their draft will be assessed, and they can edit and make corrections according to the comments of their teacher who underlines the errors and gives tips on what kind of errors they are by using a correction code. Learners have access to the correction code as well so that they can check against the correction code list. Only the edited or final version will be assessed for marks. This approach focuses on how a text can be written. Hyland (2003) mentioned that the process approaches "have a major impact on understanding the nature of writing and the way writing is taught" (as cited in Nordin, 2017, p. 76). It is a complete process of pre-writing, drafting, evaluating, and revising. Over the past years of teaching experience, I have found that learners normally performed better in the extended writing tasks than in the controlled pieces where they had to produce writing directly under test-controlled conditions.

Even though the examination papers are presented with both Pinyin and characters, all the SBAs are expected to be written in characters. Grade 12 matriculants need to write accurately, aesthetically, and fluently; writing, tests, and preliminary examinations are written under controlled conditions which requires students to be able to express themselves in characters. In

other words, they must have mastered a fair number of characters or phrases. Inadequate command of characters of candidates has always been a concern in the performance of the candidates in NSC examinations in the past years. As the examiner of Mandarin Paper 2 (2018–2020), I noted in my report to the IEB that inadequate command of characters has been a concern for the underperformance of candidates in the examiner's reports. This issue has been raised consistently. In 2018 the Examiner's Report (IEB, 2018, p. 221) stated:

> Another important contributing factor for misspelling was the lack of grasp of vocabulary of the candidates. This prevented them from expressing themselves freely and efficiently. In one extreme case, one candidate had to resort to Pinyin (the phonetics) for some words.

The importance of character writing was also mentioned in the 2018 Examiner's Report (IEB, 2018, p. 222) as some candidates failed to complete Paper 2.

> Some candidates struggled to complete the paper (Paper 2). This indicates the importance of adhering to the time allocation during the examination. Other than alphabetic languages, it takes time to write Chinese characters, this is particularly true for non-native speakers. It is suggested that training the candidates to speed up their writing is necessary in order to prevent this from happening again.

In the 2019 NSC Examiner's Report (IEB, 2019, p. 246), the issue of errors caused by character writing was mentioned again. The following quote not only gave detailed examples for misspelling but also raised the issue of strokes, in accordance with 2.10.

> The common errors made by candidates in this section (Section B, Paper 2) include misspelling, grammar and sentence structure. Candidates confused some similar words: such as 代 and 伐, 那 and 哪, 已经 and 以经, 工课 and 功课. Some other mistakes involving misspelling were incorrect strokes and failing to supply characters they wanted to express. Therefore, the importance of a good command of vocabulary cannot be overstated.

Similarly shaped characters (代 and 伐; 那 and 哪) and homophonic typo (characters with the same pronunciation 已经 and 以经, 工课 and 功课) are difficult characters to master.

In the 2020 NSC Examiner's Report (IEB, 2020, p. 229), the same issue was raised again in Mandarin Papers 1 and 2:

> Some candidates' writing ability was limited by their inadequate command of vocabulary. In one case, one candidate repeatedly had to use Pinyin to express meanings. Another common misspelling involved stroke errors.

And a similar issue was highlighted by the NSC Mandarin Examiner of Paper 1 in 2020 in the Examiner's Report (IEB, 2020, p. 227) as well: "Some candidates were marked down due to the difficulty of writing characters" (…其次由于汉字书写难度 2.2.1 也出现了扣分). Paper 1 does not require much writing as the main purpose of this paper is to check for understanding of the texts (see Table 4.3), but character writing still emerged as a problem. The Examiner's Report was a true reflection of candidates' performance. Writing the Examiner's Report was part of the responsibility of the examiner. I would like to reiterate that the above-mentioned comments expressed in the Examiner's Report were not made for the current study. I had no intention of pursuing my study in 2018 and 2019. However, my marking experience as an examiner did inspire me to take up this research.

The above analysis of the examinations gives us a clear picture of the importance of the mastery of character writing in this language learning. However, character learning has not been given its due importance in the CAPS Mandarin SAL document, although characters are expected from learners in the IEB assessments. How can this conflict be addressed? I will use one Mandarin textbook *Learn Chinese with me: Student's book 1* to illustrate what could be included in the character teaching and learning in the classroom.

4.4 Teaching Components in Character Teaching in *Learn Chinese with me: Student's book 1*

Learn Chinese with me is a set of textbooks designed for non-native Grade 9 to 12 Mandarin high school learners whose native language is English. This set includes Book 1 to Book 4 student's books, supporting workbook, teacher's book and visual resources (CDs). They have been used at the schools of the current study. The textbook analysed is *Learn Chinese with me: Student's book 1*, which is meant for beginners, as an indication of what is possible.

4.4.1 Pinyin sounds

In *Learn Chinese with me: Student's book 1*, the learning of the individual Pinyin sounds is not included in the lessons; only two tables containing all the sounds are inserted before Lesson 1 as an introduction. However, if non-Mandarin learners are to sound out the pronunciation of a character, they need to know how to pronounce all the individual sounds, which takes time and deserves proper teaching and learning (please see details in Section 2.3). Below are the tables listing all the Pinyin sounds in the textbook.

Table 4.4: Chinese phonetics (Hànyǔ Pinyin): Initials and Finals (n.p.)

Initials (声母 shēngmǔ)	b p m f				d t n l	
	g k h				j q x	
	zh ch sh r				z c s	
Finals (yùnmǔ) **(韵母)**	simple Finals (dān yùnmǔ) （单 韵母）	a	o	e	i	u	ü
	compound Finals (fù yùnmǔ) (复 韵母)	ai ao	ou	ei	ia ie iao iou (iu)	ua uo uai uei (ui)	üe
	Nasal compound finals (bí yùnmǔ) (鼻 韵母)	an ang	ong	en eng	ian in iang ing iong	uan uen (un) uang ueng	üan ün

Table 4.4, which in my own teaching practice takes at least two weeks of teaching, is inserted as a resource at the beginning, but it is not incorporated into the lessons and is not even provided with a page number. Instead, the Pinyin spelling practice is placed in the practice section from Lesson 1–9. But the prerequisite for learners to sound out the syllables is to know how to pronounce the above-mentioned individual Pinyin (finals and initials) sounds. It could be better to incorporate Pinyin sounds into the lessons properly. However, this textbook starts with a dialogue of daily Mandarin. The text is provided in both Pinyin and characters and the layout of Pinyin and characters are separated, with Pinyin in one column and characters in another column in the first six lessons. Thereafter, Pinyin is added to individual characters vertically. Learners are exposed to these two representations of the language, which can be overwhelming for Mandarin SAL learners if there has not been a proper introduction and careful organisation of the sequence of Pinyin and characters when introducing them.

In my own teaching, I introduce formal teaching with Pinyin sounds, i.e., finals and initials before teaching Chinese characters. Learners can sound out any syllable once they command the individual sounds. This can give non-native Mandarin learners a sense of success and further motivate them for their Mandarin learning. The Pinyin-first approach which I use, but which is only partially promoted in the textbook, seems to be a common practice at the initial stage of Mandarin teaching as a foreign language. McGinnis (1997), Everson (1998), and Zhang (1992) indicated that most beginner learners of Mandarin are taught to read Pinyin before they started learning Chinese characters in Australia and the United States (as cited in Chung, 2002). In this textbook, Pinyin sounds are not given proper teaching place in terms of the organisation of the lesson content as mentioned earlier and the table of sounds are only inserted before the lesson as a resource or reference. If a teacher ignores the Pinyin sounds and starts teaching right away from Lesson 1, the non-native Mandarin learners may find it difficult to learn the pronunciation, let alone the characters.

In the textbook, Pinyin spelling (pronunciation) practice is, however, placed in the practice section after the text from Lesson 1 to 9 (there are 36 lessons in this textbook). All kinds of Pinyin sound combinations are provided for learners to practice pronunciation. The audio resource which comes with the textbook works well for pronunciation. Each individual sound and combination of initials and finals can be heard, which is beneficial to learners. In the first lessons, the authors focus more on Pinyin. The majority of the practice in the workbook and

textbook is written in Pinyin for the first twelve lessons. From this point, we can see that Pinyin is emphasised at first. From Lesson 13, the grammar and expression exercises are written in both Pinyin and characters. Some practice is presented with Chinese characters only at the final part of the book, which allows for enough transitional time from Pinyin to characters for learners.

I hold a positive opinion on how the textbook and its workbook promote a transition from Pinyin to characters. It presents characters and Pinyin at the same time so that learners are aware of the unique nature of this language. They can gradually cultivate the consciousness that the meaning of Chinese is denoted by characters. For instance, the most basic character like "tā" can indicate he (他) (appears in Lesson 3, p. 11), she (她) (appears in Lesson 3, p. 11), or it (它) (appears in Lesson 14, p. 78). Character writing is the most important part that cannot be avoided in character teaching and learning in the classroom, which is the focus of the next section.

4.4.2 Stroke and character teaching and learning

In *Learn Chinese with me: Student's book 1*, characters and Pinyin are presented at the same time in the text from Lesson 1. In every lesson, the structure of new Chinese characters that appear in the text (a dialogue) are introduced. Different types of characters, namely, independent characters and compound characters are grouped and shown to learners in colour and large font in marked blocks. Independent characters are the ones that cannot be further divided into components. The characters in Row 1 (see Figure 4.1) below are examples of independent characters. This type of character is normally pictographic. Characters in Row 2 (see Figure 4.1) are examples of compound characters with two or more components. Over 80% of Chinese characters are compound characters; to be more exact, a semantic-phonetic compound (see details in Section 2.8). As indicated below, the radical of the characters are marked in red, while the components are indicated in blue. Thus, the textbook draws learners' attention to visual-orthographic features.

The supporting video resource provides stroke order animations and audio pronunciation recordings for new vocabulary. Learners can watch them first, imitating them by using their finger in the air and then working with the textbook. These characters in the textbook below can be used for learners to trace over while, or after, they watch the stroke order animation of

the characters. In this way, Mandarin learners can get the idea of strokes – how to write the stroke in the right direction, the structure, and the proportion of characters (see details in 1.4). It is a good way to introduce the writing of characters to avoid frustration by writing them themselves from the very beginning. The introduction of character writing in *Learn Chinese with me: Student's book 1* adopts step-by-step instructions.

Figure 4.1: Characters from *Learn Chinese with me: Student's book 1* (Chen & Zhu, p. 5)

The website for character learning, Arch Chinese, also provides character stroke order animation and components are displayed in different colours. The website does, however, provide more examples and works well for self-study and in-classroom character practice by learners (see 6.4). Chinese stroke order animation is a common, accepted teaching practice or method in character learning at a time when technology is prevalent.

In the textbook, the concept of stroke and the evolution of characters is first introduced in Lesson 4 (pp. 18–19). The strokes are shown in the name, stroke shape, stroke direction, and character examples containing that stroke (please see details in 1.4). The following extract gives a clear picture of stroke examples.

stroke pictures	﹀ (dot)	━	∣
names	diǎn dot stroke	héng horizontal line	shù vertical line
stroke directions	↘	⟶	↓
examples	家 丽	王 大	王 们

Figure 4.2: Stroke example of Chinese characters from *Learn Chinese with me: Student's book 1* (Chen & Zhu, p. 19)

The above image helps with the stroke directions. Once again, the strokes have been marked in colour, which helps with the identification and recognition of the strokes. The stroke directions show how a stroke should be written. Learners in this current study found that stroke order writing was the most challenging aspect in character learning (please see details in 6.6). Thus, knowing how to write the strokes in the right way will lay a solid foundation for character writing. After being exposed to the animations of stroke orders, learners can identify the strokes in the textbook and trace over them. From Lessons 4 to 6, several basic strokes are introduced in each lesson. In the supporting workbook, learners are expected to identify the strokes that are introduced. SAL learners just need to trace over the strokes presented to them. At the same time, the development of Chinese characters is also presented for the first time. In my experience, this historical perspective can create a sense of pride and inspire interest in Mandarin learners to compensate for the fact that Chinese characters are difficult to memorise. In my own experience of teaching in a South African classroom, it is wise to start writing the

strokes first as strokes form characters. Please see the character examples for character evolution below (detailed information on character evolution can be found in Section 1.4).

甲骨文 ① jiǎ gǔ wén	金文 ② jīn wén	籀文 ③ zhòu wén	小篆 ④ xiǎo zhuàn	楷书 ⑤ kǎi shū	
				繁体字 ⑥ fán tǐ zì	简体字 ⑦ jiǎn tǐ zì
人	人	人	人	人	人
魚	魚	魚	魚	魚	鱼
林	林	林	林	林	林
	國	國	國	國	国

① Inscriptions on shells & bones.
② Inscriptions on ancient bronze objects.
③ Ancient style of calligraphy, current in the Zhou Dynasty (11th century BC-256 BC).
④ An ancient style of calligraphy, adopted in the Qin Dynasty for the purpose of standardizing the Chinese script.
⑤ Regular script.
⑥ Traditional characters.
⑦ Simplified characters.

Figure 4.3: Examples for character evolution from *Learn Chinese with me: Student's book 1* (Chen & Zhu, 2003, p. 18)

In addition, the textbook starts with character writing with Chinese numerals from one to 10, which is the best starting point as these characters are formed with simple strokes and the number of strokes is relatively few, just one to four strokes for these characters. The supporting video shows character animations from Lesson 1, an audio recording for character pronunciation can be heard as well, similar to Arch Chinese. In addition, the stroke order in the practice section after the text is displayed clearly. Stroke order refers to the right sequence one should follow when writing Chinese characters. The new stroke is marked in red. Furthermore, the writing rules or principles for writing characters are also clearly well-explained (please see Section 2.9 for details). This process offers enough guidance for non-native Mandarin learners.

4.3.3 Components of characters

In *Learn Chinese with me: Student's book 1*, except for strokes, the concept of components of characters is also introduced in the second unit of this book. As mentioned in the earlier part of this chapter (stroke teaching), Chinese characters can either be learnt as a whole or a composition of different components. The textbook presents character components in the following image:

Figure 4.4: Components of Chinese characters from *Learn Chinese with me: Student's book 1* (Chen & Zhu, 2003, p. 52)

The radical (the left part) and the components are colour-coded. The positions of the components are also clearly displayed, which consists of the visual-spatial and non-verbal activation in the dual-coding theory, the principles the website Arch Chinese also applies. As discussed in Chapter Two, components can be served as verbal and non-verbal activations that are helpful in character learning; so is the visual-spatial attention. In the supporting workbook, the component practice involves the identification of the components of a Chinese character or

forming Chinese characters by using the given components. This kind of practice is derived from either breaking down characters into components or combining the components to form characters.

