ICT application in the teaching of mandarin in Malaysian secondary schools

A aplicação das TICs no ensino do mandarim nas escolas secundárias da Malásia

L'application des TIC dans l'enseignement du mandarin dans les écoles secondaires a Malaisie

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ABSTRACT

The purpose of this study is to examine the application of ICT in the teaching and learning of Mandarin in Malaysian secondary schools. This study involves 31 teachers and 90 students from a few secondary schools in Malaysia. A questionnaire is used and data collected is processed by using the SPSS program. Responses are analyzed by using mean and standard deviation to show the teachers' and students' opinion, influencing factors, and the effects of ICT applications in the teaching and learning of Mandarin in secondary schools in Malaysia. Inferential statistics, such as the one way ANOVA, is performed to see the differences in the use of ICT application based on social background of respondents. The results show that both teachers and students realized the importance of CALL application in the teaching of Mandarin. Most respondents agreed that ICT application produce more positive effects in helping teachers during the process of teaching and learning Mandarin. However, in applying CALL in the teaching of Mandarin, teachers experience various constraints. The findings show the existence of a significant difference between the frequency of using CALL and the effectiveness of the application of call in teaching Mandarin and teachers' perceptions and problems.

Index terms: secondary schools; ICT; Mandarin.

RESUMO

O objetivo deste estudo é examinar a aplicação das TICs no ensino e aprendizagem do mandarim nas escolas secundárias da Malásia. O estudo envolve 31 professores e 90 alunos de algumas escolas secundárias da Malásia. Um questionário é usado e os dados coletados são processados usando o programa SPSS. As respostas são analisadas através da média e do desvio padrão para mostrar as opiniões dos professores e dos estudantes, os fatores influentes e os efeitos das aplicações das TICs no ensino e aprendizagem de mandarim nas escolas secundárias da Malásia. As

estatísticas inferenciais, como a maneira única ANOVA, são realizadas para ver as diferenças no uso da aplicação das TICs baseado na experiência social dos entrevistados. Os resultados mostraram que ambos os professores e os alunos se deram conta da importância da aplicação CALL no ensino de mandarim. A maioria dos entrevistados concordaram que a aplicação das TICs produz mais efeitos positivos ao ajudar os professores durante o processo de ensino e aprendizado de mandarim. Contudo, em aplicar CALL no ensino de mandarim, os professores têm várias coações. Os resultados mostram a existência de uma diferença significante entre a frequência de usar CALL e a eficácia da aplicação de CALL no ensino de mandarim e as perspectivas e problemas dos professores.

Palavras- chave: ensino médio; TICs; mandarim.

RÉSUMÉ

Le but de cette étude est d'examiner l'application des NTIC dans l'enseignement et l'apprentissage du mandarin dans les écoles secondaires de Malaisie. Cette étude implique 31 enseignants et 90 students de quelques écoles secondaires en Malaisie. Un questionnaire est utilisé et les données collectées sont traitées en utilisant le programme SPSS. Les réponses analysées en utilisant une moyenne et le biais démontrent l'influence des opinons des enseignants et des étudiants, les influences et les effets des applications des NTIC dans l'enseignement et l'apprentissage du mandarin dans les écoles secondaires en Malaisie. Les indicateurs de la statistique différentielle, tels que l'analyse de la variance ANOVA, sont effectués pour voir les différences dans l'utilisation de l'application des NTIC en fonction des expériences sociales des répondants. Les résultats montrent que les enseignants et les élèves ont réalisé l'importance de la demande de CALL dans l'enseignement du mandarin. La plupart des répondants sont convenus que l'application des NTIC produit des effets plus positifs en aidant les enseignants au cours du processus d'enseignement du mandarin. Toutefois, en appliquant CALL dans l'enseignement du mandarin, les enseignants éprouvent des contraintes diverses. Les résultats montrent l'existence d'une différence significative entre la fréquence de l'utilisation de CALL et l'efficacité de l'application dans l'enseignement du mandarin et dans les perceptions et les problèmes des enseignants.

