Use of CALL (Computer Assisted Language Learning) in Teaching Japanese as a Foreign Language

Maki Ishikawa

This sub-thesis is submitted as partial fulfilment of the requirements for the degree of Master of Letters in Asian Studies, specialising in Applied Japanese Linguistics at the Australian National University in Canberra.

May 1996
Unless otherwise acknowledged, this sub-thesis is the original work of the author.

Maki Ishikawa

May 1996
ACKNOWLEDGMENT

I am indebted to many people for their help and support through the years 1995 to 1996. I would like to express my sincere gratitude here to these people.

Firstly, I would like to thank all staff members of the ANU Japan Centre for their teaching during the years. Among them, particular thanks goes to my supervisor, Mr Shun Ikeda, who showed a great amount of patience to help me work on this sub-thesis by reading my drafts repeatedly and giving much appropriate advice to improve them.

I also thank teachers of Japanese of the universities who kindly participated in the survey I conducted. Their responses were very helpful for me in understanding the current situation of the use of computers in teaching Japanese and were indispensable information for my sub-thesis.

I am especially grateful to my friends here and there for their continual encouragement and support while I have suffered from a series of stress throughout the past years. Needless to say, the completion of my sub-thesis in spite of a personal traumatic time is certainly due in part to the friendship they showed me.

I would like to express my special gratitude to my mother, who has always trusted my capacity to achieve this degree. Her support across the miles, despite hardships caused by the Great Hanshin Earthquake in January 1995, was invaluable when I came very close to giving up this sub-thesis.
Without any of the help and support mentioned above, this sub-thesis would never have been accomplished. Thank you again from the bottom of my heart.
This sub-thesis presents an analysis of the significance of use of CALL (Computer Assisted Language Learning) in Japanese language learning and teaching as a foreign language. The study is based on the more general concepts of foreign language learning and teaching, namely English. Topics discussed here are: background and development on CALL, roles of computers in language learning and teaching, limitations, advantages and disadvantages of CALL.

In the chapter concerned with the current ideas and situations of major CALL teaching Japanese, availability of relevant courseware in this area and reports on cases of two Japanese universities where computers are practically implemented in their classroom activities.

The use of computers at Australian universities is reported on through the survey to find out whether computers are actually integrated into their courses or not, and if they are used, what, how and to what extent they are used are also discussed.

This sub-thesis concludes with potential uses of advanced technologies in learning and teaching Japanese as CALL's future prospects.
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# Table of Abbreviations

The following abbreviations are found throughout this sub-
thesis and their meanings are fully explained when they
appear in the text.

AI: Artificial Intelligence
AD / DA converter: Analog-Digital / Digital-Analog converter
BLL: Bibliography of Linguistic Literature
CAI: Computer Assisted Instruction
CALL: Computer Assisted Language Learning
CAT: Computer Adaptive Testing
CD-ROM: Compact Disc Read Only Memory
CERI: Centre for Educational Research and Innovation
CMI: Computer Managed Instruction
E-mail: Electronic mail
ESL: English as a Second Language
GB: Gigabyte
GUI: Graphical User Interface
ICAI: Intelligent Computer Assisted Instruction
K / KB: Kilobyte
LAN: Local Area Network
MB: Megabyte
RAM: Random Access Memory
RHRSCET: Report of the House of Representatives Standing
Committee on Employment, Education and Training
WWW: World Wide Web
CHAPTER ONE

INTRODUCTION

1.1. Purpose of this sub-thesis

This sub-thesis firstly attempts to analyse the significance of using computers in Japanese language learning and teaching as a foreign language based on the more general concepts of language learning and teaching. Secondly, the current ideas and situations for the use of Computer Assisted Language Learning (hereafter CALL) for Japanese language learning and teaching will be reported through survey. Finally, the potential uses of CALL for Japanese language learning and teaching will be analysed in terms of expected future developments. In addition, this sub-thesis will endeavour to introduce related Japanese literature to Australian audiences to help them progress in the teaching / learning of Japanese.