Examples of components are also included in the textbook in a way that facilitates learning. Components are important for character learning. These components either tell the pronunciation or the meaning of the character as the semantic-phonetic compound characters suggest. The development of the components is also provided. It is worth noting that some components are independent characters. For example, the character "明" (míng: bright) in Figure 4.4 is composed of "日" rì (sun) and "月" (yuè moon). "日" (rì sun) and "月" (yuè moon) are independent characters, however, they can also be components of characters. In this way, it is not that challenging to expand their vocabulary. The more familiar they are with the components, the less time they need to remember them. A table of strokes and components are also provided in the CAPS Mandarin SAL Grade 10-12 document (see earlier discussion in Section 4.2.3), suggesting that this is a common, reliable way of presenting and teaching characters.

As discussed above, *Learn Chinese with me: Student's book 1* adopts a step-by-step guideline to Chinese character teaching and learning. It allows Mandarin learners enough time to get familiar with different aspects of characters. This textbook covers all aspects of characters, such as Pinyin, strokes, the evolution of characters, and even the evolution of components. All these offer Mandarin SAL learners a culturally rich historical background which can inspire the learners. Meanwhile, the supporting resources, that is to say, the supporting workbook and video resource provide enough guidance and practice for learners. Due to lack of guidance in the CAPS Mandarin SAL documents and the requirements of the IEB Mandarin SAL SAGs, the *Learn Chinese with me: Student's book 1* presents a process of learning that works and is useful in facilitating character teaching and learning. The audio resource provided in the *Learn Chinese with me* textbook works similarly to the character-learning website Arch Chinese, which appears to be a standard, effective methodology for learning characters. Arch Chinese, however, is more comprehensive and has a dictionary, vocabulary expansion, game, and worksheet generation functions.

4.5 Conclusion

As discussed above, the analysis of these documents gives us a clear picture of the Chinese character learning in the context of the CAPS Mandarin SAL documents and the IEB Mandarin SAL SAGs. The analysis of *Learn Chinese with me: Student's book 1* provided in this chapter offers detailed elements of character learning, such as the strokes and stroke order. In the next chapter, the role that a Chinese character learning website, Arch Chinese, plays in the learning of characters among Mandarin SAL learners, is analysed.

CHAPTER FIVE

DATA ANALYSIS OF THE ROLE THE ARCH CHINESE WEBSITE PLAYS IN CHARACTER LEARNING

5.1 Introduction

This chapter presents the findings of the analysis of the website, Arch Chinese. The features and functions of the website are scrutinised in detail, and the role these features play in the learning of non-native Mandarin SAL learners is assessed. At the same time, the findings emerging from the questionnaire that the Mandarin SAL learners who are the users of the website, were analysed.

As mentioned in Sections 2.3. and 2.4, Chinese character learning is considered a difficult learning factor for non-native Mandarin learners. Technologies have long been applied to support Chinese character teaching and learning. This section evaluates the features and functions of a character-learning website called Arch Chinese and the role Arch Chinese plays in terms of character learning for SAL learners in this current research. This gives context to how the respondents experienced the functions and features of the website Arch Chinese, as revealed by the questionnaire data.

5.2 Introduction to the Website

Arch Chinese is a website created by Chinese teachers in the United States for Mandarin learners from kindergarten to university. It offers a set of features with an interface and is specially designed for English speakers, particularly for beginners who have little knowledge of Mandarin. From this perspective, it suited the learners in the current research as most of the Mandarin learners spoke English (see 6.2) and the Grade 8 and 9 students were in their initial stage of Mandarin language learning. Arch Chinese has become one of the most popular Chinese learning websites in the United States and many other countries around the world. The designers of the website also took user feedback and feature requests from the Mandarin learning community into consideration. The goal of the website is to "provide a unique, high-

quality learning system to help Chinese language learners around the world study Mandarin Chinese in a practical, effective, and enjoyable manner" (Arch Chinese).

5.3 What Does This Website Provide?

Firstly, Arch Chinese can be used as a Chinese-English dictionary. At the same time, stroke order animations can be viewed and authentic recordings for characters can be heard. An online handwriting practice tool is also available to help students learn Chinese characters and phrases by writing them by hand on their devices. Furthermore, character writing worksheets with sequences and radicals for offline practice can be generated (for subscribers only). In this study, as a teacher, I was a subscriber so that my students could benefit from these features of the website. In addition, English meaning and Pinyin can be generated and customised, and printable Chinese character flashcards or sentences and different kinds of games can be created for character learning and revision as a paid subscriber. These features will be discussed in detail below.

5.3.1 Features for stroke order animations

This website offers stroke order animations for all Chinese characters defined in the national standard character set of mainland China. In other words, a total of 6 763 simplified characters including 3 755 Level 1 characters and 3 008 Level 2 characters (Dai et al., 2007) can be viewed for stroke order animation. Additionally, this website offers 8 000 frequently used characters in the traditional Chinese character set for the Taiwan and Hong Kong standard. Once the character or the phrases are entered in the search bar, the searched character(s) will appear on another page. On the page, there are tools for listening to pronunciation recordings, viewing the stroke order, and practising handwriting by completing the water inked character(s). When viewing the stroke order, the radical and component of a character are shown in different colours. At the end, images display the meaning of the character. And the authentic pronunciation recording will be automatically announced.

Figure 5.1: Features and functions that Arch Chinese provides

I would like to use the above screenshot image as an example to illustrate the features. The image is shown when the character 你 nǐ (you, singular) is searched using Pinyin input. There are also other ways, such as Zhuyin, another script used in Taiwan, for typing traditional Chinese characters. There are two ways of viewing the stroke order sequence. First, it will show the strokes automatically in the right sequence followed by the pronunciation recording. One can watch the animation order repeatedly by pressing the ⊞ button beneath the character. The second way is to view the stroke order one by one by clicking the ▶ button. Furthermore, the name of the stroke order will be pronounced and displayed successively; one stroke will be shown by one click when using this feature. In this way, it gives the user the freedom of their own learning pace. Likewise, the ▶ button can be pressed repeatedly as one wishes. However, the whole character must be finished before starting the first stroke again. In this way, the importance of the stroke sequence is emphasised in the programme.

At this point, I would like to explain the differences between radicals and components of characters. Both radicals and components can be regarded as blocks to build characters; however, only radicals are used to look up a character in a dictionary when one does not know

the pronunciation. Each character has only one radical, and characters with the same radical will be grouped in one section. The Mandarin SAL beginners have little knowledge of radicals and components, let alone using a radical to look up a new character. Coming back to Arch Chinese, the colour-coded radical (in orange) and components (in green) are easy to note. As we know, about 80% of the Chinese characters (see 2.8) are compound characters composed of phonetic and semantic components. In most cases, the semantic component will be on the left side and the phonetic component on the right side of the characters. The study of Feldman and Siok (1997), found that "character decision latencies" (p. 776) depended on the component frequency. Character decision latencies mean the time respondents take to recognise characters. In other words, the more familiar a learner is with components, the less time they will take to distinguish the characters.

5.3.2 Handwriting practice feature facilitates character learning

As we know, the command of Chinese characters involves pronunciation, meaning, and the form (characters), and learning through Chinese character animations provides all these aspects. Although the retention of vocabulary is difficult to maintain, Xu et al.'s (2013)'s research found that both writing and animation resulted in better form recognition, but animation allows better meaning recall than writing. To lay a good foundation for beginners' writing skills, non-native Mandarin learners are expected to master the basic strokes, stroke order, and word structures, so that they can produce writing that is aesthetic and with the proper speed (Tin et al., 2018). This echoes the desire of Mandarin learners to write Chinese characters "neatly" (Conor, L-Q-16) from Grade 11 FAL class and "naturally" (Leigh, L-Q-19, Grade 8 SAL class). The handwriting practice online provides learners with a good opportunity to move towards character memorisation.

Figure 5.2: Self-practising handwriting

After viewing the stroke order, when the user feels ready to practise writing themselves, they can click the brush button ✎ in Figure 5.1. The character is displayed in water-ink as indicated in Figure 5.2, and one can move and press a finger or mouse to the writing grids (actually, they are strokes), and the written stroke will be displayed in colour. Above is the screenshot. If the user does not follow the right sequence or does not write the stroke in the right direction, the right stroke will be shown by the website. If the user would like to find the right stroke, the question button can be pressed, and the next stroke will be displayed. At the same time, the name of the stroke will be pronounced. The website, therefore, provides feedback and opportunities for self-correction and learning the right stroke order. One can repeat writing by clicking the thumb down button 👎 – a window will appear, and one can choose the start-over option for repeated practice. If a phrase has two or more characters, pressing the thumbs-up button 👍 can take the learner to the next character. When one finishes practising, the website shows the time spent, a feature which promotes the "proper speed" of production mentioned earlier.

However, for beginners who are not familiar with it, the stroke sequence training of the Arch Chinese website can become an unfavourable factor in their Chinese character learning. Some of the respondents in this study complained about this as they experienced frustration. Lilian Mckenzi (L-Q-10) from Grade 9 SAL shared her thoughts: "Sometimes when I am practising my characters and I try and write one line, sometimes it keeps telling me that is wrong, and it

makes me write over and over". Anna Borshin (L-Q-27) from the Grade 8 SAL class also disclosed that "sometimes the website makes it difficult to write the character". This bears evidence to their unfamiliarity with the stroke order and the website. In the classroom, I would ask them to watch the animated stroke order and imitate it with their fingers in the air at the same time, so that they could get an idea of the stroke order. When the senior students get familiar with the stroke orders, they prefer writing on paper.

Like viewing the animation, users of the website can repeat the practice by clicking the thumb down button ⬤ (see Figure 5.2), then the recording of the pronunciation can be heard after the writing automatically, or by clicking the speaker button ⬤ beneath the character. A feature of this kind allows for individual choice in the learning process. It can be used as an alternative to writing on a piece of paper, but it is, however, also helpful in mastering the right sequence of strokes. A final advantage is that Arch Chinese is environmentally friendly as learners can practise as many times as they wish on their mobile devices, mobile phone, or laptop without using paper.

Both Chinese character animations and online handwriting practice involve visual working memory training, which can lead to Chinese character learning. This is echoed by the research finding of Opitz et al. (2014). The authors found that visual working memory training benefited visual character learning as the visual working training boosts "the recruitment of high order visual regions for Chinese character learning" (Opitz et al., 2014, p. 9). The stimulation of visual working memory can result in visual shapes (character in the square shape, the components, and radicals) working more efficiently in learners' processing of characters (Opitz et al., 2014). In other words, applying multiple visual learning (teaching) strategies, such as class demonstrations together with Arch Chinese, can lead to better performance in Chinese character learning.

5.3.3 Customised worksheets, flashcards, and games for character learning

The website Arch Chinese, provides customised worksheets, flashcards, and games for character learning and practice for paid members. These worksheets can be used for offline character handwriting practice after school as homework for learners to consolidate their new vocabulary. Character writing worksheets from the website contain stroke sequences, radicals, English definitions, Pinyin, and images indicating the meaning of the character if possible. One

worksheet can include more than 100 characters at a time and personal clip art images can be uploaded (Arch Chinese). For non-native Mandarin SAL beginners, I prefer to use the worksheets with stroke sequences, as they provide comprehensive information on the characters, especially the stroke and stroke sequence. The definition and Pinyin of the characters can be viewed and edited as needed. The image icon can be used to upload or look up an image for each character entry. Once all the characters are entered, it is possible to save the list, including the images, definitions, and Pinyin, for future use. The PDF worksheets can also be printed for learners to practise handwriting further on paper.
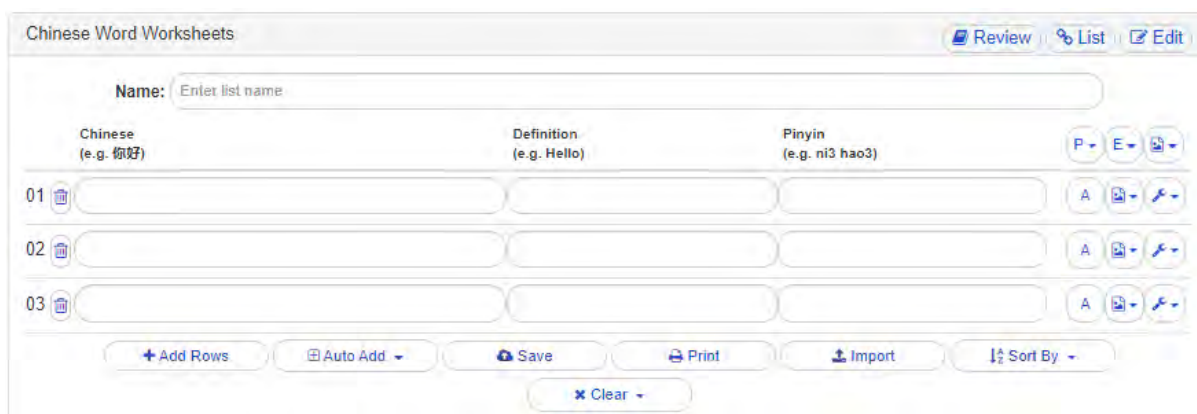
Figure 5.3: Chinese character worksheet creation

Below is one example word from one of the worksheets I used for my students.
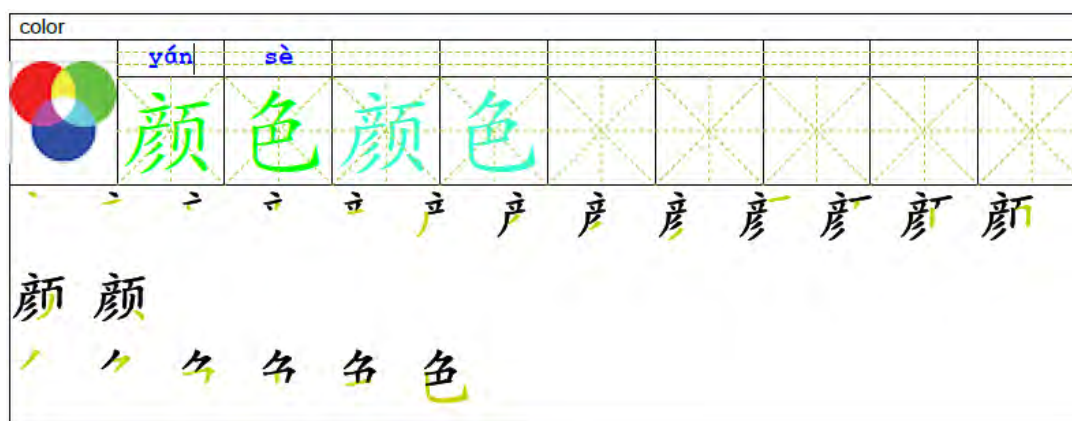
Figure 5.4: Example of part of worksheet with stroke sequence

With these worksheets, learners can start with the individual strokes first so that they are made aware of the stroke sequence. Since they are written already, learners just need to trace the strokes. Afterwards, they can start tracing the completed character(s), and in the end, they can write the whole character or word in the blank square-shaped blocks. Thus, using Arch Chinese generated worksheets plays a scaffolding role in students' learning to write the characters. Correct stroke order and proportions can be acquired in the process. Once the worksheets are saved, the links for viewing the dictionary page, flashcards, handwriting practices and memory games will be automatically generated by clicking the share button in the saved vocabulary list. These links can be sent to the learners via Google Classroom for practice digitally. Furthermore, the saved worksheets can be used to generate games, bingo card maker, quiz maker, Chinese word flashcard maker, Chinese puzzle maker, among others (Arch Chinese). Details on how writing influences character learning will be discussed below.

