

ICT APPLICATION IN TEACHING AND LEARNING MANDARIN IN MALAYSIA SECONDARY SCHOOLS

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Abstract

The purpose of this study is to survey the application of ICT appliances in teaching and learning Mandarin in Malaysia secondary schools. The survey involved 31 teachers and 90 students from a few secondary schools in Malaysia. A questionnaire has been used as the survey instrument and data were processed using the SPSS program. Responses had been analyzed by using mean and standard deviation to show the teachers' and students' opinion, influencing factors, and the effects of ICT appliances applications in teaching and learning Mandarin in secondary schools in four states in Malaysia. Inferential statistics were used to analyze the data; one way ANOVA had been done to see the differences in use of ICT appliances based on social background. The results showed that both teachers and students realized the importance of CALL appliance in teaching Mandarin. Mostly, respondents agreed that ICT appliances give more positive effects in helping teachers during the process of teaching and learning Mandarin. However, many barriers constrained the teachers in teaching Mandarin by using CALL. The findings showed existence of significant difference between the frequency of using CALL appliance in teaching Mandarin with the teachers' perceptions, problems and the effectiveness of CALL appliance in teaching Mandarin.

Introduction

According to Ward and Peppard (2003), ICT refers to technology (hardware, software, telecommunication and networks), something which is tangible such as personal computers, servers, routers, cables, and intangible things such as software. Integrated technology nowadays has its advantage in combining realistic visuals with texts and sounds, besides allow teachers to apply ICT in many ways. The interactive multimedia materials were developed by integrating graphics, visuals, text, music, video and animation and these help to strengthen the students' comprehension towards a concept (Rusmini Ku Ahmad, 2006).

ICT tools have now removed the time and space limitation found in traditional teaching. Classroom dialogue can now extend beyond the time and space constraints of class time (Frayer, 1997). Carmen et al. (2003) state that integrating ICT tools in teaching can lead to increased students' learning competencies and increased opportunities for communication. Key findings under ImpaCT2 (www.becta.org.uk) show that the use of ICT tools in teaching and learning has positive effects on behavior, motivation, communication and process skills and enables autonomous student learning.

Application of Computer in Malaysian Educational System

In Malaysia, computer application was first introduced in schools after the launching of the Application and Management of Computer in Education Programme (CIE) in 1992. The pilot program, carried out in 60 secondary schools, was the starting point for the Computer Literacy Programme among secondary school students. These selected schools were equipped with one computer laboratory furnished with 20 computers for students, one computer for the teacher and one server.

Consequently, in 1996 the CIE program expanded to 90 schools, and expanded to 110 secondary schools in 1999 through the official broadcast letter KP(PPK) 8601/01/0400/Jld.XII (91) dated 11 February 2000. In 2001, the Ministry of Education Malaysia emphasized the effective learning strategy, parallel to the educational needs nowadays and for the future; therefore application of computer aided teaching and learning become important (KPM, 2001). Hence the Curriculum Development Centre produced the teaching and learning module to help teachers promote various effective teaching and learning approaches besides creating the happy and more effective classroom environment.

In 2002, the circular KP(BS-PP)8786/004/35 (8) dated 20 March 2002 titled "Pelaksanaan Program Komputer Dalam Pendidikan (KDP) Bagi Projek Pengkomputeran" (Implementation of Computer in Education Programme (CIE) of Computerization Project) informed all the schools equipped with computer laboratories under the Programme of School Computerisation of Malaysia Education Ministry to implement the Computer Literacy Programme in Form 1 and 2 (KPM, 2007).

The importance of using computer in education is stated by the Curriculum Development Centre, Ministry of Education Malaysia, in 2007:

Appropriate teaching and learning approaches are essential to meet the learning objectives set out in the content specifications. The teacher acts as an instructor or a facilitator depending on the types of activities and the learning outcomes.

The efforts above show the earnestness of the Malaysian government in implementing and expanding ICT applications in teaching and learning in the school system. This was strengthened by the implementation of the Programme on Information and Communication Technology Literacy for Secondary School and preparation of "ICT Literacy for Secondary School Guideline" as the guidelines to help teachers implement the program successfully.