It can be seen that the development of information technology has brought great changes to our society. Computers can give humans vast calculating and information storage power making it easy to undertake projects which were formerly impossible. Computer use is no longer limited to specialists. This relevance of computers also applies to the field of education, especially in the area of teaching and learning foreign languages including Japanese. There have been remarkable changes in a short period in the area of teaching and learning foreign languages in CALL.
It is hoped that the presentation of this sub-thesis will help educators involved in teaching Japanese to catch up with current circumstances and provide up-to-date and relevant information as much as possible.

1.2. Review of the related research

This sub-thesis is being written in an attempt to supply information lacking in current research. To that end, a literature review is presented here to indicate what has been discussed in the field of CALL in Japanese up until now.

1.2.1. Related research of CALL in ESL

A substantial amount of literature can be found in the area of CALL in teaching / learning foreign languages. Especially research since the mid 1980s has increased dramatically. Basically, the research is concentrated on CALL in English as a Second Language (hereafter ESL). Some reports on CALL from various educational institutions are compiled in such books as *Computer-Assisted Language Instruction* (1984) edited by Wyatt and *Computers in Applied Linguistics and Language Teaching: a CALL Handbook* (1988) edited by Jung. It may be a good idea even for teachers who teach non-English languages to start with these books as both theoretical and practical articles are contained with actual reports of experiments from classrooms.

Firstly, articles on *Computer-Assisted Language Instruction* seem slightly technical. Thus, they will serve as a useful reference for educators who already have some general knowledge of CALL and seek particular information in the articles such as "Potential Impact of the Videodisc on Language
Teaching and CAI". One of the critical problems involved in this book is its obsoleteness as it was first published in 1984.

Secondly, *Computers in Applied Linguistics and Language Teaching: a CALL Handbook* is a suitable book for potential CALL organisers. It consists of four sections, namely, "Computer Basics", "At the Cross-roads: Computer Technology and Applied Linguistics", "Classroom Research and Teaching", and "Country Surveys". It begins with the basic information on CALL such as hardware and software and on the development of CALL software. Issues and practical approaches to CALL are also included in the first section.

This book can also be helpful for academics who are engaged in applied linguistics and general linguistics because there are a number of reports on practical use of computer technology in applied linguistic disciplines in the sub-division called "At the Cross-roads: Computer Technology and Applied Linguistics". This section can be utilised by researchers as a guide to using the computer as a research tool; for example, online searching for bibliographic references through databases. In Meyer's report (1988: 99-109), "On-line Bibliographic Databases for Applied Linguists", he raises a few examples of problems where the use of a computer is more effective to solve them. These are: the case of the missing reference, the case of the missing orientation and the case of the missing survey (Meyer: 1988: 100). Bibliography of Linguistic Literature (hereafter BLL) is one of the linguistic databases mentioned throughout Meyer's article. By accessing BLL, it is possible to find a certain article even though chapter and verse of the journal are missing only if the title and the author is identified (Meyer: 1988: 100).
"Computers and the Transcription of Speech" reported by Greisbach (1988: 147-153) is another article appearing in Computers in Applied Linguistics and Language Teaching: a CALL handbook. This article demonstrates the process of transcribing speech to narrow phonetic transcription. Analog-Digital / Digital-Analog (hereafter AD / DA) - converter is used to convert analog speech into the digital form. Then, a text processing system and a printer are required to load a character set and to output the result (Greisbach: 1988: 148).

Several specific topic reports have been compiled in recent years. For instance, Technology and Language Testing (1986), by Teachers of English to Speakers of Other Languages and edited by Stansfield, presents articles on using technology to explore relatively new examination methodology. This book focuses on Computerised Adaptive Testing (hereafter CAT) in teaching English with purposes and methods of research as well as results presented in the form of detailed tables and graphs. Some descriptions however, for example, how a CAT is administered and scored, are too technical to understand, especially for readers who are not accustomed to mathematical graphs and formulas. For those who do not have difficulties with these points, it is a good, resourceful reference to authentic and accurate information about CAT.

There is also a good deal of information on CALL available in periodicals such as CALICO Journal. The advantage journals offer their readers is their recentness as compared with books. This point should not be underestimated, as CALL is ever-progressing.
1.2.2. Related research on CALL with respect to the teaching of Japanese

Compared with ESL, the situation of CALL in teaching/learning Japanese as a foreign language, unfortunately, seems rather limited. It is undoubtedly necessary for CALL organisers to obtain the latest information on CALL in Japanese because the progress in computer technology is so incredibly rapid that information quickly becomes obsolete.

