# The Use of ICT in the Chinese Classroom: A Singapore Perspective

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**Abstract:** The Chinese language (CL) curriculum for Singapore primary schools proposed in 2004 highlights two pedagogical changes: the modular approach and the integration of ICT. The modular approach puts students into three different groups (or modules, including bridging/reinforcement, core and enrichment) with an aim at catering to students' diverse learning needs. To respond to differentiated learning as initiated in the new curriculum, differences in the type of ICT and the frequency of ICT use in actual teaching practice are expected. This paper endeavors to provide a detailed picture of ICT integration in the Chinese lessons in Singapore primary schools. 207 Primary two Chinese lessons in 20 schools were observed, and teachers' teaching practices were coded by applying the Singapore Chinese Pedagogy Coding Scheme. The preliminary results showed that no significant differences of ICT usage were found across the three modules, which implies that Chinese teachers' use of ICT has not met the needs of differentiated learning as designated in the Modular Curriculum.

**Keywords:** Primary education, Chinese language teaching, use of ICT

## 1. Introduction

### *1.1 Research Purpose*

Singapore is a multiethnic and multilingual country with its population comprised of three major ethnic groups, namely, Chinese, Malay and Indian. English, Mandarin, Malay and Tamil are designated as the country's four official languages. Ever since 1969, Singapore has been adopting an English knowing bilingualism policy that requires every Singaporean to master English as well as the language of their own ethnicities, viz., three designated Mother Tongue languages (MTLs): Mandarin for Chinese, Malay for Malay, and Tamil for Indian (Pakir, 1993). To be more specific, English is taught as the students' first language and the main medium of instruction in all schools for all subjects except for the MTL courses and a couple of humanity subjects such as civil and moral education.

As an effect of such bilingual policy, in the Chinese community, an inter-generational language shift from Chinese languages (including Mandarin and other dialects) to English has occurred in familial settings. According to the latest Singapore Census (2010), nearly half of the children entering primary school in that year were reported to use English dominantly at home, as compared to 9.3% in the 1980s. This home language shift has led to greater difficulty in CL learning, and a reform in the CL curriculum has been initialized to help students to adapt and thrive in this globalized world.

In 2004, the Singapore Ministry of Education (MOE) proposed a nation-wide curriculum reform in CL education in primary schools. The new curriculum reform proposed a

pedagogical change featuring in differentiated learning. It also recommended the use of information and communication technology (ICT) to enhance students' interest in CL learning and promote the use of CL. In view of such a curriculum reform, this study aims to investigate how ICT is applied in CL teaching in Singapore's primary schools, with special interest to examine whether classroom teachers' use of ICT meets the requirement of differentiated learning.

### *1.2 The Chinese Curriculum Reform in 2004*

The expansion of global markets and the development of new ICTs have brought a series of dramatic changes to education in today's world (Darling-Hammond, 2010). To catch up with such a trend, Singapore also initiated curriculum reforms in various subjects and fields, including the CL curriculum reform that was piloted and launched in 2006. Before 2006, students in primary schools were taught with a relatively standardized curriculum. Within each unit of the textbook, only one text was provided, and the learning focuses were equally emphasized on the four language skills, namely, listening, speaking, reading and writing. The pedagogical focuses were mainly on memorization and exam-oriented repetition (CLCPRC, 2004). The core pedagogical focus of the new curriculum (hereafter, the Modular Curriculum) was to reorient the teaching practice toward a more individually customized and communicative mode. It highlights a number of changes in pedagogies, among which the modular approach and the use of ICT are two main focal points. The flexible "modular approach" is designed to cater to students with varying levels of Mandarin proficiency. Meanwhile, ICTs are promoted so as to enhance students' communication skills (especially, listening and speaking) as well as to increase students' learning interest.

#### *1.2.1 The Modular Approach*

The Modular Approach is a pedagogy based on the concept of differentiated learning. It intends to provide customized content for students from various backgrounds and with diverse abilities. For example, different from previous textbooks, each unit in the new textbook series consists of three different modules.