CALL in Mandarin

In language education, Computer Assisted Language Learning (CALL) was began since the 1960s. After that, CALL went through three different phases, namely Behavioristic CALL, communicative CALL, and integrative CALL (Warschaur, 1999). Behavioristic CALL was first conceptualized at the end of the 1950s and expanded in the 1960s. It was influenced strongly by the theory of behaviorism that promoted the exercises and learning program in repeated drill and practice form. The second phase, communicative CALL, started to broaden its influence in the 1970s and 1980s. It was based on the communicative learning approach which protested the behaviorist approach that was perceived as unable to help prepare the students for effective and meaningful communication. The third or latest phase, namely integrative CALL, was influenced by two main modernization movements in the last decade – multimedia computer and the Internet. These two advances enabled the media integration process and provided a more effective teaching and learning platform. CALL through integrative ICT can be implemented as a whole and encompass all proficiency in language learning.

CALL facilities provided students with opportunities to learn language easily, including Mandarin which is the second most popular language in Malaysia after Malay Language and has potential market in the world. Although the Malaysian government has implemented application of ICT for more than 20 years in schools, studies on usage of CALL in Mandarin are still lacking.

A study carried out by Ambigapathy (2005) towards information technology literacy among the language practicum teachers in Malaysia indicated that Tamil Language and English practicum teachers shown high percentile in using ICT and agreed on the importance of computer aided instruction in teaching and learning. On the other hand, the Mandarin and Malay Language practicum teachers reflected moderate positive attitude towards ICT.

The Mandarin teachers embraced experience in using ICT basically, either through daily life experience or followed the courses on ICT. However the issue raised here are they implemented their experiences in teaching Mandarin because the subject of Mandarin is not provided with the ICT facilities such as laptop and LCD projector which are funded by the government in English, science and mathematic subject. What is the scenario of CALL among Mandarin option teachers in Malaysia? Can similar benefits be achieved here in Malaysia? What are problems faced by Mandarin teachers? In order to answer these questions, a quantitative study was carried out to find out the extent of ICT integration among Mandarin Language teachers and students in Malaysia.

Research Objectives

The objectives of this study were to investigate whether the Mandarin teachers are knowledgeable in the field of computers, and to what level the teachers use ICT in the teaching and learning process. Furthermore, the researcher aims to find out the perception of the teachers towards the usage of CALL, and whether they found it beneficial in teaching Mandarin in Malaysian secondary schools. Secondary schools here involved the government and Chinese independent schools. Other objectives include the problems faced by the teachers and the effectiveness of CALL appliance in teaching Mandarin. Feedback from the students was also an important indicator to show their response towards CALL appliance in teaching Mandarin.

Research Methodology

According to the implementation of ICT integration in the classroom (as represented in Figure 1) was set to explore the situation of teaching Mandarin in secondary schools in Malaysia generally.