There is a book on CALL in Japanese written by Hirasawa and Shibui titled *Nihongo CAI no Kenkyu* (1992). It includes the theoretical and practical aspects of CALL in Japanese and offers an explanation of CALL as well as practical guidance for readers on understanding and organising CALL. The courseware mentioned throughout the book was designed and produced by the authors who have also included an evaluation of their CALL courseware. This book would be a very good textbook for teachers of Japanese who are about to start CALL as there is a description of a system which has actually been created. It is well-summarised and easy to understand with the aid of flow charts and pictures. However, as there are only a few pages dedicated to theoretical discussions, it may not be appropriate for people seeking information on theoretical aspects of CALL in Japanese.

Another promising resource for CALL in Japanese teaching/learning is the quarterly *Journal of Japanese Language Teaching* by The Society for Teaching Japanese as a Foreign Language. This journal is not designed to provide CALL information but rather covers general issues in teaching Japanese as a foreign language.
Japanese CALL has been a featured topic twice in this periodical. When that topic appeared for the first time, that is, in October 1984, the focus of discussion was on the theoretical aspects of CALL in teaching / learning Japanese such as problems expected to arise through the use of computers in classrooms as well as future prospects. The second time CALL appeared as a feature topic in November 1992, discussion was focused on the practical aspects of CALL, such as how to design a CALL curriculum, how to organise a CALL, courseware review, introduction of CALL programs and the courseware used at some particular universities. This series of articles took it for granted that quite a few educational institutions had started implementing CALL in their Japanese programs over the previous eight years. Some of the hopes and expectations for CALL in 1984, such as the learner taking initiatives in learning rather than the computer taking initiatives, had become reality by 1992 thanks to the development of computer technology as well as to language teachers' continuous efforts and interests.

Although it is an academic journal, articles are relatively easy to understand, thus it is also widely circulated among the general public. It is unfortunate that CALL in Japanese has been taken up for discussion only twice. For teachers who need the latest information on CALL, this journal may be unsatisfactory. It is hoped that a journal similar to CALICO Journal in the field of teaching Japanese will be published soon.

Nihongogaku is another academic periodical that deals with Japanese language, but not exclusively on the aspects of teaching / learning. There were featured topics concerned with computers and Japanese language education in 1995 and 1996.
Similar to the *Journal of Japanese Language Teaching*, the articles such as "A Computer as a Learning Tool" and a "Roles and Uses of Multimedia in Teaching Japanese" offer useful suggestions and comments. However, these articles seem to have appeared due to the public's interest in computers and multimedia in 1995 to 1996. It is doubtful whether this topic will be featured after the initial novelty disappears.

Not only periodicals for professional teachers like *Journal of Japanese Language Teaching* and *Nihongogaku*, but also journals for non-professional people have begun to feature topics related to CALL in Japanese teaching / learning since 1994 concomitant with the sudden risen popularity of multimedia throughout in Japan. In an eighteen month period, three articles about CALL in Japanese appeared in *The Monthly Nihongo*, whose target audience are potential Japanese teachers. These articles are certainly up-to-date and relevant. For example, the featured topic of October 1995 was "Multimedia and Japanese Language Education". The other topics include relevant information available on the Internet and the most effective way of using the Internet for teaching Japanese. The most attractive features of these articles have been their practicality and ease of understanding even for non-science oriented people. Examples of various educational institutions introduce CALL system as a practical method of language learning and encourage language teachers to implement CALL.

One disadvantage of these articles, however, may be that examples given are based on particular curricula. That is, the CALL program and courseware designed for the classroom
activities conducted in one particular institution may not be fully applicable in other institutions.

In addition to the publications listed above, CALL in teaching / learning Japanese appeared as a topic in a conference held in Canberra in July, 1991. At the Seventh Biennial Conference of Japanese Studies Association of Australia under the sub-division of Japanese Language and Studies in Australia, topics discussed included the current situation of CALL, the potential contribution of CALL programs categorised into four language skills, the use of databases in the teaching of Japanese. The conference stressed the importance of CALL at Australian universities.