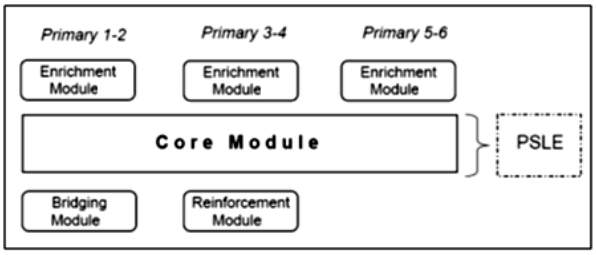


Figure 1. Structure of Chinese Language Modules for Different Learner Profiles (CLCPRC, 2004, p. 9)

Figure 1 shows the structure of module arrangement from Primary 1 (P1) to Primary 6 (P6). All students take the "core module" in each unit which focuses on the knowledge needed for the Primary School Leaving Examination (PSLE). Students who enter schools with little exposure to CL, typical of children from English dominant families, take the "bridging module", which emphasizes on the building of listening and speaking skills that would assist them with picking up the core module so as to catch up with their peers. The "bridging module" in the unit is replaced by "reinforcement module" during Primary 3 (P3) and Primary

4 (P4). For P5 and P6, the Basic Chinese course continue to serve the needs of linguistically weak students. The bridging module and reinforcement module differ in the length of the texts. The bridging module mainly introduces words useful for learning in the core module. The reinforcement module in P3 and P4 includes a passage of a topic similar to, but easier than those in the core module. Additionally, an "enrichment module" in the unit is added on top of the core module for those who have the ability and interest to go beyond the core syllabus.

The curriculum developers believe that through this modular approach, students with different language capacities and home language backgrounds could receive "customized" learning contents. Those who are weak in Mandarin can catch up with the average batch at their own pace, while the stronger ones will further improve with an enrichment module.

### *1.2.2 The Use of ICT*

The use of ICT was greatly promoted in the CL curriculum reform with the hope to enhance students' Chinese learning. More specifically, ICT application in CL pedagogy was to achieve four goals, namely, to ignite students' interest, to facilitate Chinese character writing, to assist in independent learning and assessment, and to increase opportunities to use CL (CLCPRC, 2004). However, how the integration of ICT use can promote differentiated learning was not stated clearly in the Report of the Chinese Language Curriculum and Pedagogy Review Committee (CLCPRC, 2004), the major official document that spearheaded the curriculum renovation. In other words, there were only general concepts and visions without detailed guidelines and procedures for teachers to use ICT to enhance their teaching.

## *1.3 ICT and Chinese Language Education*

Buang (2011) introduced the "10'C Programme", a Web 2.0 based programme that enabled students' independent learning and peer interaction in learning MTLs. The preliminary evaluation shows a "definite advantage of the new approach (ICT approach)" and the "new ICT-based pedagogy for the learning and teaching of MTLs is contributing to the fostering of learner autonomy in language learning in primary schools in Singapore" (Buang, 2011, p. 239). Lim and Tay (2003) reported how different types of ICT tools (informative, situating, constructive, and communicative tools) were used to engage Singaporean students in higher-order thinking. They pointed out that different types of ICT tools were often used to complement one another to achieve the teaching objectives. Moreover, the classification of an ICT tool is based more on how it is used than its characteristics, and effective management of digital instructional resources tends to ensure seamless and easy retrieval and supports the integration of ICT into the curriculum.

Since the use of ICT and differentiated learning are two major components of the modular curriculum, it is our focus to see how the use of ICT could be integrated into differentiated learning, and whether CL teachers' actual teaching practices would show any module-wise variation with respect of the use of ICT. To be more specific, since the aim of the modular curriculum is to provide learning contents tailored up for students with diverse proficiency in CL, we expected that teachers would adopt customized pedagogies for students in different modules. Thus, the use of ICT in different modules was expected to be different in terms of both type of ICT tools and frequency of their use.