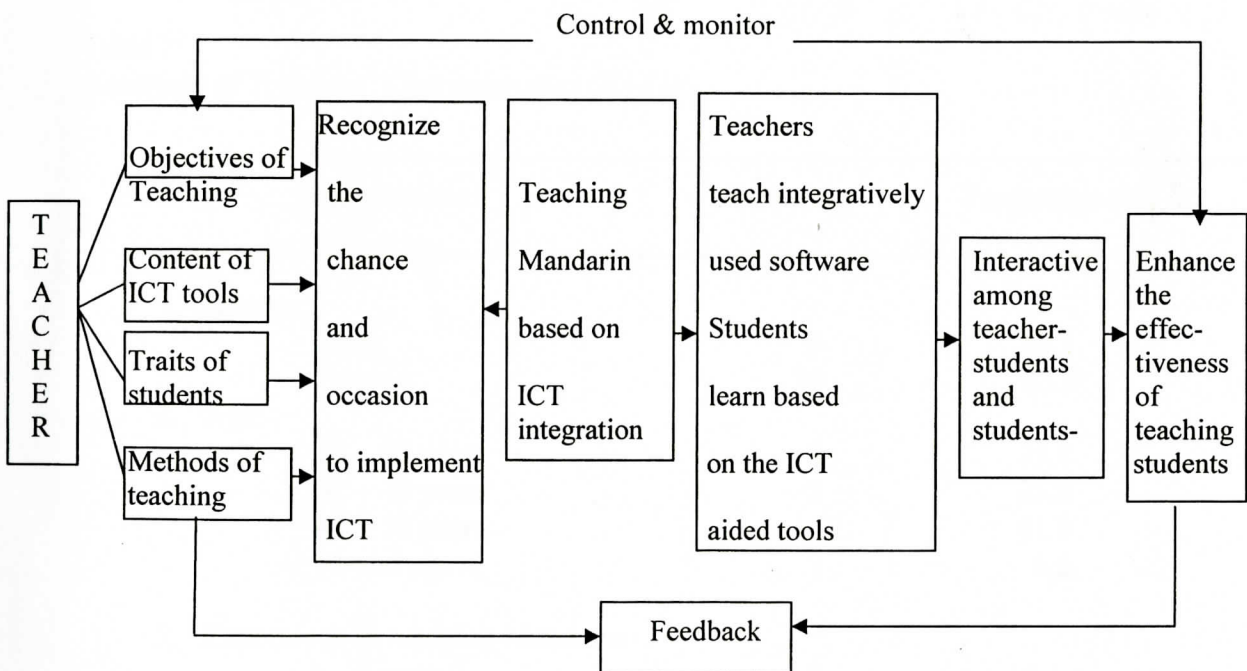


Figure 1. Model of Teaching Mandarin based on the ICT Tools

Teachers create and design the materials for ICT integration scientifically, then used them to teach Mandarin effectively to enhance the positive attitude among the students, enhance the effectiveness of teaching in the classroom, lighten the homework burden of students, and inculcate the valuable characteristics among the students.

The sampling frame of study was secondary school teachers and students in four premier schools in Malaysia. A survey questionnaire was given to 84 school Chinese language teachers and 100 students from 8 randomly selected secondary schools each in Penang Island, Perak, Selangor, and Johor. But the returned complete sets were 31 teachers' and 90 students' questionnaires.

The teachers' questionnaire was divided into 2 parts: Part 1 consists of 10 questions on the respondent's demographics, while Part 2 consists of 36 questions on the dependent and independent factors. The students' questionnaire was divided into 2 parts: Part 1 consists of 6 questions on the respondent's demographics while Part 2 consists of 28 questions on the dependent and independent factors. A Likert 5-point scale was used for the questions in Part 2. Parametric statistical tests were used to analyze the data.

Results

Reliability of instruments

The Cronbach alpha statistic for the teachers' and students' questionnaire is found to be 0.917; therefore the reliability of the questionnaire is acceptable.

Descriptive Statistics

Table 1
Summary of Teachers' Characteristics (N=31)

Characteristics	Frequency	Percentage (%)
1. Gender		
Male	5	16.1
Female	26	83.9
2. Age		
20 – 30 years	8	25.8
31 – 40 years	8	25.8
41 – 50 years	13	41.9
51 and above	2	6.5
3. Experience in teaching Mandarin		
1 – 5 years	5	16.1
6 – 10 years	7	22.6
11 – 15 years	7	22.6
16 – 20 years	4	12.9
21 years and above	8	25.8
4. Experience in using computer		
1 - 3 years	2	6.5

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4 - 6 years	6	19.4
7 - 9 years	14	45.2
10 - 12 years	7	22.6
➤ 20 years	2	6.5
5. Experience in teaching by using ICT		
1-3 years	24	80.0
4-6 years	5	16.0
>7 years	1	3.3
6. Proficiency in using ICT		
Very good	1	3.2
Good	20	64.5
Not good	10	32.3
7. Frequency of using ICT in teaching Mandarin		
Every time	2	6.5
Twice per week	2	6.5
Once per week	1	3.2
Twice per month	2	6.5
Once per month	20	64.5
Never	4	12.9
8. Computers belong to		
Own	15	48.5
School	14	45.2
Donated by society	1	3.2
Government	1	3.2
9. Learn computer since		
Primary school	5	16.1
Secondary school	7	22.6
Teacher training college	5	16.1
University	4	12.9
Others	10	32.3
10. Sources of teaching materials		
Local web page	8	25.8
China's web page	1	3.2
CD	3	9.7
Combination	19	61.3

Table 1 summarizes the teachers' characteristics. They are 5 male Mandarin teachers (16.1%) and 26 female teachers (83.9%). Among them are 13 (41.9%) aged between 41 to 50 years and 8 (25.8%) with more than 21 years of teaching experience. Some 14 teachers

(45.2%) have experience in using ICT in life and 24 (80%) teachers are still new in using ICT in teaching Mandarin. Table 1 shows that 21 teachers (67.7%) possess good proficiency in using ICT, but the majority (20 teachers or 64.5%) use ICT in teaching Mandarin only once a month. The majority of teachers use their own computers (15 teachers or 48.5%) or computers belonging to their schools (14 teachers or 45.2%) in teaching. Table 1 shows that most of the teachers learned computer in secondary schools (7 teachers or 22.6%) or others (10 teachers or 32.3%). Some 61.3% of teachers use the combination of the local and China web page and CD to teach.