Active discussions on CALL in teaching / learning Japanese have been held on the Internet. There are several groups specialising in CALL in teaching / learning Japanese on the Internet including the "Hypermedia Working Group". This organisation has debated the use of computers and the Internet in teaching / learning foreign languages. Hypermedia Working Group has also held workshops or symposiums on the same or similar topics. In terms of recentness, Internet is the ideal media to receive information because the latest information is available. To put it more simply, anything on Internet can be delivered more quickly than any printed materials. The most serious and common barrier is the availability of a computer and access to the Internet.

As can be seen, the topic "CALL in teaching / learning Japanese" has been discussed on various occasions through wide ranges of media. However, this tends to be slightly partial to
multimedia and the Internet. Judging from this situation, there is a possibility that CALL in teaching / learning Japanese is only a passing fad, connected to the rising interest in advanced technologies such as multimedia and the Internet.
CHAPTER TWO
GENERAL KNOWLEDGE OF CALL

2. 1. What is CALL?

CALL is concerned with using computers to teach students foreign languages. It can be categorised as a part of a more general concept of Computer Assisted Instruction (hereafter CAI). Indeed, some would prefer to express this differently, saying that CALL is mainly concerned with helping students to learn foreign languages. Since CALL is administered through computers, it constitutes part of language learning technology.

2. 2. The Background and the development of CALL

First mechanised language teaching system was called a "teaching machine". It was used before the computer in the field of language teaching. This teaching machine was a mechanised drill and practice mode system invented in the 1920s (Murakami and Sato: 1984: 6). The main feature of the teaching machine was that it provides learners multiple-choice type questions only. Learners were instructed to choose the correct answer from among the four choices. If the answer was wrong, the result was recorded and learners were not able to proceed to the next questions until the correct answer was selected.

2. 2. 1. CALL in the 1950s to the 1960s

The use of computers for language learning appeared in the late 1950s and early 1960s. It was largely influenced by the behaviourist view, which was known as stimulus-response
learning - predominant theory in linguistic and language learning during this period. As a result, computers were used for habit-formation, which was seen as the model for language learning.

It cannot be denied that computers were adopted and their use encouraged in language learning because they were believed to be more efficient due to the success of scientific experiments stimulated by the competition between the United States and what was known as Soviet Union in those days (Fox: 1994: 2015). Interest in computers in business, recreation (computer games) and education also contributed to the acceleration in the development of computer technology. Accordingly, implementation of CALL was generally considered as progress in language learning (Underwood: 1984: 34).

Applications programmed at this early stage were categorised as multiple-choice, drill and practice materials. The computer was used in the form of a tutorial; some of the roles that the teacher was doing were taken over by the computer. In other words, a question was presented to the learner, then he/she input the reply, then the assessment was conducted and delivered to the learner.

Usually, learners worked in isolation in a self-learning environment. The computers were not generally considered as an assistant for learning but as an instructor in those days.

2.2.2. CALL in the 1970s to the mid-1980s

It was in the late 1970s that the development of CALL became notable due to the invention and diffusion of microcomputers in the market. In addition to the conventional programs such as gap-filling, multiple-choice or drill and
practice, the capacity of microcomputers allowed more creative, easy-to-use programs.

The change in language teaching methods had led to the evolution of computer use in language learning. Non-tutorial, game-like programs, for example simulations, adventure games and role-playing-games started to appear since the communicative approach to language learning became popular.

Learners were encouraged to work in pairs or in small groups to solve the problems, make decisions or challenge the tasks required by the programs. This stimulated learners to negotiate in their target language with each other.

2.2.3. CALL in the mid-1980s to the 1990s

It seems that the major developments in CALL arose in the late 1980s along with the dramatic advance of computer technology in general. In this section of Chapter Two, a number of the latest technologies involved in CALL will be discussed. They are: interactive audio, interactive video, multimedia, the Internet and Artificial Intelligence (AI). They have not been thoroughly examined in an organised way because of their relatively short history but they are already available on the market and have been used by quite a few universities in Australia, Japan and some other countries for some years.