## 2. Research Methods

### *2.1 Participants*

This study adopted the method of class observation to investigate the use of ICT in different modules in Singapore primary schools. The video recordings were obtained from a large-scale ongoing research project at the Centre of Research in Pedagogy and Practice, National Institute of Education, Singapore. In that project, three classes of different modules (bridging, core, and enrichment) in twenty primary schools' P2 cohort were randomly sampled to be observed. For each class, one week's worth of lessons were systematically observed and recorded because one unit should be taught within one week according to MOE's curriculum. Each lesson lasted from thirty minutes to 1.5 hours. In total, 207 lessons were observed, including 56 bridging lessons, 68 core lessons, and 74 enrichment lessons.

During the observations, the researchers used the Singapore Chinese Pedagogy Coding Scheme (SCPCS) to code each lesson. This coding scheme was developed on the Singapore Pedagogy Coding Scheme (Luke, Freebody, Shun, & Gopinathan, 2005). The SCPCS was modified to facilitate classroom observation, help capture the features of teachers' pedagogical practices, and examine the similarities and differences among different modules. Each lesson observed was divided into several phases according to teachers' teaching activities. Each phase lasted at least three minutes, and within each phase, the pedagogical focus, the teaching tools, code switching, the learning tools students used, and students' engagement were coded according to the coding manual. In the present study, we focused only on the data of teachers' teaching tools. We recorded exactly whether the teacher had used any tools and what kind of tools the teacher adopted.

Since lessons were observed across three modules, it was expected that teachers' use of tools, especially ICT tools, would vary from module to module. To be more specific, students in the three modules would be taught with diverse pedagogical approaches since they possessed different CL capacities, and miscellaneous tools would be applied so that the aim of differentiated learning could be achieved. In order to investigate the differences of the use of ICT among the three modules, one-way between subjects ANOVA was conducted to compare the effect of module type on various conditions.

## 3. Preliminary Results

Since the study mainly focused on teachers' use of ICT, this paper only provides the results of the following categories, namely, Teacher's Tool_Nil (no ICT usage), Teacher's Tool _ICT_total (including Teacher's Tool_Traditional ICT and Teacher's Tool_New ICT), and Teacher's Tool_Traditional (teacher used traditional tools such as textbooks, whiteboard, worksheets, etc.). The use of traditional ICT such as PowerPoint, Audios and Videos was coded within the sub-category of Teacher's Tool_Traditional ICT, whereas the use of new ICT such as one-to-one computer, interactive whiteboard and multi-media involving interaction was coded under the sub-category of Teacher's Tool_New ICT. This paper examines the use of ICT across the three different modules (bridging, core, and enrichment).

One-way ANOVA results showed that for Teacher's Tool_NiL, there was a significant difference between Core and Bridging modules and between Enrichment and Bridging modules, $F(2, 195) = 6.577$, $p = .002$. However, no significant differences were found across modules, $F(2, 195) = 1.057$, $p = .350$ for Teacher's Tool _Traditional ICT, $F(2, 195) = 2.796$,

$p$ = .064 for Teacher's Tool_New ICT, $F(2, 195) = 1.057$, $p$ = .349 for Teacher's Tool_ICT_total, and $F(2, 195) = .085$, $p$ = .918 Teacher's Tool_Traditional.

## 4. Conclusion and Discussion

The above result indicated a very intriguing finding, that is, how to integrate the use of ICT into differentiated learning. Although the adoption of the modular approach and ICT attempted to band the weak with the average through differentiated pedagogies, the expectations did not seem to be well met when the intention of the curriculum reform was translated and carried out into practices. The result implies that teachers' use of ICT in Singapore CL classrooms has not met the needs of differentiated learning. CL teachers' pedagogical practices in general, and ICT use in particular, remained the same even though they were conducting lessons to students with different CL proficiency. Therefore, in order to fulfill the purpose of differentiated learning, teacher training should consider reinforcing the integration of ICT in classroom pedagogies to accommodate learners' diverse learning needs.

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