Table 2

Summary of Students' Characteristics (N=90)

Background	Frequency	Percentage (%)
1. Gender		
Male	45	50.0
Female	45	50.0
2. Age		
15 – 16 years	46	51.1
17 years & above	44	48.9
3. Domicile location		
Urban	34	37.6
Rural	56	62.2
4. Father's occupation		
Government staff	7	7.8
Private	36	40.0
Businessman	34	37.8
Others	13	14.4
5. Mother's occupation		
Government staff	5	5.6
Private	12	13.3
Businessman	9	10.0
Housewife	64	71.1
6. Family income		
RM500 – RM2,500	71	78.9
RM2,501 – RM5,000	13	14.4
RM5,001 & above	6	6.7

Table 2 shows that there were more rural students (56 students or 62.2%) compared to urban students. High percentage of their fathers work in the private sector (36 fathers or 40.0%) or as businessmen (34 fathers or 37.8%), and the majority of their mothers are housewives (64 mothers or 71.1%). In addition, 71 respondents (78.9%) came from low income families.

Findings

Teachers

Table 3
Perception of Mandarin Teachers toward Application of ICT in Classroom

Perceptions (N=31)	Mean	SD
1. I am willing to teach Mandarin using CALL	3.4516	0.8500
2. I know how to apply CALL such as email, chat on line, MSN, IM etc.	3.2903	0.8244
3. When preparing the ICT material for teaching, I only consider the contents	3.0968	0.6509
4. When preparing the ICT material for teaching, I consider the content and design as well	3.5806	0.6720
5. School administrators support me in applying CALL in Mandarin	3.7097	0.5884
6. The facilities in my school enable me to teach Mandarin by CALL	3.2903	1.0706
7. CALL appliance in teaching Mandarin has a bright future	3.3871	0.7154
8. CALL appliance in teaching Mandarin is very important	3.4516	0.7676
9. CALL appliance in teaching Mandarin suit the changes of ICT era	3.7097	0.5884
10. CALL appliance in teaching Mandarin is an urgent need	3.1290	0.6704
11. CALL appliance in teaching Mandarin is easy to be implemented	3.0645	0.7718
12. CALL appliance in teaching Mandarin benefit me and my students	3.4194	0.6720
13. CALL appliance in teaching Mandarin lightened my burden of teaching	3.2258	0.7620
14. CALL appliance in teaching Mandarin is suitable to teach all the topic and skills	3.0968	0.7897

Table 3 show that there were two items that gained the highest mean among the Mandarin teachers, namely CALL appliance in teaching Mandarin suit to the changes of ICT era and the school administrators support me in applying CALL in teaching Mandarin (mean 3.71, SD 0.59). That meant the secondary Mandarin teachers realize that applying CALL to teach Mandarin is a new trend, thus their school administrators support them in doing so. They also notice the importance of CALL appliance in the classroom (mean 3.45, SD 0.77), so the teachers are willing to teach Mandarin using CALL (mean 3.45, SD 0.85). When preparing the ICT material for teaching, teachers will consider both aspects of content and design to attract the attention of students (mean 3.5806, SD 0.6720).

Table 4
Problems Faced by Mandarin Teachers

Problems (<i>N</i> = 31)	Mean	<i>SD</i>
1. I always face the technical problems when using CALL	3.2581	0.8551
2. ICT facilities in my school are not maintained & repaired properly	2.5806	1.0255
3. Some students don't like Mandarin to be taught by CALL	3.4516	0.8884
4. CALL application limits my teaching aids	3.2581	0.8932
5. CALL application make my preparation for the Mandarin lessons become harder	2.8710	0.8462
6. CALL application makes class control complicated	2.8387	0.7347
7. CALL application adds to my daily workload	3.4194	0.9228
8. CALL application takes up a lot of my time	3.8387	0.6375
9. CALL application ignores the roles of teachers	2.8710	0.7184

Nine problems were faced by Mandarin teachers in the classroom, as shown in Table 4. The major problem was that the teachers have to spend a lot of time preparing the ICT materials in teaching Mandarin (mean 3.8387, *SD* 0.6375). They found that some students do not like to learn Mandarin by CALL (mean 3.4516, *SD* 0.8884). Teachers also dislike to use CALL in the classroom because it adds to their workload (mean 3.4194, *SD* 0.9228).