Lyu et al. (2021) conducted a literature review on 15 studies concerning the different influences of typing and handwriting (that is, with pen or brush on paper) on Chinese character and word learning. There were four studies involving Chinese as a second language and 11 were conducted in the context of Chinese as a first language. The research found that handwriting had a positive influence on orthographic recognition and orthographic-semantic mapping for second language learners. Research also found that handwriting boosts the connection between form and meaning of Chinese characters among Chinese foreign language learners, which leads to more successful character memorisation (Cao et al., 2012; Guan et al., 2011, as cited in Hsiung et al., 2017).

5.4 The Role the Website Plays in the Learning of Characters for Mandarin SAL Learners

The character stroke sequence animations help Mandarin SAL learners develop their receptive knowledge and skills in reading and writing Chinese characters (Xu et al., 2013). The animation of character strokes makes it easy for learners to visualise the strokes and the position of the strokes in the characters. For a compound character, the website indicates which component provides the sound and which component suggests the meaning. It helps them to establish the visual-orthographic representation. With more practice, learners can identify the visual input, which can result in higher accuracy in writing. Eventually, learners can break down characters themselves and become aware of the structural property of characters. Thus, proper command

of the stroke, stroke order and sequences, and radicals and components of a character is important to character reading and writing.

5.4.1 Mandarin SAL learners' perception of the website

In response to the questionnaire in relation to character learning, 66% of respondents identified mastering the stroke order of characters as a particularly difficult learning aspect concerning Chinese characters learning. This could be the reason that 30 out of 35 (86%) respondents found the Chinese characters stroke order animations helpful as it made memorisation of the stroke order easier. Kylie Jenner (L-Q-12) from Grade 9 SAL revealed that "learning strokes is easy because the stroke is already there, you just need to outline it". Sue Rosé (L-Q-L15) from the Grade 9 SAL class felt similarly as she disclosed that "learning the stroke order is most challenging to me, so this feature is very helpful". Understandably, 23% of the respondents preferred using Arch Chinese and 46% of respondents chose to use Arch Chinese in combination with handwriting on paper when they needed to memorise characters.

Chinese character stroke order animations are helpful in non-native Mandarin learners' development of character writing skills. Ben Dover (L-Q-1) who took Mandarin both as SAL and FAL in Grade 9 shared his experience: "They [the stroke order animations] show me the write [sic] way to write and makes my handwriting much better". Other respondents were happy with the animations as they are "clearly demonstrated" (Linda Sue, L-Q-26), "bold and clear" (James O'Neil, L-Q-18), "easy to follow along" (Sue Rosé, L-Q-15) and "helpful with the order and direction" (Holland Davidson, L-Q-24). It is evident that stroke order animations facilitate writing and character acquisition. Grade 11 Conor (L-Q-16) said that stroke order animation makes it easier for him to write the characters and make them look neat; Grade 8 Leigh (L-Q-19) shared a similar idea: "I like it because to me that helps with making the character look more natural".

5.4.2 Chinese-English dictionary feature

Other than offering Chinese character animations, Arch Chinese can also be used as a Chinese-English dictionary to help learners look up new characters, words, and example sentences. Users of the website can listen to a recording of a native speaker pronouncing every character, name of stroke order, and example sentence. More interestingly for the advanced student or

teacher, character formation and etymology information for all Chinese characters are provided. These features and functions are available free of charge, while some other features are made available to paid subscribers only. I will first discuss the dictionary feature in detail below.

Once one enters the homepage of the website (Arch Chinese), an obvious item one can see is the search bar. Learners can look up characters, words, and example sentences. It is user-friendly as one can enter Pinyin with or without tones, Chinese simplified or traditional characters, or a combination of English, Pinyin, or characters in the search bar. The students in the current study used Pinyin input for typing. Pinyin input is the most frequently used Chinese typing system (Zhu et al., 2009). When typing Pinyin without tone marks, a list of characters that share the same or similar sounds will appear, and the learner needs to select the one being searched. Due to the sound and script inconsistency, there will be many characters for selection once Pinyin is entered.

It must be noted that in order to type Chinese characters, the learners need to have a Chinese keyboard installed on their devices. For instance, if someone is looking for the character 他 tā (he), the Pinyin "tā" must be typed and entered, and several options will appear as indicated by the following image:

Figure 5.5: An example of typing a Chinese character via Pinyin input

This also makes the website suitable for more advanced students. Once the Chinese character has been identified, the learner just presses the number key corresponding to the Chinese character. In this case, number 1 is for character 他 tā that is being searched. It is highly possible that one must choose among the characters provided due to homophones. The probability of a given Chinese character sharing the same syllable with another is about 9% (Tan & Perfetti, 1998). In other words, one must recognise the Chinese character after typing Pinyin on a digital device or computer. This requires learners to be able to type Pinyin and to have knowledge of Pinyin, as well as the rules of composing a syllable.

The problem is that if learners only focus on the Pinyin in this way, it is difficult for them to identify or recognise the character(s) being searched. That explained why some of the respondents sometimes found using Pinyin to look up characters difficult. Ben 10 (L-Q-5) from Grade 9 SAL class explained that "when I type something it gives me different answers for the same word". The "word" this learner meant was the Pinyin word, not a word in characters. As shown in Figure 5.5 and explained in 2.2, only the characters can determine the meaning, not the Pinyin. For non-native Mandarin beginners who are used to alphabetic languages, it seems like multitasking. If learners do not know the characters, it is difficult for them to select the correct answer. Grade 9 SAL student, Flower (L-Q-8) also revealed that she "sometimes struggles to get the correct characters to look up a word". This once again highlights the inconsistency between sound (represented by Pinyin) and script (represented by characters). On the other hand, typing is helpful in learner recognition of Chinese characters. It is rewarding if learners can type the Pinyin and search and have access to the different aspects of the characters as a result, such as listening to the audio recording of the characters.

Knowing the pronunciation of characters is important for Mandarin second additional learners. Everson (1998, as cited in Wang & Leland, 2011) discovered that there was a high correlation between the pronunciation of a character and learners' ability to recognise its meaning for non-native Mandarin beginners. The authentic recording of the character pronunciation and the meaning of the character are available to users. Due to limited knowledge of the language, it may appear difficult for beginners to learn the pronunciation based on the orthography (Wang & Leland, 2011). The visual and auditory stimulation provided by this website makes up for this shortfall. Wang and Leland (2011) found that pronunciation was remembered from listening to and pronouncing characters. On the other hand, individual character learning facilitated the learning of Chinese character orthography and benefited learners' understanding of the meaning and their learning of pronunciation (Wang & Leland, 2011). For learners to retain the characters and to embed them in learners' long-term memory, writing is an inevitable part of character learning. Worksheets can be an effective way for practising and consolidating characters.

5.4.3 Perception of extra information on characters

The Arch Chinese website also provides extra information on the character(s) searched. To return to Figure 5.1, the example in the screenshot, the information on the left side gives a more detailed explanation of this character from a different perspective. The radical for character 你 (Figure 5.1) is made of "亻" (the variant of 人 rén person) and the component "尔". The character 你 is presented by Pinyin "nǐ". The total stroke count is seven. The writing structure is from left to right. More information, like antonyms, part of speech, characters with the same pronunciation, at which level the character "你" is in the Chinese Proficiency Test (HSK in Chinese), usage frequency, and the pronunciation, are provided. In short, orthographic knowledge is made available to its users.

The reception of the detailed information on characters was positive among respondents in general. Twenty-seven out of 35 (77%) respondents found the information useful and informative, while seven (20%) admitted that they had not noticed the information and one (3%) respondent found too much information to sink into the brain (Anna Borshin, L-Q-27 from Grade 8 SAL). For handwriting practice, most of the respondents (97%) found it worked for them as 14 (40%) respondents found it easy to use the brush button, 13 (37%) respondents found it manageable, and seven (20%) found it very easy. One (3%) respondent found it very difficult, and the reason was that the respondent (Flower, L-Q-29) from Grade 8 SAL class found the lines were very small.

Moreover, as part of Arch Chinese, the character etymological and formation information and definition in Chinese are provided by the website on the Chinese-English dictionary page for all Chinese characters. Below is the example of the character "你":

Figure 5.6: Character formation and definition in Chinese

For extended information on the character, more phrases or idioms containing the character being searched will appear at the bottom of the page. This function may be more appropriate for learners with some knowledge of Mandarin Chinese so that the extended words or phrases make sense to them. All these extended characters are provided with the same features mentioned above, for example, pronunciation, stroke animation, and handwriting practice.

5.5 The Application of Theories on the Website

The above-mentioned stroke order animation and other functions or features accord well with the dual-coding theory involving verbal code (concerning non-linguistic objects or information) and non-verbal code (dealing with linguistic information) (See 2.8). Character animations involve both codes in the cognition process. Concerning Chinese character stroke order animation, non-verbal codes comprise the animated strokes, radicals and components by colour for the compound character(s). The verbal code includes the meaning and pronunciation of the character. The non-verbal code (imagery code) produces visual images that represent the meaning of vocabulary. When encoding a new character or word, using the imagery code works better than using the verbal code alone. There is evidence that, in addition, the verbal and non-verbal codes working together can outperform the verbal code (Shen, 2010). Sadoski (2005, cited in Shen, 2010) reviewed several studies in relation to instruction in sight vocabulary (merely learning the vocabulary as a whole) and in meaningful vocabulary (learning through context). The conclusion the author reached was that "imagery-based methods (providing pictures or evoking images in learners' minds) were more effective than verbal-associative

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methods" (Sadoski, as cited in Shen, 2010, p. 488). Although these studies only related to alphabetic languages because Chinese characters are highly visual, Sadoski's above conclusion is relevant here.

Because Chinese is a logographic language, its characters are "highly imageable" (Steffensen et al., 1999, as cited in Kuo & Hooper, 2004, p. 2), pictograph characters (see 2.2) for instance, representing the image (shape and form) of the objects. Although pictographic characters compose a limited proportion of the total number of characters (1%), they form the most basic kind of Chinese characters, and they appear frequently as radicals or components in compound characters. Each pictographic character represents an image of the vocabulary. Chinese logographic characters provide graphic and semantic information, and these elements can lead to successful character recognition even when a learner does not know the character's etymology (Kuo & Hooper, 2004). The visual appearance of a character facilitates identifying and discerning the character (ibid).

5.6 Conclusion

The above section detailed the features and functions that the website Arch Chinese provides. It is obvious that the website plays a facilitating role in Chinese character learning. It gives learners step-by-step guidance in learning characters in terms of pronunciation, meaning, and various aspects of characters, such as stroke, stroke order sequence, radicals, components, formation of characters as well as additional information related to the character being studied. The dictionary feature gives the Mandarin SAL learners a sense of autonomy as it provides them with an opportunity for self-improvement and self-learning even after class. The general feedback from the respondents in this current study was positive, confirming the benefits of ICT in character learning. When considering the limited class teaching and learning time and the disruption caused by the COVID-19 pandemic, using technologies – such as the website in this current study for character acquisition, is particularly important.

CHAPTER SIX

WHAT MANDARIN SAL LEARNERS SAID ABOUT THE WEBSITE: ANALYSIS OF THE LEARNERS' QUESTIONNAIRE

6.1 Introduction

This chapter presents the results of the questionnaire administered to the respondents. Firstly, it describes the background of the respondents, for instance, the language they spoke, gender and grades of the respondents, and then presents the data from the questionnaire in a series of sections, interwoven with discussion. The questionnaire mainly answered Research Question 3, namely: How do Mandarin SAL learners experience Arch Chinese as a learning tool in the learning of characters?

6.2 Respondents' Learning Context
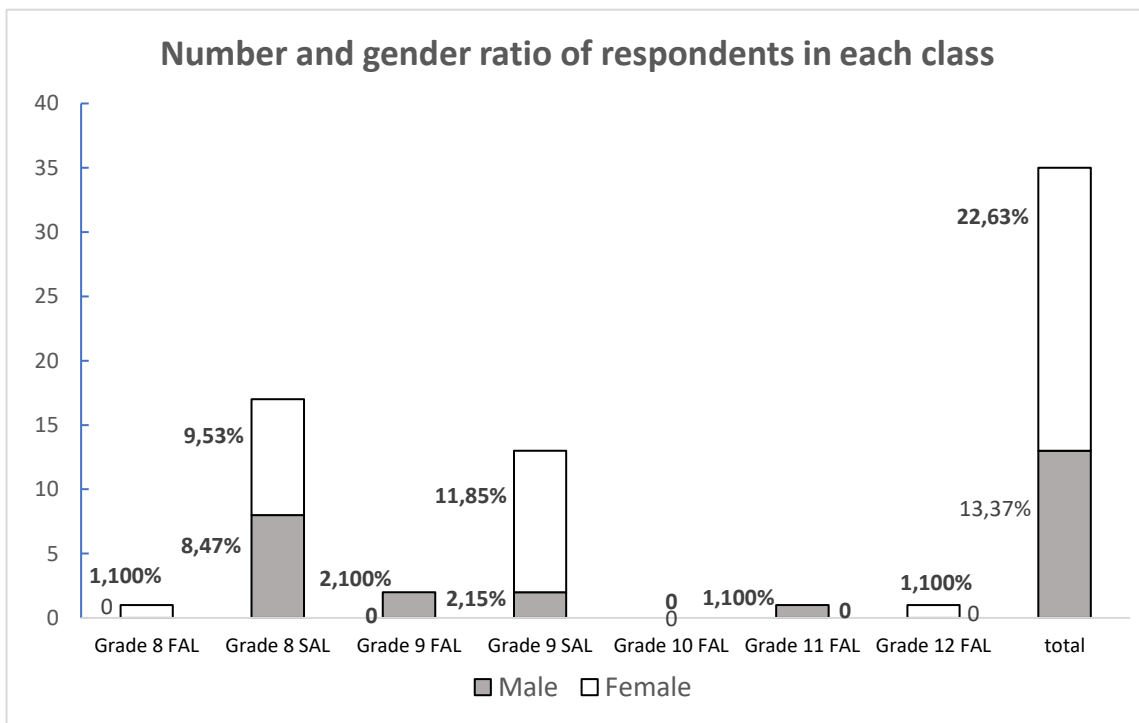
Graph 6.1 Number and gender ratio of respondents in each class

From the graph above we can see that the Grade 8 Mandarin SAL class had the largest number of respondents participating in the questionnaire. Among the 17 respondents, there were eight boys, taking up 47% of all respondents in the class, whereas nine female respondents accounted for 53%. The majority of the Grade 9 respondents were also from the SAL class where 14 respondents participated in the questionnaire. Once again, female respondents accounted for the majority at 85% and male respondents accounted for 15%. It was evident that Grade 8 and 9 SAL classes were bigger than the Grade 8, 9, 11, and 12 FAL classes.