Mots- clés: écoles secondaires; NTIC; mandarim.

1. 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 allowing teachers to apply ICT in many ways. The interactive multimedia materials are developed by integrating graphics, visuals, text, music, video and animation and these helped to strengthen the students' comprehension towards a concept (AHMAD, 2006).

ICT tools have now removed the time and space limitation found in traditional teaching. Classroom dialogue can now be extended beyong 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.

2. 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 then to 110 secondary schools in 1999 through the official circular KP(PPK) 8601/01/0400/Jld.Xll (91) dated 11 February 2000. In 2001, the Ministry of Education, Malaysia, emphasized effective learning strategy,

parallel to educational needs then and the future; therefore the application of computer aided teaching and learning became important (KPM, 2001). Hence the Curriculum Development Centre was entrusted to produce the teaching and learning modules to help the teachers and to promote various effective teaching and learning approaches besides creating a happy and more effective classroom environment.

In 2002, the circular KP(BS-PP)8786/004/35 (8) dated 20 March 2002, entitled "*Pelaksanaan Program Komputer Dalam Pendidikan (KDP) Bagi Projek Pengkomputeran*" (Implementation of Computer in Education Programme (CIE) of Computerization Project) informing all the schools equipped with computer laboratories under the School Computerisation Program 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 (PPK, 2007, p. 7).

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 Information and Communication Technology Literacy Program for Secondary Schools and the preparation of "ICT Literacy Guidelines for Secondary School " as the guidelines to help teachers to implement the program succesfully.

3. CALL in Mandarin Class

In language education, Computer Assisted Language Learning

(CALL) was already in use 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 conseptualized 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 the form of repeated drill and practice.. The second phase, communicative CALL, started to spread 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 encompasses all proficiencies in language learning.

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

A study carried out by Ambigapathy (2005) on information technology literacy among the language practicum teachers in Malaysia indicated that Tamil Language and English Language practicum teachers shown a 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 have experienced in using basic ICT, either

through daily life experience or courses on ICT. However the issue raised here is whether they have used their experiences in teaching Mandarin because the subject of Mandarin is not provided with ICT facilities such as laptops and LCD projectors which are funded by the government in English, science and mathematics subject. What is the status of CALL among Mandarin option teachers in Malaysia? Can similar benefits be obtained here in Malaysia? What are the problems faced by Mandarin teachers? In order to answer these questions, a quantitative study is carried out to find out the extent of ICT integration among Mandarin Language teachers and students in Malaysia.

4. Research Objectives

The objectives of this study are to investigate whether 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 find it beneficial in teaching Mandarin in Malaysian secondary schools. Secondary schools here include government and Chinese independant schools. Other objectives include the problems faced by the teachers and the effectiveness of CALL in teaching Mandarin. Feedback from the students is also an important indicator to show their response towards CALL in the teaching and learning of Mandarin.