Table 5
Effectiveness of Using ICT in Teaching Mandarin

Effectiveness (<i>N</i> = 31)	Mean	<i>SD</i>
1. CALL application may enhance the effectiveness of teaching Mandarin	3.4194	0.6204
2. CALL application may enhance the academic result of students	3.2581	0.5755
3. CALL application may enhance the reading proficiency of students	3.2258	0.6170
4. CALL application may enhance writing proficiency of students	3.2258	0.5603
5. CALL application may enhance listening proficiency students	3.3871	0.6152
6. CALL application may enhance speaking proficiency	3.2258	0.5484
7. CALL application may encourage students to involve in learning process actively	3.5484	0.6239
8. CALL application makes my preparation easier	3.0645	0.8139
9. CALL application may enhance communication skills	3.1290	0.8462
10. CALL application may enhance thinking skills	3.2903	0.6925
11. CALL application may enhance the quality of teaching	3.2581	0.6816
12. CALL application holds the attention of students to study	3.2258	0.5603
13. CALL application may take over the role of traditional method of teaching Mandarin	3.2581	0.6816

According to Table 5, most of the teachers agree that CALL application in the classroom has positive implication to students. The benefits gained include encouraging the students to involve actively in learning process (mean 3.5484, *SD* 0.6239), enhance the effectiveness of teaching in Mandarin (mean 3.4194, *SD* 0.6204) and enhance the listening proficiency of students (mean 3.3871, *SD* 0.6152). ICT tools is a compelling way to capture and hold students' attention and make learning relevant (mean 3.2258, *SD* 0.5603).

Students

Table 6
Importance of CALL Application in Teaching Mandarin

Importance of CALL (<i>N</i> = 90)	Mean	<i>SD</i>
1. I like teacher to teach Mandarin using ICT	3.5111	1.1441
2. My teacher masters the technique of ICT application	3.1667	1.0732
3. ICT facilities in my school are advanced	2.7000	1.2035
4. My Mandarin teacher selects the suitable material of ICT application	3.3667	1.0217
5. ICT application makes the teaching & learning process interesting	3.8556	1.0553
6. ICT application motivates me to study	3.3556	1.1027
7. ICT application enhances my learning process	3.5667	1.0711
8. ICT application enhances my thinking skill	3.6222	1.0340
9. ICT application enhances my speaking proficiency	3.2333	1.0605
10. ICT application enhances my reading proficiency	3.3222	1.0475
11. ICT application enhances my writing proficiency	3.3778	1.0448
12. ICT application enhances my listening proficiency	3.8000	0.9622

Table 6 shows the students' views on the importance of CALL in teaching Mandarin. The students in this survey agreed with the importance of using CALL in teaching and learning Mandarin because it makes the lesson more interesting (mean 3.8556, *SD* 1.0553), enhances their listening proficiency (mean 3.8000, *SD* 0.9622), and enhances their thinking skills (mean 3.6222, *SD* 1.0340). However the students found that ICT facilities in their school are not advanced or up to date; this item had the lowest mean at 2.7000 with *SD* of 1.2035.

Table 7
Problems Learning by CALL in Classroom (N = 90)

Learning Problems by CALL	Mean	SD
1. Teacher has not mastered the CALL skill	3.1333	0.9019
2. Teacher ignores the usage of the book	2.8556	1.1951
3. The material of ICT designed by teacher is not interesting	2.9889	1.0546
4. Teacher ignores interaction with students	2.7556	1.1149
5. Teacher depends too much on CALL application	2.5333	1.0515
6. Teacher always faces technical problems in teaching	3.2000	0.9853

As shown in Table 7, the students found that the major problem in using CALL to teach Mandarin is the technical problem faced by teachers (mean 3.2000, *SD* 0.9853). Beside that, teachers were also found to lack mastery of the CALL skills (mean 3.1333, *SD* 0.9019).