Some aspects of language learning have been shown to relate to gender and research has found that gender plays an important role in terms of learners' motivation of learning a foreign language. Akram (2013) stated that females have a more positive attitude than males towards learning foreign languages (e.g., Dornyei et al., 2006; Mori & Gobel, 2006). In the Grade 8 and 9 SAL classes, female respondents accounted for the majority. According to my own observation, girls normally come to class earlier and participate more actively than boys in class.
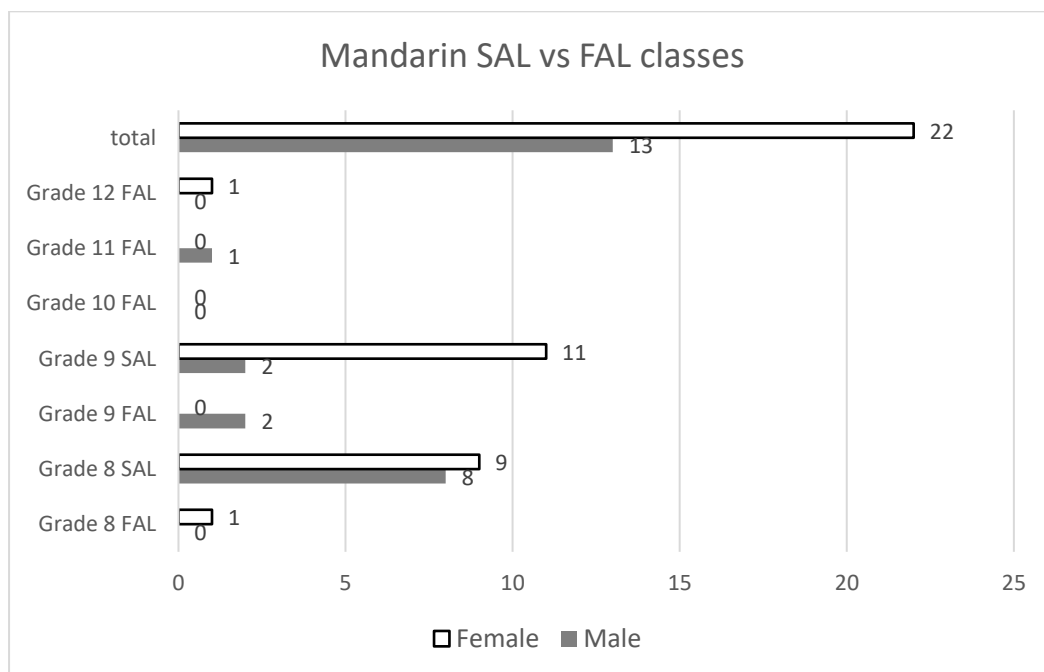
Graph 6.2: Number of respondents in each class

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In sharp contrast with SAL classes as indicated by the above graph, there was only one participant from the Grade 8 FAL class and two from the Grade 9 FAL class. It must be noted that there was a Grade 9 respondent who took Mandarin both as his FAL and SAL subject. This male respondent was counted as one participant. There were no Grade 10 respondents because no learners were taking Mandarin in this grade in 2021. Besides, there was one participant in Grade 11 and 12 FAL classes, respectively. The relatively small number of Mandarin FAL classes was the result of the current language policy. According to the language policy in education, Grade 4–12 learners must learn two languages. In a normal case, these two languages must be official languages. Non-official languages can be taken as an elective subject at the FET Phase (Department of Education, 1997), Mandarin falls into the category of non-official languages but there is an exception for learners who meet the concession of being immigrants. These learners can take one foreign language as their FAL subject starting from Grade 8. In other words, all the learners taking Mandarin as a FAL subject must be qualified for their immigration status; thus in their timetable, they can take Mandarin as their FAL subject, even though Mandarin is offered as a SAL for NSC matric examinations in the country.
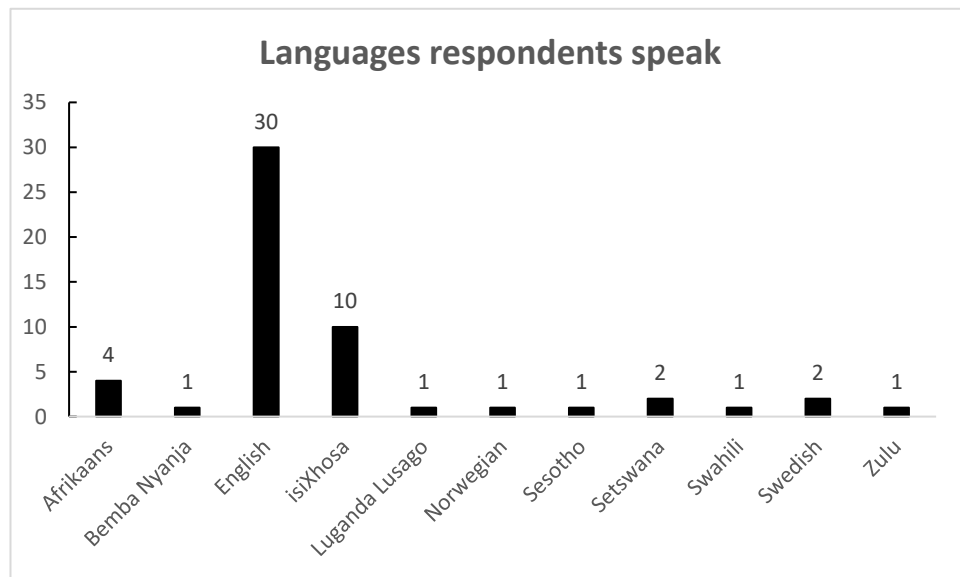
Graph 6.3: Languages respondents spoke

At the schools where respondents came from, Mandarin as a SAL subject was offered to learners only at Grade 8 and 9 levels. As indicated by the graph above, some of the respondents were foreign nationals as some of them spoke Swedish, Norwegian, and Luganda Lusoga. However, 30 out of 35 respondents spoke English either at home or at school. The fact that English became the dominant spoken language among respondents came as no surprise as 80% of the South African population chose English as the language of instruction (Barry, 2002). It is also the Language of Learning and Teaching at the schools of this research. However, it is worth noting that 16 of the respondents spoke at least two languages at home or school. A total of 11 languages were spoken by 35 respondents. This once again reflected the multilingual society in this country. IsiXhosa was spoken by 10 respondents. This might be because isiXhosa is widely spoken in the Eastern Cape Province, besides, the schools of this research offer isiXhosa both as a SAL and a FAL as well. Followed by isiXhosa was Afrikaans (4). Other languages spoken by respondents included Bemba Nyanja (1), Luganda Lusago (1), Norwegian (1), Sesotho (1), Setswana (2), Swahili (1), Swedish (2), and Zulu (1). While it was not expected that home language would play an important part in respondents' attitude to learning Mandarin characters, it seemed worth identifying the wide variety of languages which these learners spoke.

6.3 Learners' General Attitude Towards Mandarin as a Subject

Before I went on with the questions on the use of the website Arch Chinese, a general question was asked about respondents' attitudes towards learning the Mandarin language. The question being asked was whether they would take Mandarin for matric if they could and explain the reason for their choice. The majority of the respondents expressed a positive attitude towards the Mandarin subject as 22 out of 35 (63%) respondents wanted to take it to matric if they could. Nine of them enjoyed learning the Mandarin language. Sarah (L-Q-23) from Grade 8 SAL class stated that "I really like Mandarin as a subject, it's fun learning a new language". Some of them attributed their love of Mandarin to teaching. Anna Borshin (L-Q-27) from Grade 8 SAL class indicated that "I really enjoy studying Mandarin with Ms Fu because she's a very great teacher and she makes our lessons enjoyable". Some respondents enjoyed learning the language because the language was interesting. Umama Wakho (L-Q-6) from Grade 9 SAL class stated that she "really enjoyed learning Mandarin because it's very interesting and it's straightforward".

According to Stephen Krashen's (1986) affective filter hypothesis – part of his theory of Second Language Acquisition – affective factors such as motivation, self-confidence, or anxiety, play a role in second language acquisition. Enjoyment of learning can decrease the level of anxiety and boost one's motivation. A high degree of motivation, self-confidence, and a low level of anxiety is beneficial to second language acquisition. This is because it allows for acquisition when the affective filter is low (Schütz, 2007). Positive attitudes to the subject in this study were, therefore, potentially a marker of learners who were engaged in other ways and may also have a positive attitude to learning through Arch Chinese.

Another eight respondents who responded positively believed learning Mandarin would create opportunities for travelling and studying overseas, thus being beneficial to their future. Kyra Michaels (L-Q-7) from the Grade 9 SAL class indicated that "Yes. I would take it because it is an interesting language and is widely spoken nowadays and being able to speak it could benefit my future". It was evident that the importance of learning Mandarin was acknowledged by the respondents. Leigh (L-Q-19) from Grade 8 SAL class expressed her willingness to study in China: "I've been interested in learning other languages because I'm going overseas for university. China is one of the countries I'd like to go to, so I'd like to learn Mandarin in order to communicate easily". Respondents were also influenced by their own or their family member's experiences. One of the respondents, Ben Dover (L-Q-1), from both Grade 9 FAL and SAL class, had lived in China. Another respondent, Jeff (L-Q-29) from Grade 8 SAL disclosed that his aunt actually went to Hong Kong for years and she knew a lot of Mandarin. Therefore, he wanted to pursue the language. The rest of the respondents' responses were because they had chosen this subject, but they did not give additional details.

Other learners responded negatively, and 13 out of 35 (37%) respondents had chosen not to carry on with Mandarin if they could. Five (14%) respondents found Chinese too difficult, and one mentioned that Chinese characters were too difficult to learn. Natalie Stunner (L-Q- L4) from the Grade 9 SAL class said: "I am not the best at remembering the character because languages are difficult for me". This echoes some research findings. The difficulty of remembering Chinese characters was one of the factors for dropout from Mandarin courses in a secondary school in the UK (Ping, 2009). The research found that characters, being non-alphabetic, can be a big challenge for non-native Chinese speakers to learn. Starr (2009) disclosed that "estimates of the impact of this on a European learner's progress are that Chinese

takes two to four times as long to reach a comparable standard compared to learning another European language" (p. 78).

In the current research, European languages such as French, Latin, and Spanish are also offered to learners as SAL options. Five (14%) respondents wanted to focus on their FAL and other subjects. They were all from the Mandarin SAL class. Victoria Gregg (L-Q-25) from the Grade 8 SAL disclosed: "No, because I would like to focus on my FAL and other main subjects in matric". This kind of thought came as no surprise as the schools in the research offer Mandarin SAL subject to Grade 8 and 9s only. Another two (6%) respondents did not see themselves using Mandarin in their future and one respondent found that Mandarin took up too much time as an extra subject.

6.4 Learners' Attitudes Towards the Use of Arch Chinese

The rest of the 15 questions of the questionnaire related to respondents' use of Arch Chinese in their learning of characters. These questions covered how frequently they used the website, the advantages and disadvantages that respondents found when using the website, and their choice of Pinyin or characters if they had a choice when answering their tests or examination papers. This questionnaire further covered the experiences of respondents using Arch Chinese in terms of language aspects such as pronunciation, stroke, and character learning.

In response to the frequency of their use of the website, 14 (40%) respondents used Arch Chinese for character learning every second or third day, 13 (37%) respondents used it once a week, while eight (23%) respondents seldom used the website. When respondents were asked whether they used Arch Chinese for private study, 17 (49%) out of 35 respondents used it after school – among them, four (11%) respondents used it when they prepared for tests or examinations and nine (26%) respondents used it for practising characters they learnt in class. Alice Smith (L-Q-2) from Grade 12 FAL revealed that she used it "when determining stroke order of new characters". For Grade 8 and 9 students, they used it for character practising: James O'Neil (L-Q-18) from the Grade 9 FAL class indicated that "it is very useful for understanding how to write the characters you are learning". The last four (11%) respondents used the website for help and to understand the schoolwork without being specific.

The number of respondents who did not use the website roughly equalled the number of respondents who used it, as 18 out of 35 (51%) respondents did not use Arch Chinese for private study. Seven (20%) of them believed that there had been no need to use the website after school as they were either happy with Pinyin or had alternative ways of learning characters. Holland Davidson (L-Q-24) and Jeff (L-Q-29) from the Grade 8 SAL class preferred to practise writing characters on paper. Three (9%) respondents preferred to use the website in class; two respondents (6%) claimed they had no time to use it after school, while two (6%) respondents stated that they were still familiarising themselves with the website; the last four (11%) respondents simply just did not use it after school without giving any reasons. All the respondents who chose not to use the website for their private study were from the Mandarin Grade 9 SAL class. This might be because they would be dropping Mandarin after Grade 9, and were thus reluctant to spend additional time mastering characters.

As indicated above, there might be various reasons that respondents chose not to use Arch Chinese after class. The feeling that it was not necessary to learn characters seemed to be the perception of most of the respondents (51% out of 100%). Dakslambo Sampleton (LQ-3) from the Grade 9 SAL class believed that "we haven't really gotten to the point in Mandarin where we learn characters intensively yet". Due to limited teaching time, character teaching and learning cannot be allocated enough time in SAL classes as is required. This is because the syllabus has to cover other aspects of this language such as reading, listening, speaking, grammar, and expressions. This can lead to learners' belief that characters are not needed, which is not the case. In this study, this is shown in that the respondents relied heavily on Pinyin for reading and writing, which will be confirmed again later. The reason for this lies in Chinese orthographies that are different from alphabetic orthographies. In contrast to alphabetic languages, there is no consistency between characters and sounds in Mandarin, which is a difficult learning aspect for students whose native language is not Chinese (McBride, 2016).

6.5 Respondents' Perceptions of the Website Arch Chinese

The questionnaire further explored the advantages and disadvantages of the website that the respondents perceived. There were three options: improved marks in general, increased confidence, I enjoy learning characters more, and "other" if the first three options did not apply.

Of the 35 respondents, eight (23%) of them believed using Arch Chinese would improve their marks in general; another eight (23%) respondents felt it increased their confidence, while 18 (51%) respondents enjoyed learning Chinese more. The last four (11%) respondents gave their own answers, including that the website was helpful for character learning. It is worth noting that three respondents simultaneously chose two options.