5. Research Methodology

The implementation of ICT integration in the classroom (as represented in Figure 1) is set to explore the situation of teaching Mandarin in secondary schools in Malaysia in general.
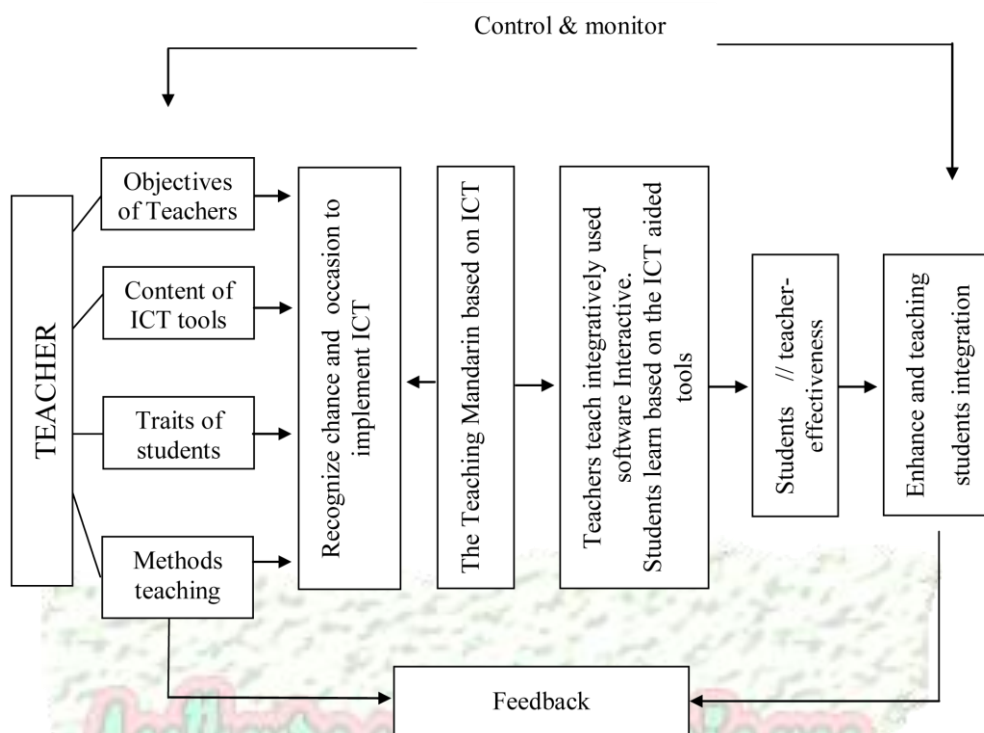
Control & monitor

TEACHER

- Objectives of Teachers
- Content of ICT tools
- Traits of students
- Methods teaching

Recognize chance and occasion to implement ICT

The Teaching Mandarin based on ICT

Teachers teach integratively used software Interactive. Students learn based on the ICT aided tools

Students // teacher-effectiveness

Enhance and teaching students integration

Feedback

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 valuable characteristics among the students.

The respondents of this study are secondary school teachers and students in four premier schools in Malaysia. A survey questionnaire is administered to 84 school Chinese language teachers and 100 students from four randomly selected secondary schools each in Penang Island, Perak, Selangor, and Johor.   The return rate is 85% and 93% respectively for the teachers and students respectively.

The teachers' questionnaire is divided into 2 parts: Part 1 consists of 10 questions on the respondent's demography, while Part 2 consists of 36 questions on the dependent and independent factors. The students'

questionnaire is divided into 2 parts: Part 1 consists of 6 questions on the respondent's demography while Part 2 consists of 28 questions on the dependent and independent factors. A Likert 5-point scale is used for the questions in Part 2. Parametric statistical tests are used to analyze the data.

6. Results

6.1. 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.

6.2. 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
4 - 6 years	6	19.4
7 - 9 years	14	45.2
10 - 12 years	7	22.6
13 - 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' demographic characteristics. There are 5 (16.1%) male Mandarin teachers and 26 (83.9%) female teachers. 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 and 24 (80%) teachers are still new in using ICT in teaching Mandarin. Table 1 shows that 21 (67.7%) teachers 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 a 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 are more rural students (56 students or 62.2%) compared to urban students. A high percentage of their fathers work in the private sector (36 or 40.0%) or as businessmen (34 or 37.8%), and the majority of their mothers are housewives (64 mothers or 71.1%). In addition, 71(78.9%) respondents come from low income families.