Table 8
Students' Hope Towards CALL

Students' Hope (N = 90)	Mean	SD
1. I hope my teacher uses CALL application to discuss the text book	3.4889	1.0412
2. I hope my teacher uses visuals in CALL	3.8333	0.8644
3. I hope my teacher uses music in CALL	3.7556	0.9518
4. I hope my teacher uses illustrations in CALL	3.8667	0.9143
5. I hope my teacher uses ICT application to give us exercises	3.3333	1.1016
6. I prefer the traditional method in learning Mandarin	2.8333	1.1732
7. I prefer the ICT application in learning Mandarin	3.6667	0.9944
8. I prefer the combination of traditional and CALL in learning Mandarin	4.0667	0.8715

According to Table 8, most of the students surveyed show they favored learning Mandarin by combining the traditional and ICT application method (mean 4.0667, *SD* 0.8715). When teachers apply CALL, students hope their teachers will utilize illustrations (mean 3.8667, *SD* 0.9518), visual effects (mean 3.8333, *SD* 0.8644), and music (mean 3.7556, *SD* 0.9518). On the other hand, the students also do not like the traditional "chalk and talk" method of learning Mandarin (mean 2.8333, *SD* 1.1732).

Inferential Statistics

Table 9
Summary of One-Way ANOVA Significant Difference Between Frequency of Usage ICT of Teacher and the Situation of CALL in Secondary Schools

Perceptions Towards CALL	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	395.609	5	79.122	4.420	0.003*
Within Groups	590.750	33	17.902		
Total	986.359	38			

Problems of Using CALL	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	398.444	5	79.689	5.225	0.001*
Within Groups	503.300	33	15.252		
Total	901.744	38			

Effectiveness in Using CALL	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	338.827	5	67.765	2.594	0.044*
Within Groups	862.250	33	26.129		
Total	1201.077	38			

Note. (*) Value of F Prob. =. 000. smaller than α Level of 0.05.

After analyzing all the teachers’ and students’ characteristics with the dependant variables, one-way ANOVA revealed that only frequency of using ICT by teachers showed significant differences between groups and within groups on issues of teaching and learning by applying CALL with a big sum of square at the level of .05. Frequency of using ICT to teach Mandarin has significant differences with teachers’ perception towards CALL ($p = 0.003$), problems in using CALL ($p = 0.001$), and effectiveness in using CALL ($p=0.044$).

Discussion

The research findings show that teachers and students surveyed have moderate attitude towards the application of CALL in teaching and learning Mandarin in secondary schools. In this study, the uses of CALL have become significant in developing techers’ ideas and

creativity in the teaching and learning process. A skilful teacher who uses CALL to support the teaching of Mandarin is able to enhance language acquisition. This is shown by the one-way ANOVA that teachers who use ICT frequently reflected more positive perceptions, encounter fewer problems in handling CALL in the classroom and show more effectiveness in attaining the teaching objectives.

Integrating CALL in the teaching and learning process will help teachers to attract the attention of students in the classroom. This finding is similar to that of Zhao, Hueyshan and Mishra (2000) who found that application of ICT results in more interesting and effective teaching besides better management of students. Students were also found to embrace positive attitude towards CALL in learning Mandarin.

School administrators were found supportive of the teachers in order to attract the interest of students to study. School administrators are important in creating the ICT environment in the school compound. They are supposed to give financial support via becoming the model of ICT users in administrative jobs besides responding to the changes of time. To promote the ICT culture in Malaysian schools, administrators should draft and prepare the development plan. The School Development Program should be parallel with the aims and procedures determined by the Ministry of Education. The state education department and district education office should collaborate to guide and support the schools in formulating the ICT development plan, and supervise its implementation.

The most revealing finding came from the ICT integrated lessons area. Out of a total of 31 teachers surveyed, only one teacher (3.2%) admitted that he has integrated ICT tools in the teaching and learning of Mandarin. The others said they found too many obstacles in their way including the administrative burden of teachers.