As indicated in 2.11, character learning traditionally relied on rote-learning by writing them by hand repetitively until they were memorised. Using Arch Chinese to learn characters provides an alternative way of learning. Students can watch how a character or a word is being written stroke by stroke. Just by pressing the window button, they can watch it repeatedly. Once they feel confident, they can move on to practising writing by themselves by clicking the brush button (see Section 5.3.1). It is no wonder that most of the respondents enjoyed doing this. This echoes findings from research on the use of technologies for character learning which I discuss below.

Lyu and Qi (2020) conducted a review of research on technology-assisted teaching and learning of Chinese as a second or foreign language from 2008 to 2018. They found in five studies (e.g., Xu & Moloney, 2011) on Chinese language learning that students displayed positive attitudes towards the use of technology as "it made learning enjoyable, effective and interactive" (Lyu & Qi, 2020, p. 149). Research findings indicated that students were motivated and had a high level of engagement when using technologies in their Chinese language learning (Lyu & Qi, 2020) as students found the use of technologies helped improve their language skills, including speaking, reading and writing. As a result, it improved students "cognitive skills … and providing them with opportunities for authentic learning and self-directed learning" (Lyu & Qi, 2020, p. 149).

Another four respondents (11%) gave their own reasons. Two stated that the website Arch Chinese was helpful in "taking Pinyin into characters" (Natalie Stunner, L-Q-4, Grade 9 SAL) and "getting better sometimes" (Emily, L-Q-13, Grade 9 SAL). Another respondent preferred "drawing characters" (Mrs. Mencles, L-Q-8, Grade 9 SAL), while the last one had only used it recently, so he did not have much experience with it (Kylie Jenner, L-Q-12, Grade 9 SAL).

While the advantages of the website are discussed above, respondents were also asked about its disadvantages. There were seven (20%) respondents who stated that the website took up too much time. Bronwyn (L-Q-14) from the Grade 9 SAL class pointed out that "the website is also quite confusing to navigate which takes up more time". Three (9%) respondents did not understand the website and another six (17%) respondents did not like learning online; eight (23%) respondents felt they already managed with Pinyin. Altogether, 14 (40%) respondents stated their own answers other than the provided ready-to-choose options. Interestingly, seven (20%) of them were happy with the website by stating that they found no disadvantages, while five (14%) were not happy with the website as they found the design of the website was often a challenge when they practised. It asked students to complete strokes in a certain order and if they failed to do so, they could not carry on writing, thus the character could not be completed. Learners perceived this as a malfunction that discouraged them.

One respondent (3%) liked to write on paper and another respondent (3%) was still familiarising herself with the website. Once again, three respondents had chosen two options for their answers. It must be admitted that "technical problems" and "problems using digital tools" (Lyu & Qi, 2020, p. 154) can hinder learning. These problems could include weak internet connection or students' insufficient ICT expertise (Lyu & Qi, 2020). This might be the reason why seven (20%) of the respondents found that it takes up too much time and six (17%) respondents did not like learning online.

6.6 Challenges SAL Learners Face When Learning Characters

The survey further explored what challenges the Mandarin SAL learners face when learning Chinese characters. The predominant responses involved character learning: nine (26%) respondents found remembering characters a challenge and another 23 (66%) respondents specifically pointed out that memorisation of stroke orders was complicated. Umama Wakho (L-Q-6) from the Grade 9 SAL class said that "remembering which strokes go in which order and remember what characters go with the Pinyin" was a challenge. This echoes another two (6%) respondents who found it difficult to write Pinyin for characters. Debby de Klerk (L-Q-11) from the Grade 9 SAL class pointed out a problem in "trying to remember the way to write Pinyin words for the characters", while Charles Kirk (L-Q-35) from the Grade 8 SAL class also said: "I just struggle with finding the character and Pinyin". All these comments point to

the lack of sound-script correspondence, which can be a challenge for non-native Mandarin learners. Lastly, one (3%) respondent found that "learning where the tone marks go" was a challenge.

Understanding learners' perceptions of learning difficulties concerning their character learning was important. It is the first step to get to know how the learners perceived character learning and what they thought it entailed and how I, as their teacher, could help them to the best of my ability. Horwitz (1985) stressed the importance of students' beliefs and perceptions when learning a foreign language. Their perceptions could affect their understanding of the language they were learning. Thus, in the current research, being conscious of students' beliefs or perceptions of their character learning would "increase student learning and satisfaction" (Horwitz, 1985, p. 333).

With the above comments in mind, one question focused on their preference between Pinyin and characters when writing tests or examinations. Most respondents, 31 out of 35 (89%) favoured Pinyin instead of characters. All these respondents came from the Grade 8 and Grade 9 SAL and FAL classes. Among them, 27 of them agreed that Pinyin was "easier" and "comfortable to understand" Mandarin and thus they were more productive. Natalie Stunner from the Grade 9 SAL endorsed Pinyin, as "it's easier to remember because it's in letters". Another three chose Pinyin because they were not comfortable with writing characters. One respondent, Leigh (L-Q-19) from the Grade 8 SAL class regarded Pinyin and characters as equally important: "Both, I'd like Pinyin so I could understand the sounds but also characters so I can get used to seeing and identifying them". Another three (9%) respondents preferred to write characters; it is not surprising that two were from the Senior Phase – one in Grade 11 and one in Grade 12 – as writing characters is expected of them after three or four years of learning.

It is also no surprise that most students preferred Pinyin as it is in alphabetic letters. De Saussure (1983) divided language writing systems into two kinds: the ideographic and 'phonetic' system. The 'phonetic' system represents the sounds – it can be syllabic and alphabetic. However, the Chinese writing system is an ideographic system, in which "a word is represented by some uniquely distinctive sign which has nothing to do with the sounds involved" (de Saussure, 1983 p. 26). This refers to the lack of sound-script correspondence as mentioned earlier in this study. The "sign" mentioned means Chinese characters, which de Saussure (1983, p. 27) referred to

as "a second language" when identifying words having the same pronunciation. Therefore, he suggested that "the ideogram and spoken word are equally validity as a sign for an idea" (de Saussure, 1983, p. 27). In the current research, it is evident that students got used to the Western system of writing, namely alphabetic writing, such as in English. Pinyin is close to what students were familiar with, as it is also alphabetic. This can explain why most respondents chose Pinyin in preference to characters. Additionally, Chinese character learning means crossing two writing systems, which makes it difficult for non-native Chinese students. Furthermore, it validates the findings detailed below which present a detailed exploration of the respondents' use of the website Arch Chinese.

6.7 Respondents' Use of the Website Arch Chinese

Respondents needed to rank five options according to the usefulness of the website. These options included the dictionary function, hearing the pronunciation, learning the stroke order, learning phrases that contain the syllables, and practising writing the characters with a finger. Respondents needed to explain the reasons for their choices. Learning the stroke order was ranked as the first option by 18 respondents and 12 ranked it as the second most useful tool. Hearing the pronunciation was ranked as second as seven respondents chose it as the most useful and nine chose it as the second most useful. Practising writing the character with a finger was the third option chosen by respondents: six respondents found it most useful and eight found it the second most useful. One of the least useful tools respondents chose was the option of learning phrases that contained the syllable being searched. This is because altogether, 26 (74%) respondents ranked it as either the last or second last useful tool. The dictionary function was also found less useful as well, as 18 (51%) respondents in total chose it for the last two options. Alice Smith (L-Q-2) from the Grade 12 FAL class revealed that "I struggle with learning stroke order; this site [Arch Chinese] is best for it, and [sic] is also best practising writing with your fingers. Other websites have dictionary functions, therefore it is last on the list".

Why is stroke order so difficult to learn for non-native speakers of Mandarin? First, a Chinese character is made up of strokes and characters form the most basic and important structural unit of Chinese. This is according to the Character Standard theory or character-based theory first proposed by Tongqiang Xu in the 1990s (see 2.5). In terms of language families, Mandarin

belongs to the Sio-Tibetan language family whereas English is part of the Indo-European language family (de Man, 2017). Students who are learning non-cognate languages need to familiarise themselves with the language writing system and this requires more time and effort. Research (e.g., Chang, 1987; Packard, 1990; Everson, 1994; 1996; 1998; Ke, 1996; 1998a; 1998b) has found that from the cognitive perspective of character acquisition more curriculum time is needed; besides, "strategies like rote-learning and memorisation are needed for the master of orthography" (Wang, 2011, p. 11). In this current research, the website Arch Chinese provided Mandarin SAL learners with a useful tool to learn the right order of strokes so that they could eventually learn to write characters. Students should be given more detailed guidance in learning characters so that they can find effective strategies for character acquisition which will be discussed below.

Students were asked their strategies of character memorisation. There were 24 out of 35 (69%) respondents that chose to write on a piece of paper numerous times until they learnt it by heart. Another three (9%) respondents preferred to use their fingers to write or 'draw' in the air after learning the stroke order. A further three (9%) respondents specifically focused on learning the stroke order while three (9%) other respondents chose to observe and read the characters repeatedly. It is worth noting that 13 respondents adopted multiple ways to memorise characters. Holland Davidson (L-Q-24) from the Grade 8 SAL class gave a detailed description of her way of memorising characters: "I learn the stroke order, the meaning and I make little notes. For example, the character for 'she', I think of the first character [component] as a girl sitting". It is good to note that student had noticed different components in characters and associated the components with images. A similar comment was made by another respondent Natalie Stunner (L-Q-4) from the Grade 9 SAL class – she said she would "try to see the pattern and what it reminds me of". Another student Lilian Mckenzi (L-Q-10) from the Grade 9 SAL class would find "a picture with the character".

All these strategies above, learning strokes with the aid of the Arch Chinese website and relying on images, show the importance of visual skills in character acquisition. This is because Chinese characters are visually distinctive to alphabetic language speakers in character recognition (McBride-Chang et al., 2005). McBride-Chang et al. (2005) found that visual skills such as visual-spatial relationships have a strong association with Chinese character recognition. This echoes students' choice of using visual images in their character learning.

Most commonly, handwriting was the favourite choice of students when learning characters by heart. This reflects that the learning of characters is a perceptual and cognitive process as stated in 2.4. Vocabulary learning involves the "phonological, graphic, semantic, and syntactic" features of words (Gibson, 1971, p. 1). From the broad components perspective, Chinese characters can be divided into morphological and phonetic components. From a micro perspective, teaching and learning of a character consists of three tiers: whole character, components and stroke, while components are the core and the base of the formation of a character (Le, n.d., as cited in Tse et al., 2007). Students in this research were doing it correctly by starting with the correct components, or in their own words "pattern". These learning strategies echo what the Character Standard theory developed, namely that a character is the basic structural pattern of "one character, one syllable, one concept", according to Tongqiang Xu, who first proposed the Character Standard theory in the 1990s. He proposed that the structural characteristics of various structural levels (speech, semantics, language convergence, grammar) all are intersected here so that each level of research is character-based. One of the basic characteristics of "character" is its semantics, which forms the structural basis of the Mandarin language. This language is a semantic language and character is the most basic structural unit of this semantic language (see Section 2.5 for more detail). The research of this study was based on "character" acquisition. The analysis of the components (pattern), learning the accurate pronunciation of syllables, learning the stroke order, the shape of components and so on are conducive to student character learning. It can be seen as the starting point of this language learning (see Section 2.8).

The website Arch Chinese is designed to help beginners of Mandarin to learn characters. One can search for the meaning, pronunciation, stroke order, and practise handwriting. Thirty out of 35 (86%) respondents found the stroke order animation for Chinese characters helpful. They found that it helped them "memorise the stroke order" (Dakslambo Sampleton, L-Q-3) of characters, "making it easier to know how to do the stroke" (Kyra Michaels, L-Q-12). The animation stroke images are no doubt conducive to character learning. Flower (L-Q-20) from Grade 8 SAL believed that "it is helpful seeing the stroke order because then it's easier to draw it on a different paper". The stroke order learning also made students aware of the fact that characters have to be written in a certain order. James (L-Q-34) from the Grade 8 SAL class revealed that "I never knew that there was [sic] specific ways to write a character, so it is

helpful to get a step by step [sic] tutorial". Only one (3%) respondent found it not very helpful, and another four (11%) respondents stated that they were not sure. One of them did not understand why they had to follow the stroke order.

All the findings above confirm the difficulty of Chinese character learning for non-cognate language learners for the reasons discussed earlier on the differences between Western and Chinese writing systems. Technologies provide a useful tool for character learning for non-native Mandarin learners. Research findings on Chinese character stroke order animation indicate that it improves students' writing performance and writing skills (Tin et al., 2018).

Moreover, Zhao et al. (2011) noted that stroke order animation not only provided a clear view of the components and structure of the characters but also helps students to understand the correct order of the strokes when writing the characters. The use of ICT also enables pupils to repeatedly observe and imitate the writing process.

As shown above, this current research found similar findings, that is, the animation of stroke order in characters is helpful in student character learning. The website does not only provide animation in Chinese character writing, but it also offers audio pronunciation of the characters being searched. One of the questionnaire questions concerned how students experienced the pronunciation function of the website. There were 29 (83%) respondents who found the pronunciation provided by the website useful, while four (11%) students did not notice this feature, one (3%) found it not very helpful and one (3%) had not heard it yet. All these respondents came from Grade 8 and 9 SAL classes. They still needed time to familiarise themselves with the website. On the other hand, this echoes earlier findings that some Mandarin SAL students were reluctant to invest their time after school. Pronunciation is an integral part of character learning, which is indicated by Pinyin.

Mandarin character learning cannot be separated from Pinyin. Pinyin is especially needed when they searched for characters. Students were asked whether they were able to type and look up a character or word using Arch Chinese and needed to explain the reason if they struggled to do so. Twenty-eight out of 35 (80%) of the respondents were able to identify the character by typing the Pinyin. Seven of them (20%) found it challenging sometimes to find the characters they were looking up. One of the reasons was that there were numerous options to select. Dakslambo Sampleton (L-Q-3) from the Grade 9 SAL class disclosed that: "sometimes there's

a lot of options and [I] don't know which one to select". This once again highlights the inconsistency between sounds and scripts (characters). There are words that are pronounced the same, namely homophones, but they are written differently and mean completely different things. Therefore, they need to recognise the characters first. For beginners of Mandarin, it poses a challenge as they have limited subject knowledge.

Except for checking whether the students could look up Mandarin characters by typing Pinyin, they were also asked about their perception of detailed information of the characters provided by the website Arch Chinese, such as pronunciation, radicals, components, stroke count, among others. Among 35 respondents, 27 (77%) adopted a positive attitude towards that detailed information as they found it useful. They found the information was very informative about the character or phrase they were searching for, making it easier for character memorisation and a better understanding of the character or phrase being searched. Grade 12 FAL learner Alice Smith (L-Q-2) found the information "useful as you are able to connect to other words as well as fully understand all aspects of the character". In addition, seven (20%) respondents admitted that they had not noticed it yet, while one (3%) respondent found it too much to absorb. In this case, more information seemed to be counterproductive.