It is necessary to know what is available in order to obtain indications about where to go and what can be done as Hill (1989: 9), quoted by Hananto (1992: 94-95) suggests to language teachers: "there are many reasons why we should become technology-literate and why we should not studiously ignore what is going on". Following is a description of some of these
advanced technologies which compose the crucial parts of CALL at the present time.

2. 2. 3. 1. Interactive audio (Fox: 1994: 2018)

Interactive audio appears to be technically the simplest enhancement of CALL. It is commonly used to improve listening and dictation skills.

In most situations, a tape recorder is combined with a computer to allow a learner to have random access to pre-recorded sections of tape (Jung: 1988: 11). Firstly, the computer presents a question with four different possible answers in a multiple choice. The student chooses the answer he/she thinks is the most appropriate. Then, the computer responds to the answer and quickly access with the appropriate piece of text (or music, etc. is played) by the use of the fast forwarding or rewinding mode of the tape recorder.

This provides an economical interactive system because the cost for this facility is considerably low as a CALL system. It can be controlled by the learner when used in self-study situation, and the addition of sound to the monotonous text on computer screens can be a noteworthy advantage.

However, teachers may avoid the use of interactive audio because of the time and trouble involved in the preparation of materials. Furthermore, there are technical problems such as the depreciation of tape effects and copying. In addition, systems based on tape and tape cassettes can be very slow when they are in actual use and this may cause irritation to both teachers and students. If voice-cards are used instead of tapes, these problems are solved. These cards are able to store sound in the
computer in the form of a digitised code on a card that can be built inside the computer hardware. Most of the technical problems of tapes are therefore overcome. The voice-cards are sufficiently fast when operating, and they are not as expensive as tapes.

2. 2. 3. 2. Interactive video (Fox: 1994: 2018)

Interactive video has become a major form of information technology in language learning technology. To be brief, it is basically an interactive audio with video-cassette player or video-disk player added.

When the program starts, the question is presented and the learner has to make a choice. He / she, then presses one of the keys of "A", "B", "C" or "D" corresponding to the selection. This is followed by a presentation of, for instance, an example or scene from a play on the computer monitor.

The added visual stimulus of the computer makes foreign language practice less monotonous and thereby encourages the students to participate more actively and enthusiastically. In addition, it enables learners to benefit from authentic language in context.

However, technical problems also exist. Media involved with interactive video generally require high-standard visual materials, which must be programmed by a computer technician. Programs can be stored on video-cassette, which is slow and suffers the risk of wear and tear. Storing on video-disk is the alternative choice. It is more reliable in terms of maintenance though it is more costly.
For learners of Japanese, there is a series of cultural laser disc called "Safe and Sound in Japan" on market (Tokyo Shoseki: 1994). They are highly recommended by educators of Japanese.

Using interactive video in foreign language learning may be a time-consuming process since it offers non-linear pattern learning, that is learners are allowed to choose their own journeys in the story through the materials, and there is a possibility that too many selections are available. Some of them may have difficulties finishing the program within a limited time. This can reduce the effectiveness of learning and cause problems of class organisation for teachers.

2. 2. 4. CALL in the 1990s to present: multimedia

Since the beginning of 1990s, there appears to have been an even more drastic leap in the field of computer technology, namely the emergence of multimedia on the market. It seems to be impossible to speak about computer technology in 1990s without mentioning multimedia. In Japan, the year 1994 was called "multimedia year one" and the word multimedia began to be found in every aspect of daily Japanese life (Kashiwada: 1995: 85).

The term multimedia has become wide-spread so quickly that it is difficult to find one appropriate definition. According to Sugihara (1994: 26-27), the three key words to understanding multimedia are "seamless", "digital" and "interactive". Briefly, multimedia means an information or communication system which deals with more than one medium - such as sound, printed materials, moving pictures, still pictures, animated graphics. The information is digitalised which facilitates interactive use. The
application of this system can be found in, for example, computer games using virtual reality or car navigation equipment (Tazaki: 1993: 72).

There are some specific requirements to make use of multimedia as an ideal working environment. In terms of hardware, the multimedia personal computer usually requires colour monitor, CD-ROM drive and a sound card. Writing tablet, headphones and recording facilities, including microphone and speaker are also desirable.