Teachers acknowledged that their ICT skills are generally poor and this is agreed by the students. Government teachers are currently being given a two week course on ICT integration in teaching and learning. This course which is known as BPPT (Bimbingan Perguruan Profesional dalam Teknologi Maklumat dan Komunikasi) is a nationwide project held in 90 centres (www.bppt.com.my). Besides the BPPT course, the state and local district education officials do organize a basic computer course for teachers. Although these courses are available, it is difficult to get selected as many teachers want to attend, especially Mandarin teachers because Mandarin is an elective paper to be selected by Chinese students, therefore the school management normally will nominate the fundamental subject teachers to attend such courses, such as English, Mathematics and Science teachers.

Nevertheless, if the opportunities to attend computer courses are provided, some of the senior teachers avoid going by directing other younger teachers to go. Most of the senior teachers adhere to the traditional ways of teaching, namely "chalk and talk" in the classroom, and are reluctant to adjust themselves to instructional technology. Four teachers (12.9%), especially the senior ones in this study have not attended any computer courses at all. So, change in teacher attitude and behavior towards ICT is crucial to face the new challenges in education (Ambigapathy, 2005).

In terms of age, this study found that CALL usage was higher among younger teachers, compared with older teachers. Findings show that most of the teachers in the 20 to 30 years age range are more interested and pursue positive response in CALL in Mandarin. This means age was negatively related to CALL where younger teachers were more likely to use these facilities. This study finding is similar with that of Ashinida

Aladdin (2004) who found that teachers aged between 25 and 45 years showed more interested attitude in teaching Arabic language by CALL.

The teachers indicated that after attended the training on ICT integration, they are aware of the benefits and know how to integrate ICT tools in teaching and learning activities, but they are unable to carry out ICT integrated lessons in class. So a sense of commitment and dedication on the part of the teachers is necessary. This study mirrored the fact that ICT skills gained at courses are being used to the maximum to further the participants' qualifications but they are not being used to improve their presentation skills for the benefit of pupils. Too many constraints hamper them in this crucial task of ICT integration in teaching and learning activities.

According to Zulkifli and Raja Maznah (1998), trained teachers with ICT usage experiences in schools or university tend to be skilful in ICT compare to those who are not trained. In this context, teachers without experience in ICT usage were found to have more negative attitude and high anxiety towards computers. Hence it indicated that the early exposure towards ICT usage in the classroom may have positive impact in moulding teachers' positive attitudes.

Hannafin and Freeman (1995) found that perception of the teachers towards the knowledge gaining will influence their perception toward ICT application in their classroom. So this study reflects the fact that most of the Mandarin teachers embrace constructivism¹ in education.

Therefore, it is suggested that appropriate skills training in MS Word, MS Excel and MS PowerPoint, Internet, website, on-line, email and so forth be given to all teachers on an on-going in-house basis. Those who have mastered basic skills should be given opportunities for advanced training. Appropriate incentive is recommended for teachers to encourage and motivate them to use ICT in the classroom; for example, the ICT tools competition can enhance the standard and innovation of the teachers in CALL. Although the emphasis of this staff development is likely to focus on academic staff, Bob (2007) suggested that administrative and technical staff also need ongoing staff development to ensure coordinated support and continued focus on teaching and learning issues.

However, teachers found that application of CALL is time consuming; hence their reluctance in using CALL to teach Mandarin. This is shown by the data that 20 teachers (64.5%) apply ICT only once per month. This situation happened because preparation for the ICT materials require a lot of time; teachers need to browse and access the Internet for a long time to look for materials, and this adds to their workload. Teachers are thus passive although they are aware of the importance of CALL in teaching Mandarin. Lack of time and workload are two main constraints hindering teachers from exploring the digital world.

Due to the heavy workload and administrative burden² shouldered by all teachers including Mandarin teachers, they lack teaching periods³ and energy to indulge in

¹ The teachers who embrace constructivism are the teachers who have positive attitude in integrating ICT in teaching and learning process compared to the teachers who believe in objectivism. Constructivism posits that students have knowledge in their mind and they are moulded by their own experiences; learning is the result of the teachers' effort to give knowledge to students; this is totally different from objectivist belief that knowledge exists everywhere, so learning is a process of transforming the knowledge from the world outwards into students' minds (Hannafin & Freeman, 1995).