As mentioned earlier in the literature review chapter (see 2.8), being aware of components of a character, for instance, radicals, is conductive to character learning according to dual-coding theory. This theory concerns three dimensions of processing, namely "representational, associative, and referential processing" (Sadoski & Paivio, 2013, as cited in Kuo et al., 2015, p. 4) when it comes to individual differences in visual skills. Visual input is activated in the representational process. This visual input can include radicals and components of characters. For instance, the radical "口" can be seen as a square block as an image. It can be an independent character meaning mouth or measure word for family members. It can also serve as a component to form many other characters. There can be quite a lot of words with "口", such as 吃，叶，可，兄，另，吗，呆，骂. The position of 口 can be on the left side, like "吃" or "叶", on the top, like "兄" or "另", or at the bottom part of a character, like "可". Learners may identify these radicals in other characters. For beginners, they noticed the different radical on the left for characters "他" and "她" as well as the common component "也". Radicals and components contain meaning. For instance, radical "女" indicates a female.

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The meaning of radicals or components, together with their position in the character, will help them break down the characters, which facilitates the process of character learning among non-native Mandarin learners. This confirmed what respondents perceived. James O'Neil (L-Q-18) from Grade 9 FAL said "it helps me remember the character easier".

The website also provides a handwriting practising function. Learners can practise writing themselves just by clicking the brush button (please see details in Section 5.3.2). I wanted to find out how they perceived this function. There were five options to select from: very difficult, a little difficult, manageable, easy, and very easy. Most of the respondents found it within their grasp as 14 (40%) respondents found practising the handwriting using the brush button easy, 13 (37%) found it manageable, and seven (20%) found it very easy. Just one (3%) respondent rated it very difficult. Although students found it easy to practise, however, they sometimes found it challenging as it did not work as they expected. The following quotes evidenced this:

> Because sometimes it makes me write over and over. (Lilian Mckenzi, L-Q-10, Grade 9 SAL)

> It helps but it can be frustrating at times. (Umama Wakho, L-Q- 6, Grade 9 SAL)

> The brush can be inconsistent and sometimes it doesn't register when you try to write the stroke. (James O'Neil, L-Q-18, Grade 9 FAL)

This is because the website is designed in a way that a user must follow the right order and the stroke must be written in the right direction; if any of these are not met, it will not allow the user to proceed. For pupils who mastered these, it became a benefit, as stated in the following comments made by respondents:

> Once I see the order it becomes a lot easier. (James, L-Q-34, Grade 8 SAL)

> It helps you know which stroke goes first and how it is drawn if you do the wrong thing. (Inala, L-Q-17, G8 FAL)

> Once I see how to do it, I memorise the order. (Anna Borshin, L-Q-27, G8 SAL)

> It is very easy cause you just need your figure. (Natalie Stunner, L-Q-4, G9 SAL)

There is no doubt that the mastery of basic stroke order helps Mandarin learning students write Chinese characters with the proper structure; it is helpful in their producing accurate, neat, aesthetic, and speedy character handwriting (Tin et al., 2018). Research on English-speaking beginners of Mandarin (Xu et al., 2013) found that stroke order animations displaying the stroke sequences help learners to develop their "sensitivity to Chinese orthography" (p. 436). There is no doubt it is facilitating non-native speakers of Mandarin in recognising and attaining characters. Most importantly, it not only improves their writing skills but also their reading competence without the aid of Pinyin (Everson, 2011, as cited in Xu et al., 2013). Being able to read and write competently is of utmost importance for FET students who will be writing Mandarin for the matric examination. From this point of view, stroke, stroke order, or radicals play an important role in their character acquisition, which can be further beneficial to their Mandarin language literacy development.

Respondents were further asked their preferred ways to practise writing characters. Eight (23) respondents chose to use the website Arch Chinese, 11 (31%) respondents preferred copying on paper, 16 (46%) chose both ways, namely, using Arch Chinese and copying on paper. Their choices indicated that students integrated technologies into their character acquisition, which allowed them to carry on their learning even outside the classroom and they could work at their own pace. On the other hand, students who relied on mechanical copying characters disclosed the fact that they still did not have enough knowledge of Chinese radicals. This was particularly true for Grade 8 and 9 Senior Phase students due to their limited subject content knowledge. This echoes some research findings of Shen (2005), who found copying and learning strokes were the most used character-learning strategies.

The last questionnaire question involved students' suggestions for the website so that it made character learning easier. Ten (35%) students were happy with the website's settings and they wanted no change. Eight (23%) respondents hoped the website's format, layout, and features could be simplified and made easier to navigate. Some respondents made some proposals, for instance: the layout to be bigger (2); using different colours (2); being able to type English when searching (2); customising own settings (2); and being able to rate one's writing (2). Other changes respondents would like to be included: pronunciation of the words (1); telling the meaning of stroke (1); providing English translation (1); quizzes, games and flashcards, etc. (1); a tool where one can make sentences (1); consistent writing when trying to practise the

characters (1); and being able to search two separate characters together (1). It is worth noting that some of the features, such as customisation of own setting, quizzes, games, and flashcards are available for people who pay for a subscription. It was because of their suggestions that I became a subscriber shortly after the survey.

6.8 Conclusion

From the data analysed above, we can see that most respondents expressed positive attitudes towards the use of the website Arch Chinese, although some of them were still in the process of familiarising themselves with the website. As indicated in this chapter, the features and functions of the website, nevertheless makes character learning less stressful, are easy to follow, or even enjoyable according to the experience of respondents. So far, all the findings of the research questions have been presented. The next chapter, therefore, focuses on the main findings of this study, proposed recommendations based on these findings conclude this study.

CHAPTER SEVEN

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

7.1 Introduction

In this chapter, I will present the main findings as answers to the three research questions. Based on the findings, recommendations are made for various parties, such as the curriculum makers, the IEB assessment body, future website designers, and Mandarin teachers. The limitation of this study, ideas for future research, and my personal introspection are presented as well.

The incorporation of Mandarin SAL into South African schools made it a possible subject choice. The first Mandarin curriculum was released in 2014 by the DBE and implemented in 2016 (DBE, 2015, p. 5). The Language in Education Policy and National Curriculum Statement states that non-official languages can be taken as elective subjects at FET Phase (Department of Education, 1997). This is to say, the introduction of Mandarin SAL by a school is optional, not compulsory. This will have some impact on the teaching and learning of Mandarin SAL nationally as not all learners have access to this language learning at school.

This study focused on character teaching and learning of non-native Mandarin learners in South African high schools, represented by the two participating private high schools in this research. The goal of the research was to find out how a character-learning website Arch Chinese supported non-native high school Mandarin learners in their Chinese character learning. Three sub-questions were designed to answer this main research question from different perspectives. These three sub-questions were constructed as follows:

1. What are the main requirements for character learning in the classrooms of the study?
2. What role does Arch Chinese play in character learning?
3. How do Mandarin SAL learners experience Arch Chinese as a learning tool in the learning of characters?

The main findings of this research are first discussed below.

7.2 Main Findings of the Requirements for Character Learning in the Classrooms of the Study

To answer Research Question One, namely, what are the main requirements for character learning in the classrooms of the study, a set of documents were analysed concerning character teaching and learning. These documents included the CAPS Mandarin SAL documents (Grade 4–12), the IEB Mandarin SAL SAGs and the textbook *Learn Chinese with me: Student's book 1*. The unpacking of the CAPS Mandarin SAL documents presented in Chapter Four made the following findings.

7.2.1 Findings that emerged from analysis of the CAPS Mandarin SAL documents

- Character learning is integrated into the Intermediate Phase teaching where the elements involving characters are covered in the curriculum.

These elements include strokes, stroke order, word writing, sentence writing, and paragraph writing at the beginning of Grade 4 and throughout the Intermediate Phase. However, the CAPS Mandarin SAL documents in the Senior and FET phases do not mention character learning in detail in the teaching plan. This suggests that there is an assumption in the curriculum that Mandarin will be taught in the Intermediate Phase. This cannot be guaranteed in an elective subject, but the Senior and FET phases curricula do not provide for the possibility that learners are being introduced to Mandarin and character writing for the first time. Instead, learners are expected to produce Chinese characters in the assessments. Pinyin is only allowed in the formative assessments in the Senior Phase.

- The sequence of the introduction of Pinyin and Chinese characters is not practical for teaching.

The CAPS Mandarin SAL Grades 4–6 document introduces the two systems at the same time which may overwhelm the Mandarin SAL learners and have a negative impact on their motivation and interest. It would be realistic to introduce Pinyin first and then characters. There is another conflict between the characters and Pinyin in the document. The curriculum stresses the use of authentic texts, which means characters only, but for SAL learners, texts in characters

without Pinyin can be meaningless. The CAPS Mandarin SAL document (DBE, 2014a) did not have a very clear stance on this matter.

- Due to the complexity of Chinese characters, Mandarin has its own unique characteristics and presents unique challenges.

However, the CAPS Mandarin SAL documents were designed based on the CAPS English Generic SAL. This means that character teaching and learning is restricted by the limited teaching time allocated in the curriculum. Furthermore, due to Mandarin SAL being an elective at school, the continuum of this language teaching and learning is not guaranteed. For instance, Senior Phase (Grade 8) learners at schools in this current study did not have prior Mandarin knowledge. The knowledge gap and limited teaching and learning time puts pressure on these learners. On the other hand, a learner who learnt Mandarin SAL in primary school might not have access to this language learning at the high school level.

- When it comes to the implementation of the curriculum, the resources specified in the curriculum do not exist in practice.

Furthermore, the absence of a vocabulary list in the curriculum makes it even more of a challenge. All parties involved in the matriculation examination, teachers, learners, and examiners, are faced with uncertainty as no one knows which characters and how many characters in total should be mastered. This is against the common practice in Mandarin curricula or syllabi in other regions in the world, for instance the EU, UK, Australia, China, and even on the African continent (Mauritius is an example). All these mentioned curricula or syllabi provide a detailed grading vocabulary list.

- The teaching approaches promoted in the CAPS Mandarin SAL documents do not correspond well with the Mandarin language or character learning.

The curriculum promotes text-based, communicative, process-orientated approaches (DBE, 2014a-c, p. 19). In the curriculum, all language skills, namely the listening, speaking, reading, and writing skills are expected to be taught, but the speaking and listening skills do not transfer to the reading and writing skills in Mandarin. Further, Cumming's transfer theory does not accord well with Mandarin Chinese due to the logographic nature of Mandarin which is non-

cognate to the alphabetic languages that respondents in this research spoke. Based on these, the assessment requirements for character count in the CAPS Mandarin SAL documents are not realistic.

7.2.2 IEB Mandarin SAL Subject Assessment Guidelines

The IEB Mandarin SAL SAGs have adjusted the requirements on character count. The number of characters for the writing tasks has been reduced compared to the CAPS Mandarin SAL documents. The current Mandarin SAL SAGs are the result of consultation with Chinese teaching professionals in the Mandarin SAL National Subject Forum meeting on the 26th of August 2015, as mentioned in Section 4.3.2.

In the Mandarin SAL NSC examination, Simplified and Traditional Chinese versions are available to candidates. Pinyin is included in both Paper 1 and 2, however, candidates need to answer in Chinese characters. Candidates are expected to write characters for the SBA portfolio as well. IEB's move, therefore, is worth affirming and repeating in the CAPS curriculum. In the SBA portfolio, essay writing accounts for 60% of the available marks. Being able to write characters is very important for candidates. Character writing can be a challenge and the misspelling by candidates which occurred in the NSC Mandarin examination also seems to be an issue. This has been repeatedly raised in the IEB Examiner's Reports (2018–2020). Inadequate command of vocabulary prevented candidates from expressing themselves effectively. Thus, writing characters correctly is of the utmost importance for the success of matriculants. The analysis took this issue further when looking at the textbook, *Learn Chinese with me: Student's book 1*.

7.2.3 *Learn Chinese with me: Student's book 1* and character learning

Findings also emerged from the analysis of the textbook *Learn Chinese with me: Student's book 1*. First, the Pinyin sounds do not get their due place in the lesson content of the textbook as it is not even incorporated into the lessons, although the Pinyin spelling (pronunciation) practice is. This arrangement is not beneficial to Mandarin SAL learners. Learners need to know the individual sounds first before they can pronounce the characters. However, it is also noted that Pinyin is mainly used for the first 12 lessons in the workbook and practice in the textbook. This allows for the transition from Pinyin to characters, which helps facilitate the learning of characters.

The textbook provides step-by-step guidance from stroke, stroke order, components, and character writing to the evolution of characters and components. The way the textbook presents these elements provides an effective introduction to character learning.

7.3 The Role That the Website Arch Chinese Plays in Character Learning

The website Arch Chinese has many functions. It can serve as a Chinese-English dictionary, for example, and at the same time, every aspect of character learning is available. This includes strokes, stroke order animations, native pronunciation audio recordings, extended phrases, and detailed information relevant to the character being searched. Customised worksheets for learners to practice character writing are also available to members who pay for a subscription to the next level, as well as games and other features for consolidation. For character learning, one of the most helpful features is stroke order animation and this is a distinguishing feature of Arch Chinese. Mandarin SAL learners can type in Pinyin and identify the character they are looking up. Components of characters are colour-coded. The features for various functions are displayed together under the character being searched and users of the website just need to click the button to interact. However, some learners found the animation stroke order challenging due to its correct character stroke sequence requirement.

The website Arch Chinese proved to be helpful in the learning of Chinese characters for Mandarin SAL learners as acknowledged by learners in the questionnaires (see below in Section 7.4). This is not only because of the features the website provides but also because of its positive reception by the Mandarin SAL learners in this current study. Animation of characters has generally been found to be conducive to character recognition and meaning recall. The handwriting practice feature is also available for learners to complete the water inked characters stroke by stroke. Correct stroke orders are shown if they are written incorrectly. The website provides learners with progressive guidance and a sense of independence in their learning as they have a choice of the features they wish to engage with.

As Chinese is a logographic language (see discussion in 2.9), the images of characters are easily noticeable. The way the website presents the Chinese characters and their components in different colours, is an excellent application of the dual-code theory, visual working memory, and visual-spatial attention. It helps learners identify and establish the orthographic representations, which can lead to greater accuracy in character writing and easier

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memorisation. Thus, Mandarin SAL learners' writing skills can be improved. In practice, the website can be used for teachers to teach new vocabulary in the classroom as well as for learners to practice writing in and out of the classroom.

Typing is, however, a prerequisite for the searching of characters when using the website. Mandarin beginners in this study preferred Pinyin instead of Chinese characters and this left beginner learners at a disadvantage when negotiating the website. They tended to believe that Pinyin represents the Mandarin language, which is not true. Typing allows for the application of Pinyin knowledge and the recognition of characters. Typing characters was challenging to some respondents as they needed to identify the character(s) they were looking up from a set of characters appearing at the same time. Typing and recognition of characters can cultivate the awareness among Mandarin SAL learners that characters define the meaning, not the Pinyin. It can also give learners a sense of achievement when they find the characters they are looking for.