7. Findings

7.1. 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 are two items that have the highest mean among the Mandarin teachers, namely CALL application in the teaching of Mandarin to suit changes in ICT era and the school administrators support me in applying CALL in teaching Mandarin (mean 3.71, *SD* 0.59). It means that 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 application 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 (*N* = 31)	Mean	S*D*
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 are faced by the Mandarin teachers in the classroom, as shown in Table 4. The major problem is that the teachers have to spend

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a lot of time preparing the ICT materials in teaching Mandarin (mean 3.8387, *SD* 0.6375). They find that some students do not like to learn Mandarin with 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 (*N* = 31)	Mean	*SD*
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

With reference to Table 5, most of the teachers agree that CALL application in the classroom has positive implication on the students. The benefits gained include encouraging the students to involve actively in the learning process (mean 3.5484, *SD* 0.6239), enhancing the effectiveness of teaching Mandarin (mean 3.4194, *SD* 0.6204) and enhancing 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).

7.2. Students

Table 6

Importance of CALL Application in Teaching Mandarin

Importance of CALL ($N = 90$)	Mean	*SD*
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 agree 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 find that ICT facilities in their school are not advanced or up to date; this item has the lowest mean at 2.7000 with *SD* of 1.2035.

Table 7

Problems Learning by CALL in Classroom (N = 90)

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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 find that the major problem in using CALL to teach Mandarin is the technical problem faced by teachers (mean 3.2000, *SD* 0.9853). Besides that, teachers are also found to be lacking in the skills required to apply CALL (mean 3.1333, *SD* 0.9019).

Table 8

Students' Hope towards CALL

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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

With reference to Table 8, most of the students surveyed show that they favor learning Mandarin by combining the traditional and ICT 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 do not like the traditional "chalk and talk" method of teaching Mandarin (mean 2.8333, *SD* 1.1732).

8. Inferential Statistics

Table 9

Summary of One-Way ANOVA Significant Difference Between Frequency of Using ICT and the Situation of CALL in Secondary Schools

Evaluation	Variation	Sum of Square	df	Mean Square	F	Sig.	η
Perceptions Towards CALL	Between groups	395.609	5	79.122			
	Within groups	590.750	33	17.902	4.420	.003*	.00
	Total	986.359	38				
Problems of Using CALL	Between groups	398.444	5	79.689			
	Within groups	503.300	33	15.252	5.225	.001*	.01
	Total	901.744	38				
Effectiveness in Using CALL	Between groups	338.827	5	67.765			
	Within groups	862.250	33	26.129	2.594	0.044*	.00
	Total	1201.077	38				

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

After analyzing the teachers' and students' demographic characteristics and   the dependant variables, one-way ANOVA reveals that frequency of using ICT shows a significant difference between groups and within groups on issues of teaching and learning by applying CALL with a high   sum of square at the level of .05. There is a significant difference

between the frequency of using ICT to teach Mandarin and the teachers' perception towards CALL ($p = 0.003$), problems in using CALL ($p = 0.001$), and effectiveness in using CALL ($p=0.044$).

9. Discussion

The research findings show that teachers and students surveyed have moderate attitude towards the application of CALL in the teaching and learning of Mandarin in secondary schools. In this study, the application of CALL is significant in developing teachers' ideas and creativity in the teaching and learning process. A skillful teacher who uses CALL to support the teaching of Mandarin is able to enchance language acquisition. This is shown by the one-way ANOVA that teachers who use ICT frequently reported more positive perceptions, encounter fewer problems in handling CALL in the classroom and more effective 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 find that application of ICT results in more interesting and effective teaching besides better mangement of students. Students are also found to embrace positive attitude towards CALL in learning Mandarin.

School administrators are found to be 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 provide financial support via becoming the role model in the administration of ICT besides responding to the changes of time. To promote the ICT culture in Malaysian schools, administrators should draft and prepare a development plan. The School Development Program should be in line 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 comes from ICT integrated lessons. Out of a total of 31 teachers surveyed, only one teacher (3.2%) admits that he has integrated ICT tools in the teaching and learning of Mandarin. The others say they find too many obstacles in their way including the burden of administrative duties assigned to the teachers.