² The administrative burden of teachers has been the bane of teachers in general. In this information era, there are still many tasks in schools which are done manually. Preparation of Report Cards, making attendance summaries and filling the Record Book are some of the administrative tasks which wear down the overworked teacher.

designing ICT tools to teach, so the school administrators should set up the ICT tools bank as the main resource for teachers to design ICT tools to enhance the effectiveness of CALL (Liu Yan, 2008).

Some teachers bear in mind that some students do not like them to teach Mandarin by applying CALL, but the findings from students show the other way of thinking. Students were generally favorable towards CALL in learning Mandarin compared with the traditional ways. This finding is similar to the study done by Dai Qin and Feng Zhengzhi (2005) that both teachers and students agreed that CALL is more efficient than the traditional ways because it is more lively and impressive.

Combining the graphic visual materials, text, music, video and animation of ICT not only fulfils the basic learning theory, but also impresses the students and makes them aware of the ICT functions in teaching and learning (Xu Hong-chen et al., 2004). This helps to hold student interest and maintain good teaching impact. For instance, the explanation articles are normally hard for students to understand because they explain the concept, events or things objectively. As a result, it is difficult for each student to imagine the real picture reflected by the author although he/she applied simple and correct language (Liu, 2006). In such circumstances, application of CALL will help the author to send the message exactly and clearly to students.

However, the traditional ways of teaching should not be abandoned totally from the classroom because it has its own advantages that cannot be challenged by ICT usage, for instance traditional ways of teaching and ICT are both continuing and complement each other in shaping the students' morale and personality, direct instructing education and controlling in the teaching process (Zhang & She, 2006).

Hence the surveyed students prefer the combination of CALL and traditional method of teaching and dislike the traditional ways most. Furthermore, students also think that teachers should utilize CALL applications especially in illustration, visual effect and music to teach Mandarin. This finding is similar with the study by Zhang and She (2006) that a combination of ICT and traditional ways helped students to understand more.

Many teachers cited lack of ICT resources and infrastructure facilities in schools as the most common hindrances to integration of ICT tools in the teaching and learning of Mandarin. Computers in fact are available in school for teachers and pupils but the findings revealed that many of them are out of order. This is a serious problem and repair services are slow. So this is the reason almost half or 15 teachers (48.5%) in this study buy their own notebook computers. The personal possession of a computer may well be the single most important factor enabling a teacher to integrate ICT into their professional practice (Dawes, 2000).

Commonly in Malaysia, the ICT facilities in private Chinese secondary schools are more complete equipped; meanwhile the sophisticated level of ICT facilities in government secondary schools are not uniform nowadays. Some government schools put their computers in the classrooms, some put them in the computer laboratory. Some of the computers are connected to the Internet, whereas the rest are not. Hence the challenge nowadays and in future in Mandarin education is providing the complete computer facilities for the class and for teaching purpose. However, connecting the computers to access Internet only does not guarantee the effectiveness of the online teaching and

³ The teaching period for Mandarin in government secondary schools are three periods per week, whereas the Malay Language and English are six and five periods per week respectively. But in Chinese private independent schools, the Mandarin teachers have six periods per week.

learning process. Teachers' and students' attitudes towards CALL need to be channelled in a positive way so that CALL effectiveness in the classroom can be enhanced.

Hence the application of CALL in teaching and learning needs proper planning, not by "hopping from any option" (*bidan terjun*) or treated as unimportant co-activities unrelated to the curriculum. Integrating ICT in the classroom is suitable with the curriculum needs and supports the teaching and learning process.

Conclusion

As ICT becomes increasingly commonplace within educational settings, there is an expectation for educators to utilize ICT tools to support classroom teaching and learning. The ICT usage have pervaded the world of education in hope of making student learning easier and more enjoyable. Unfortunately, the rapidly changing field of ICT poses the "technology-competent" teachers with a daunting task. The survey provided an insight into the impediments that Mandarin teachers face pertaining to CALL integration in the teaching and learning of Mandarin language. The full cooperation and support from the school administration, positive attitude of Mandarin option teachers, continuous training to update teachers' CALL skills and appropriate training on when, when not and how to use ICT tools appropriately in classroom situations is necessary to fully realize the benefits of CALL integration. In line with globalization, application of ICT will help to create the smart learning environment that emphasizes three main elements, namely *self access*, *self paced*, and *self directed*. CALL has a bright future in Malaysia but the constraints exposed by this study must be removed for better CALL implementation in teaching and learning .

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