7.4 Learners' Perceptions of Character Learning and Experience with Arch Chinese

This research established that most respondents held a positive attitude towards Mandarin language learning as one of their subjects. This inevitably affected their willingness to spend time and effort on learning the language. However, some respondents found the language too difficult to learn and character learning was one of the contributing factors. Predominantly, respondents found remembering characters challenging, and some of them specifically pointed out that memorisation of stroke orders was complicated. It is not surprising that 89% of them favoured Pinyin instead of characters. This is a significant finding in terms of the current practice of establishing learning with Pinyin before characters. Data collected in the questionnaire supports the use of Arch Chinese or a similar website or programme for character learning. Recommendations are made in this regard below.

Respondents reported that they benefited from the website for various reasons. These reasons involved improving marks, boosting confidence, and making learning the language enjoyable. These findings fit in with other research on what motivates learning in general and language learning in particular. The majority of learners (86%) found the stroke order animation the most useful in their character learning as the website shows the right order of strokes. They found the stroke order animation provided detailed and step-by-step guidance on stroke orders and

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made it easier to write themselves. When they practiced writing characters, most of them (69%) preferred either using Arch Chinese only or using Arch Chinese along with handwriting on paper, making this the most common method of memorising characters. Surprisingly, the respondents noticed the components of the characters in what they called "patterns". Due to the large proportion of phonetic-semantic compound characters (see details in Section 2.8), component learning is of utmost importance in character learning. Other features of the website, for instance, pronunciation recordings of native speakers or detailed information concerning character(s) being searched, were found to be helpful by most respondents but was not highlighted as much.

However, some learners found the animation stroke order challenging due to its correct character stroke sequence requirement. Besides, typing characters and identifying the characters was challenging for some learners. Moreover, a few learners found learning the tones of spoken Mandarin difficult. All these reflections echo the complexity of character learning. It must be pointed out that students' unfamiliarity with the layout and features of the website also caused frustration. This meant they needed detailed guidance as to how to navigate the website.

Repetition and memorisation of character learning cannot be avoided if one would like to be proficient in this language. Learners in this research realised this, as the majority of the respondents (69%) preferred to write on paper several times when they needed to memorise characters (Please see detail in 6.7). This current study shows that repetition and memorisation have key roles in Mandarin language learning, however, the curriculum does not acknowledge this. The importance of writing cannot be overemphasised, nor that repetition is the key to remembering Chinese characters. Furthermore, I would strongly suggest that one cannot learn Mandarin communicatively. This is picked up later in the recommendations section (see Section 7.5.2). Learners' Mandarin language learning will be limited in a significant way if they do not learn to write characters fluently.

In a modern context, the current study shows that ICT makes the process of repetition and memorisation an exciting and easier task for young learners who are technologically fluent. Using ICT can take the repetition out of the classroom and into an interactive virtual environment that learners seem to respond to positively. More importantly, Arch Chinese

provides Mandarin SAL learners with future learning opportunities, even after they leave school. Whenever they need to look up something in Mandarin, they have the resources to turn to. In this way, using ICT as a learning tool or support, their school-based language learning opens the door to their future life. The website Arch Chinese or any comparable ICT tool can become a learning tool for their life-long learning of this language.

7.5 Recommendations Based on the Findings of the Study

Based on the findings presented above, recommendations for various parties are proposed below. These parties involve curriculum policy makers, Mandarin teachers in the country, the IEB as the assessment body as well as future website designers.

7.5.1 Recommendations for curriculum policy makers

Based on the detailed analysis of the CAPS Mandarin SAL documents in relation to character learning and teaching, the following four recommendations are made for any future revisions of the curriculum:

1. As the CAPS Mandarin SAL documents were based on the CAPS English Generic SAL, the unique characteristics of the Mandarin language were not taken into consideration. It is strongly recommended that in future, this uniqueness is considered by allocating more teaching time for the Mandarin SAL subject. If this cannot be done, then realistic assessments need to be created by adjusting the requirements in line with the IEB Mandarin SAL SAGs. Mandarin is not the only non-alphabetic language in the SAL category. Hindi, Tamil, and Urdu, for instance, are all scripts languages that have their own unique characteristics, and any possible future revisions of the curriculum will benefit them all.

2. It is important to introduce Pinyin sounds first instead of the simultaneous introduction of Pinyin and characters at the beginning of learning Mandarin in Grade 4. It is also suggested that the curriculum or any guide or policy takes a clear stance on the use of Pinyin in the Intermediate and Senior Phase.

3. It is clear that providing a detailed vocabulary list for Grade 12 at least, or preferably, a vocabulary list for each grade would provide positive guidance for matriculants, teachers,

and examiners. The absence of a vocabulary list creates uncertainty for all parties involved in the NSC Mandarin examination.

4. The gap between the curriculum on paper and curriculum in implementation needs to be addressed. The continuum of the learning of Mandarin SAL cannot be guaranteed because it is an elective and the number of schools offering the Mandarin SAL subject to their learners is still limited. Whether schools offer this subject depends on school policy and funding, which may change. Besides, the prescribed resources specified in the curriculum do not exist in practice. Confucius Institutes and Confucius Classrooms have become the main teaching influence in South Africa but are not available everywhere. It is important to have national prescribed books from the Senior Phase onwards to eliminate the current unevenness in teaching and learning. It would be ideal for all the bodies involved in Chinese teaching to work together in this regard, but this may prove difficult in practice.

7.5.2 Recommendations for teachers in South Africa concerning character teaching

Due to the limited teaching time, and the absence of a Mandarin language environment, teaching depends on the teacher's ability to help students to improve their competence in every aspect of this language by exposing students to "different real-life situations" (Green 1985, as cited in Adil et al., 2020, p. 3726). This might be difficult for teachers on another continent; however, video and movie clips can be used in the classroom, thus students can be exposed to a "real-life situations". The following five suggestions are for teachers in South Africa:

1. When teaching characters, first present the character, and then use Pinyin and English as prompts to enhance the learning of meaning and pronunciation to be efficient. To compensate for the limited classroom teaching and learning time allocated in the curriculum, it is suggested to use ICT after school to allow for more practice, in line with findings in this research. Thus, an ICT programme like Arch Chinese investigated in this research is strongly recommended to Mandarin teaching professionals. It would work best with the printed character practising worksheets (please see Section 5.3.3).

2. Characters cannot be replaced by Pinyin. Pinyin can only be used as an aid for pronunciation, even for beginners of Mandarin SAL. Stroke, stroke order, and components can be

introduced step-by-step right after the introduction of the Pinyin sounds. A good foundation of the stroke, stroke order, and components will pave the way for the senior years of Mandarin learning. The Chinese numerals from one to 10 can be a good starting point for the introduction of character writing.

3. Cultivating an awareness among Mandarin SAL learners that characters define the meaning, while Pinyin can only represent the pronunciation. Using characters with the same pronunciation can illustrate this point well. For instance, "他们" and "她们" share the same pronunciation but mean different things. Therefore, Pinyin allows pronunciation to drive meaning, while characters allow learners to distinguish between meanings. This difference may be difficult for learners to grasp but is essential to engaging their understanding of the need to practice characters. In short, the teaching of Mandarin cannot do without character teaching.

4. Typing can be used by beginners for the recognition of characters. This will not only improve their Pinyin knowledge but also reduce the difficulty of handwriting Chinese characters when SAL learners are not ready yet. Thus, learners remain balanced between the barriers to learning caused by a lack of familiarity and the enjoyment of learning a completely different new language. Besides, giving students freedom in their learning is important by allowing them to choose the methods or strategies which best match their own unique learning style. They will start writing characters without being forced when they are ready.

5. After learners get used to typing characters, handwriting can be introduced. For Mandarin learners who take Mandarin SAL to Grade 12, character writing and memorisation are indispensable parts of this language learning. Dictation can be an effective method for character memorisation. It is suggested that dictation should start with simple characters and the number of strokes should remain four. Learners should be given enough practice time before the dictation. After the dictation, the learners should be allowed to practise the characters they wrote incorrectly.

7.5.3 Recommendations for Mandarin SAL NSC examination

The IEB requires visual or graphic text, for example, a menu or a newspaper logo with a heading, to be included in the Mandarin SAL NSC examination (see Table 4.3: IEB Mandarin NSC examination requirement in Chapter Four). For Mandarin, it can be a challenge due to two reasons: first, as mentioned earlier, Pinyin is included in the examination paper but the authentic visual or graphic text has characters only, which makes the inclusion of Pinyin impossible. On the other hand, due to the provision of simplified and traditional scripts to matriculants, it is a challenge to find the same visual or graphic texts in both scripts. It would be nice to give an examiner more freedom in their choice of the kinds of texts in the examination papers.

7.5.4 Recommendations for future character-learning websites

Even though the website of Arch Chinese does provide some introduction to key features of character learning, some respondents in this research still felt confused as to how to use the website. The designers of the website seemed to believe that users will know how to use the website, but this is not always the case. It would be nice to have an introductory video to help users to navigate the website easily as suggested by the learners in this research in 6.7. Besides, this website's format, layout, and features can also be simplified for easier navigation. Learning websites like Arch Chinese can be useful for character learning, however, for beginners of the language, too many options on offer might be counterproductive. This might be the reason why some of the respondents did not notice or chose to ignore some of the features. An "Arch Chinese for beginners" subsection of the website might be a useful feature.

7.6 Limitations of this Study

It would have benefited the study to include more learners. Due to the fear that learners would not be available or physically present at school because of the outbreak of the COVID-19 pandemic, close personal contact such as interviews and observation in the classroom were not adopted in this study. It was, therefore, not possible to explore the nuances of their responses. The number of respondents in this research was limited to 35, although all learners were invited to participate. It would have benefited the research to have a larger number of respondents so that it could have given deeper and more comprehensive coverage of character learning and teaching.

Character learning involves many aspects and this research did not cover all the nuances. Some aspects concerning character learning were not investigated intensively in this study. In particular, these aspects are Pinyin, including tones in characters and characters' semantic use when learning characters. The Mandarin learners whose mother tongue was English, which is not a tonal language, tended to ignore marking the tones. Tone marking for Mandarin SAL learners, thus deserves further investigation. Moreover, learners' character-learning styles or strategies and teaching strategies could have been examined in greater depth as they could provide concrete suggestions for learning methods. All these are important in relation to character learning, especially the role of Pinyin.

7.7 Ideas for Future Research

Pinyin plays an important role in character learning due to its similarity to Roman letters, which gives Mandarin SAL learners a tool for pronunciation. But this does not mean the learning of Pinyin for SAL learning is smooth sailing as tones are challenging to learners. The role of Pinyin is crucial in the learning of the meaning and pronunciation of characters. It is important to cultivate the awareness of tones among Mandarin SAL beginner learners because Mandarin is a tonal language. In my experience, some Mandarin SAL learners still tend to ignore marking the tones even after a year of study. It would be interesting to investigate whether speakers of African tonal languages such as Sesotho have difficulties similar to their English-speaking counterparts.

As mentioned earlier, there are aspects involving character learning worth further investigation and study. Because of the pandemic, this was largely a desktop study, but an investigation of practice would be very valuable. Learners' learning and teachers' teaching strategies or methods could be worth considering for further investigations. Mandarin SAL as a relatively new subject in South African schools has not been much researched and a study of the language learning policy and its influence on South African schools might be an interesting area for research.

7.8 Personal Introspection

Focusing on how to improve students' learning ability has always been my intention and a key interest of the study was to improve my teaching competency. After careful consideration, one of the character-learning websites, Arch Chinese, was selected as the learning tool to be

investigated in this study. I have gained a more comprehensive understanding of the website and now use it more effectively in and out of my classroom.

It has been a significant academic journey over the past two years (2020–2021). During this journey, I have grown into a more competent educator, researcher, and human being. The intensive study of this issue on the teaching and learning Chinese characters deepened my understanding of the curriculum, the IEB Mandarin SAL SAGs, and the difficulties as well as the importance of character learning. This study has also been beneficial to me as an IEB Mandarin SAL subject examiner. In short, my personal, academic, and professional development as a teacher and examiner have risen to another level as a result of the research presented here.

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Appendices

Appendix A: Ethical Clearance Permission
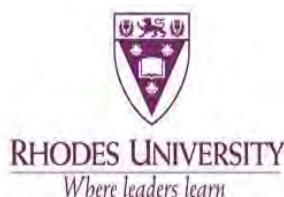
Rhodes University, Education Faculty
Research Ethics Committee
PO Box 94, Makhanda, 6140, South Africa
Tel: +27 (0) 46 603 8393
Fax: +27 (0) 46 603 8028
email: e.rosenberg@ru.ac.za

https://www.ru.ac.za/researchgateway/ethics/

24/03/2021

Shuying Fu

Education Department

g13F5988@campus.ru.ac.za

Dear Mrs. Shuying Fu

Re: How can the ICT programme "Arch Chinese" support non-native high school Mandarin learners in learning Chinese characters?

APPLICATION NUMBER: 2021-3849-5982

This letter confirms that your research ethics application has been reviewed and **APPROVED** by the Education Faculty Research Ethics Committee (EF-REC). Your permission letters have been received and you are free to proceed with your study.

Approval is granted for 1 year. An annual progress report is required in order to renew approval for an additional period. You will receive an email notifying you when the progress report is due.

Should any substantive change(s) be made during the research process, that may have ethical implications, you should notify the Education Faculty REC Chair via email. This includes changes in investigators. The REC Chair will advise as to whether a new application is necessary.

Do keep this clearance letter secure and accessible throughout your study and after its completion. It will be needed when a thesis is examined and when publications are submitted to journals.

Please also submit a brief report to the REC Chair on the completion of the research. This can be done via email. The purpose of this report is to indicate whether the research was conducted successfully and whether any ethics-related matters arose that the committee should be aware of, in order to guide future studies. XXX

 Sincerely,

Prof Eureta Rosenberg

Chair: Education Faculty Research Ethics Committee

Appendix B: Examples of Letters of Permission

Permission letter to schools

<div align="right">

Ms Shuying Fu

███████████████

████████████

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███████████

3 February 2021

</div>

The Headmaster

████████████

██████████

███████████

███

████████████

REQUEST FOR PERMISSION TO CONDUCT RESEARCH ON CHARACTER LEARNING OF MANDARIN STUDENTS AT ████████████████

I am registered as a Masters student at the Education Department of Rhodes University in Grahamstown, South Africa 2020. The goal of my research is to find how an identified Information and Communication Technology tool can be used to support Mandarin as a second additional language learners learning characters in and out of the classroom. This will benefit the learners at ████████████ and the ████████████, as well as improve my own teaching of characters. The research I wish to conduct requires me to collect data from the Mandarin students from March this year. The learners will fill in a questionnaire.