Teachers acknowledged that their ICT skills are generally poor and this is in agreement with the view of the students. Teahcers in public schools 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, especiallyso in the case of Mandarin teachers because Mandarin is an elective paper taken by few Chinese students. Therefore, school management normally will nominate teachers teaching the core subjetcs 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 would avoid attending such courses by directing other junior teachers to attend. Most of the senior teachers adhere to the traditional ways of teaching, namely "chalk and talk" in the classroom, and are reluctant to adopt instructional technology. Four teachers (12.9%), especially the senior ones in this study have not attended any computer courses at all. So,a change in teacher attitude and behavior towards ICT is crucial in facing the new challenges in education (AMBIGAPATHY, 2005).

In terms of age, this study found that CALL usage is 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 in and more positive in their response to CALL in Mandarin. This means that age is negatively related to CALL where younger teachers are more likely to use these facilities. This study's finding is similar with that of Ashinida Aladdin (2004) who found that teachers aged between 25 and 45 years showed more positive attitude and gretaer interest in the teaching of Arabic language with CALL.

The teachers indicate that after having attended the training in 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 being used to improve their presentation skills for the benefits of the pupils. Too many constraints on them in this crucial task of ICT integration in teaching and learning activities.

According to Zulkifli and Raja Maznah (1998), trained teachers with ICT 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 are found to have negative attitude and high anxiety towards computers. Hence, it indicates that the early exposure to ICT usage in the classroom may have positve impact in moulding teachers' attitudes.

Hannafin and Freeman (1995) found that perception of the teachers towards gaining knowledge would influence their perception toward ICT application in their classroom. This study also finds that most Mandarin teachers adopt constructivism 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 innovative nature of teachers in CALL. Although the emphasis on staff development is likely to focus on academic staff, Bob (2007) suggested that administrative and technical staff too need ongoing staff development to ensure coordinated support and continued focus on teaching and learning issues.

However, teachers found that applying CALL is time consuming; hence their reluctance in using CALL to teach Mandarin. This is shown that 20 teachers (64.5%) apply ICT only once per month. This situation happens because preparation of ICT materials is time consuming; teachers need to browse and access the Internet to look for materials, and this adds to their workload. Teachers are thus passive although they are aware of the impotance 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 duties shouldered by all teachers including Mandarin teachers, they lack teaching periods and energy to indulge in 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 showed otherwise.. Students are generally favorable towards CALL in learning Mandarin compared with the traditional ways. This finding is similar to the finding in a study conducted 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, ICT not only fulfils the basic learning theory, but also impresses the students and makes them aware of ICT functions in teaching and learning (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 as seenby the author although he/she apply 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 because it has its own advantages that cannot be challenged by ICT usage, for instance traditional ways of teaching and ICT cancomplement each other in shaping the students' morale and personalitiy, direct instructing education and controlling in the teaching process (ZHANG & SHE, 2006).

The student respondents in this study prefer a combination of CALL and traditional method of teaching and dislike the traditional ways most. Furthermore, student respondents 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 better.

Many teachers cited the lack of ICT resources and infrastructural 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, independent Chinese secondary schools are better equipped with ICT facilities; while the level of sophisticationof ICT facilities in government secondary schools are not the same. 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 today and in the future in the teaching of Mandarin is in providing the the necessary computer facilities for the class and for teaching purpose. However, connecting the computers to internet alone does not guarantee the effectiveness of online teaching and learning. Teachers' and students' attitudes towards CALL need to be channelled in a positive way so that CALL's 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" or treated as unimportant co-activities unrelated to the curriculum. Integrating ICT in the classroom is suitable to meet the demands of the curriculum and supports the teaching and learing process.

10. Conclusion

As ICT becomes increasingly commonplace in educational settings, there is an expectation for educators to utilize ICT tools to support classroom teaching and learing. ICT usage have pervaded the world of education making learning easier and more enjoyable for students. 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 languge. The

full cooperation and support from 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 a smart learning enviroment 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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