2. 2. 4. 1. CD-ROM

CD-ROM, mentioned above is the abbreviation of Compact Disk Read Only Memory. This is a magnetic optical disk storage device which looks like a compact disk for audio. The major attraction of CD-ROM is its large storage capacity. Compared with a floppy disk, it can contain six hundred times as much digitalised data; text, graphics and sound can be stored on a single CD-ROM. In addition, the price of CD-ROM has become reasonable because it can be produced on a large scale (Inakage: 1994: 118). Furthermore, CD-ROM is more durable than floppy disks. This is a fundamental characteristic that magnetic optical disks possess. Thanks to these features, CD-ROM software has gained popularity and become one of the integral elements making the multimedia environment more efficient.

Considering the main feature of CD-ROM is its enormous storage capacity, it comes as no surprise that many of the software designed for CD-ROM are dictionaries and encyclopaedias. This computerised publication system is called electronic publication and the published materials are called
"expanded books" (Yamana: 1994: 106). In fact, many dictionaries and encyclopaedias, such as Oxford English Dictionary and Britanica Encyclopaedia are already compiled and available on the market in CD-ROM format (The Parliament of the Commonwealth of Australia: 1989: 19). CD-ROM version of Britanica Encyclopaedia can contain one thousand more articles than the printed version with more photographs, maps and flags.

For learners of Japanese, there are CD-ROM version of Koojien called "Mac Koojien" fourth edition and Electronic Book version of Kenkyusha's New Collegiate English-Japanese, Japanese-English dictionaries on the market (Hatasa: 1996b: 66). It is certain that the efficiency of these CD-ROM based materials will encourage language teachers to urge students to use them as references.

CD-ROM, however, is not considered the perfect foreign language teaching / learning tool. It is still difficult for learners to receive a complete interactive response from a computer terminal even though the full use of CD-ROM capacity is made. However, the development being made in this area is so rapid that talking to a computer in the same way as to a human may be possible in a short time as expressed in the statement made by Desmarais (1995: 45), "the interactive nature of CD-ROM - more interactive in some titles than others - also corresponds to the nature of language, which is, after all, most commonly used in the give and take of conversation".

2. 2. 4. 2. Authoring system

Considering the advantages provided by multimedia, it has the possibility of being an ideal system for language teachers to
produce teaching materials themselves as described below. Multimedia courseware may not only simpler for teachers to create but may also be more attractive for learners.

Nitoguri (1995: 13) introduces a piece of software to compose a piece of courseware which is compatible with multimedia computers. It is called the "Intelligent Pad" (hereafter IPad). IPad allows a user to devise material with moving pictures, colour graphics, and characters in different fonts and sound. He comments that it will be greatly practical if a photograph or a moving picture of a cultural aspect of the target language, for example a photograph of a Japanese entrance hall or moving picture of taking shoes off there, is shown to learners as such an aspect is sometimes difficult to explain through words alone (Nitoguri: 1995: 14). In other words, a piece of multimedia courseware is able to portray messages hidden in the text. To put it more simply, learning a foreign language does not mean learning only grammar or vocabulary but understanding invisible factors, such as cultural or traditional notion in the target language. Sakamoto and Akahori (1995: 89) present an example of this. They insist that it is not sufficient for learners to learn how to say "where is ~?" or "how far is it from here?". To complete this task without difficulties, they also need to learn complete information surrounding these activities. For example, coins are necessary to buy a train ticket or clear a turnstile etc.

In sum, the concept of multimedia seems to be more than that of merely a teaching tool. In Sakamoto and Akahori's (1995: 88) words, it is more appropriate to define it as an "interactive
learning environment system" for learners to take the initiative
to make progress in learning by themselves.

2. 2. 4. 3. Internet

Like multimedia, the "Internet" has become immensely
popular of late. In brief, the Internet is a gigantic network,
which connects a computer to a computer as well as to computer
networks existing around the world (Rikitake: 1994: 2).

It started in the United States as a part of the defence
program and it spread to universities and research centres for
the purpose of research. It has since expanded to include the
general public (Hatasa: 1996c: 70). The Japanese expression, "to
do Internet" means to participate in the services offered through
the Internet.