The research will be conducted under the supervision of Dr Caroline van der Mescht from the Education Department of Rhodes University, who is happy to answer any questions that may arise concerning this research. She can be contacted on **c.vandermescht@ru.ac.za**. I undertake to uphold the reputation of our school throughout the research process and will

ensure the anonymity of the learners and the school. No videos or recordings will be made, no learners' name will appear in the thesis and the data from the research will be stored securely. Only myself and my supervisor will have access to the data.

Mr Siyanda Manqele is the Ethics Coordinator at the Research Office, Rhodes University +27 (0) 46 603 7727, **s.manqele@ru.ac.za**. Any concerns which may arise during the research may be directed to him. This study has met the standards laid down by Rhodes University and received ethical clearance. The learners who volunteer for the research will each complete an assent form, and their parents will be sent a request letter explaining the study to them.

Upon completion of the study, I undertake to provide you with access to the research findings. If you require any further information, please do not hesitate to contact me on ▉▉▉▉▉▉▉ (via phone) and ▉▉▉▉▉▉▉▉▉▉ (via email).

 Thank you for your time and consideration in this matter.

 Yours sincerely

Shuying Fu

Signed permission form from the headmaster of ▉▉▉▉▉▉▉▉▉

Declaration

I……………………………………….....(Full names of the Principal) hereby confirm that I understand the content of this document and the nature of this Mandarin research project. I give permission for the introduction of this project at ▉▉▉▉▉▉▉▉ and support the envisaged research.

……………………………………. ……………………………

Signature of Principal Date

Letter requesting permission from the headmasters of ███████████ **and** ███████████
███

Signed permission form from the headmaster of ███████████

Declaration

I...███████████........(Full names of the Principal) hereby confirm that I understand the content of this document and the nature of this Mandarin research project. I give permission for the introduction of this project at ███████████ and support the envisaged research.

███████████ ....

Signature of Principal

24/03/2021

Date

Ms ████████

████████████████████

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The Headmaster

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████

Dear Mr ████████,

REQUEST FOR PERMISSION TO CONDUCT RESEARCH ON CHARACTER LEARNING OF MANDARIN STUDENTS AT ████████████████████████

I am registered as a Masters student at the Education Department of Rhodes University in Grahamstown, South Africa 2020. The goal of my research is to find how an identified Information and Communication Technology tool can be used to support Mandarin as a second additional language learners learning characters in and out of the classroom. This will benefit the learners ████████████████ and ████████████████████, as well as improve my own teaching of characters. The research I wish to conduct requires me to collect data from the Mandarin students from March this year. The learners will fill in a questionnaire.

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Mr Siyanda Manqele is the Ethics Coordinator at the Research Office, Rhodes University +27 (0) 46 603 7727, s.manqele@ru.ac.za. Any concerns which may arise during the research may be directed to him. This study has met the standards laid down by Rhodes University and received ethical clearance. The learners who volunteer for the research will each complete an assent form, and their parents will be sent a request letter explaining the study to them.

Upon completion of the study, I undertake to provide you with access to the research findings. If you require any further information, please do not hesitate to contact me on ████████ (via phone) and ████████████ (via email).

 Thank you for your time and consideration in this matter.

 Yours sincerely

Shuying Fu

Signed permission form from the headmaster of ████████████████

Declaration

I…………………………………………..(Full names of the Principal) hereby confirm that I understand the content of this document and the nature of this Mandarin research project. I give permission for the introduction of this project at ████████████████ ████████ and support the envisaged research.

………………………………………. ……………………………

Signature of Principal Date

Letter requesting permission from the headmasters of ██████████████████████
██

Signed permission form from the headmasters of ████████████████

Declaration

I…██████████████████████..(Full names of the Principal) hereby confirm that I
understand the content of this document and the nature of this Mandarin research project. I give
permission for the introduction of this project at ████████████████████
and support the envisaged research.

██████████████████ …   _23/03/2021_

Signature of Principal   Date

Permission letter to parents

Request for parents' permission for learners to participate in Research Project

Ms ████████

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3 February 2021

Dear Parent/ Guardian,

Request for permission for your child to participate in a Mandarin Learning Research Project at ██████████████████████████████████.

My name is Shuying Fu, the Mandarin teacher at ████████████████. I am also currently a Masters student in the Education Department of Rhodes University. My research project aims to improve learners' learning ability, especially in learning characters with the aid of an identified ICT tool. Your child has been invited to participate in this project in 2021.

I believe that this research will benefit your child as well as improve my own teaching of characters, a part of the curriculum which learners find difficult. The learners will fill in a questionnaire. This questionnaire mainly concerns learners' experience when using a particular ICT tool (Arch Chinese) for character learning. Please contact me if you have any questions.

This study has met the standards laid down by Rhodes University and received ethical clearance. Mr Siyanda Manqele is the Ethics Coordinator at the Research Office, Rhodes University +27 (0) 46 603 7727, **s.manqele@ru.ac.za** and may be contacted with any concerns which may arise during the research.

If you give permission for your child to participate in this research project, please complete the declaration form below and return it to me. Your child will be free to withdraw from the project at any time.

Yours sincerely

Shuying Fu

Parent / Guardian's Consent form

DECLARATION

I………………………………………………………………………….. (Full names of Parent/Guardian) hereby confirm that I understand the content of this document and the nature of this research project. I give permission for my child _____ to participate in this research project.

-- --------------------------

Signature of Parent Date

Permission letter to respondents

INFORMED CONSENT DECLARATION

(Learner participant's assent form)

Project Title: How can Arch Chinese support non-native high school Mandarin SAL learners to learn Chinese characters?

Researcher's name: Ms Shuying Fu

Name   **of**
participant: ………………………………………………………………………………

Has the researcher explained what she will be doing and wants you to do?

YES	NO

1.   Has the researcher explained why she wants you to take part?

YES	NO

2.   Do you understand what the research wants to do?

YES	NO

3.   Do you know if anything good or bad can happen to you during the research?

YES	NO

4.   Do you know that your name and what you say will be kept a secret from other people?

YES	NO

5.   Did you ask the researcher any questions about the research?

YES	NO

6.   Has the researcher answered all your questions?

YES	NO

7.   Do you understand that you can refuse to participate if you do not want to take part and that nothing will happen to you if you refuse?

YES	NO

8.   Do you understand that you may pull out of the study at any time if you no longer want to continue?

YES	NO

9.   Do you know who to talk to if you are worried or have any other questions to ask?

YES	NO

10.   Has anyone forced or put pressure on you to take part in this research?

YES	NO

11.   Are you willing to take part in the research?

YES		NO	

_____   _____

Signature of learner   **Date**

Rhodes University, Research Office, Ethics

Ethics Coordinator: **ethics-commitee@ru.ac.za**

t: +27 (0) 46 603 7727 f: +27 (0) 86 616 7707

Room 220, Main Admin Building, Drostdy Road, Grahamstown, 6139

Appendix C: Questionnaire for Learners

Write your pseudonym (false name) here: ……………………………………………

Thank you for taking part in this study, which is trying to find out ways in which Arch Chinese (Arch Chinese) can help you learn Chinese characters. Please answer as fully as you can.

YOUR BACKGROUND DETAILS

1. What grade are you in? Please circle your answer.

A.   Grade 8 B.   Grade 9 C. Grade 10 D. Grade 11 E. Grade 12

2. According to your timetable, what level are you doing Mandarin on? Please circle your answer.

A.   Second Additional Language B. First Additional Language

3. What languages do you speak? Please circle your answer.

A.   English

B.   Afrikaans

C.   isiXhosa

D.   Other language(s): _____ _____ _____

4. What is your gender? Please circle your answer.

A.   Male   B. Female

5. Would you take Mandarin for matric if you could? Please circle your answer.

A. YES   B. NO

If your answer is YES, please explain why; if your answer is NO, please explain why.

_____

_____

_____

USING ARCH CHINESE TO LEARN CHARACTERS

The next section is about the character-learning programme Arch Chinese (Arch Chinese).

6. How often do you use Arch Chinese to practise characters? Please circle your answer:

A.   Every day

B.   Every second or third day

C.   Once a week

D.   Seldom

7. Have you used Arch Chinese after school for voluntary private study? Circle your answer.

A. Yes.   B. No.

Please explain your answer.

_____

_____

_____

8. What advantages have you experienced from using Arch Chinese?

A. Improved marks in general

B. Increased confidence

C. I enjoy learning Chinese more

D. Other. Explain below

_____

_____

_____

9. What disadvantages have you experienced using "Arch Chinese"? Please give some details.

A. Uses too much time

B. I don't understand the website

C. I don't like learning online

D. I can already get along in Pinyin

E. Other. Explain below.

_____

_____

_____

10. What specific challenges do you face when learning Chinese characters?

_____

_____

_____

11. If you were given a choice to answer your test or examination paper either in Pinyin or in Chinese characters, which would you prefer? Please justify your choice.

_____

_____

_____

12. Which experience provided by Arch Chinese is most useful to you? Please put the following in order and explain why you have placed them as you have.

A. The dictionary function

B. Hearing the pronunciation

C. Learning the stroke order

D. Learning phrases that contain the syllable

E. Practising writing the character with your finger

_____

_____

_____

13. If you need to memorise one character, what do you do? Please outline your process briefly.

_____

_____

_____

14. Will you be able to type and look up a word or character using Arch Chinese?

A. Yes   B. No C. Sometimes

If no or sometimes, can you identify the reason(s):

_____

_____

_____

15. How do you experience the pronunciation provided in Arch Chinese? Please circle your answer.

A. Helpful B. Not very helpful C. I don't notice it.

D. Other, please specify:

_____

_____

_____

16. How do you experience the stroke order animations for Chinese characters? Please circle your answer and give a reason.

A. Helpful B. Not very helpful C. Not sure

Please explain your answer:

_____

_____

_____

17. How do you experience the detailed information of the characters in Arch Chinese, e.g., Pinyin, radical, component, stroke count, structure…? Please circle your answer and give your reason.

A. Useful B. Not very useful C. I haven't noticed it.

Please explain your answer:

_____

_____

_____

18. When you practise the handwriting yourself using the brush button, circle how you experience it:

A. Very difficult B. A little difficult C. Manageable D. Easy E. Very easy

Please explain your answer:

_____

_____

_____

19. When you practise character writing which do you prefer? Please circle your answer.

A. Using Arch Chinese B. Copying on paper C. Both D. None of them
E. Your own way of practising character writing:

_____

_____

_____

20. If you were the designer of Arch Chinese, what feature(s) would you like to include so that it makes character learning easier?

_____

_____

_____

Thank you for your help with this! If you have additional comment, I would be very interested to hear it.

All the best for learning characters in 2021 –

Ms Fu

Appendix D: Data Sample from Questionnaire for Learners

The following is an example of the raw data generated from the questionnaire. Learners' responses were noted down and combined under each question. Other data are available on request.

11. If you were given a choice to answer your test or examination paper either in Pinyin or in Chinese characters, which would you prefer? Please justify your choice.

L1 (Ben Dover, Gr 9 take both FAL and SAL, M): Pinyin as it's much easier where as (whereas) characters will give me a challenge.

L2 (Alice Smith; F, Gr 12 FAL): Chinese characters. I am more comfortable with this as I have had my exams in Chinese characters for many years now.

L3 (Dakslambo Sampleton, Gr 9 SAL, M): Pinyin, easier to remember

L4 (Natalie Stunner, 9 SAL, F): Pinyin, it's easier to remember because it's in letters

L5 (Ben 10, Gr9 SAL M): Pinyin because it's easier to write and understand

L6 (Umama Wakho, Gr 9 SAL, F) : I would prefer to write in Chinese characters, but only after having done it in Pinyin first. I think it is important we learn characters.

L7 (Kyra Michaels, Gr 9 SAL, F): I would choose Pinyin because I can remember words.

L8 (Mrs. Mencles, Gr 9 SAL, F): Pinyin because I'm more comfortable with it.

L9 (Lisa Turner, Gr 9 SAL, F): Pinyin, I feel more comfortable using Pinyin at the moment.

L10 (Lilian Mckenzi, Gr 9 SAL, F): Pinyin, because it is really hard for me to remember in characters and Pinyin is easier for me.

L11 (Debby de Klerk, Gr 9 SAL, F): Pinyin. I find its (it's) easier to learn and remember.

L12 (Kylie Jenner, Gr9 SAL, F): Pinyin, it is much easier because I already know Pinyin not the characters.

L13 (Emily, Gr 9, SAL, F) : I would prefer Pinyin, as it is easier to memorise.

L14 (Bronwyn, Gr 9 SAL, F): Pinyin, because I feel that Pinyin is easier to read as it is more similar to English.

L15 (Sua Rosé, Gr 9 SAL, F): I would much rather in Pinyin, as I am not confident in my Chinese characters just yet.

L16 (Conor, Gr 11 FAL, M) : Chinese characters, its (it's) expected of me to write in characters.

L17 (Inala, Gr 8, FAL, F): I would prefer Pinyin because it's easier to use and less complicated.

L18 James O'neil, Gr 9, FAL, M: Pinyin, I understand Pinyin better and I can remember the definitions of the Pinyin easier.

L 19 Leigh, Gr 8 SAL, F: Both, I'd like Pinyin so I could understand the sounds but also characters so I can get used to seeing & identifying them.

L20 flower 8 SAL F: I would answer it in Pinyin because I feel more comfortable writing in Pinyin.

L21 8 SAL Blenda F: Pinyin. I find it much easier.

L22 Andy Mak 8SAL F: Pinyin, because its [sic] easier to understand.

L23 Sarah 8 SAL F: Pinyin, it's more easier [sic] to learn than Chinese characters.

 L24 Holland Davidson F: I would use Pinyin, I personally find Pinyin easier than characters.

L25 Victoria Gregg 8 SAL F: Pinyin because its [sic]easier.

L26 Linda Sue 8 SAL F: Pinyin because it's easier and I understand it more.

L27 Anna Borshin 8 SAL F: I would prefer to write in Pinyin because that's what we've focused on these past couple of weeks.

L28 Ben Button 8 SAL M: Pinyin because I struggle with the characters.

L29 Jeff 8 SAL M: Pinyin because you do not need the website when you study and it is much more easier.

L30 Sam bergers 8 SAL M: Pinyin because I am beter [sic] at it.

L31 Jonny Sins 8 SAL M: Pinyin, because it's much easier than to remember all the strokes.

L32 Dixie Normas 8 SAL M: Pinyin, it is a bit easier to understande [sic].

L33 Devlin 8 SAL M: Pinyin, it is easier to understand.

L34 James 8 SAL M: Pinyin because it's a lot simplier [sic] and it is also easier to remember and makes more sense to me.

L35 Charles Kirk 8 SAL M: I would choose Pinyin because it is easier to remember and better.