There seems to be unlimited activities available on the
Internet if one considers that millions of computers in the world
are connected to each other. It may be applicable to language
education and has the potential of becoming a useful method (or
environment) for both learners and teachers.

The most widely recognised service available on the
Internet is called "World Wide Web" (hereafter WWW). WWW is
the information system used on Internet. Information around
the world flowing on the WWW is open for anyone to access
through the computer "server" linked to other terminals. One of
the popular activities on WWW is called "browsing" or "net-
surfing", meaning to check various web pages one after another.
New home pages, which are similar to the cover of a book are
created everyday by organisations like government bodies and
individuals alike.
Electronic mail (hereafter E-mail) is another popular application used widely within the Internet. It is a system used to transmit and receive messages between individuals. It is also possible to send the same message to more than one person by using E-mail. The list of the addresses that a mail massage is sent to is called a "mailing list" and it is useful when exchanging information within a group.

E-mail is not appropriate for real-time communication as a mail message will not be read until the receiver checks it. Should real-time communication be required, the "chat" function is more appropriate because it enables participants to "chat" on the screen simultaneously.

In the area of education, several advantages of networking systems have been recognised and some institutions have attempted to integrate this system into foreign language teaching and learning. Until recently, the typical image of CALL was as a "standalone" form of education that is, as separated terminals not connected to each other.

However, it is possible for learners to work together during CALL class thanks to the spread of Local Area Network (hereafter LAN). LAN is a network system which is available only within a particular limited area. For instance, terminals in one classroom are connected to each other as well as connected to other terminals in different buildings located on a university campus with this LAN network.

With LAN, it is expected that learners are able to help, communicate or emulate each other. There is an example of a revised version of courseware used in networking condition from standalone, presented by Okamoto (1995: 121-124). This
courseware is designed for learners of English but the program itself and the way it is organised in class can be applied to Japanese learning courseware. It is an English learning courseware the name of which is "Mariko obasan no himitsu (The Secret of Aunt Mariko)". It aims to improve listening comprehension in colloquial American English. The program is a role-playing-game with a laser disk connected to hardware. The successful completion of the program depends on the learner making correct choices based on his / her correct understanding of the English text.

This courseware is recommended to be used with a small number of learners such as approximately three. They are encouraged to cooperate together to solve problems by exchanging a mail message, still pictures and sound. It is also possible for them to hold a discussion in English on information they collect individually.

2. 2. 4. 4. Artificial Intelligence

Along with the progress of research conducted on computer technology, Intelligent CAI (hereafter ICAI) has also drawn language educators' attention. ICAI means an application of Artificial Intelligence (hereafter AI) in CAI (Fukada: 1992: 45-46). AI means "science technology aiming to reproduce the intelligent human behaviour by the use of computer, or the system itself aiming to be actualised." (Kusanagi: 1992: 4-5).

The important role that AI can play in foreign language education is natural language processing. Kusanagi (1992: 5) defines natural language processing as follows: it is a technology aiming to process the ordinary language (as opposed to specific
language, for example, computer language) such as Japanese or English. ICAI, therefore, is the system whereby a computer behaves like a human teacher as well as holding an interactive communication with learners. Katoh (1992: 26) points out that "mixed initiative", the learner and the computer taking initiatives in turn in learning, is desirable in ICAI environment.

2. 3. What can computers do?

To achieve the most effectiveness with CALL, it is worthwhile considering the roles of the computer in the area of teaching / learning languages. Jones and Fortescue (1987: 5-6) classify three basic roles played by the computer. In their words, they are: knower-of-the-right-answer, workhorse and stimulus.

2. 3. 1. Computer as knower-of-the-right-answer

Firstly, knower-of-the-right-answer means that the program works as an instructor that provides a question and right answer in a strict and inflexible way as learners are only offered feedback as to whether the answer is right or wrong. It is adopted for learning skills which require repetitive practice such as vocabulary, grammar and listening comprehension. Traditional gap-fillings and drill-and-practice are categorised in this group.

Higgins (1985: 34) in Hananto (1992: 17) describes this role as: "He (instructor, ie. the computer here) chooses the order in which things happen, what is to be learned, and what kind of activity the learners will carry out". The use of computer in this
way has become rather old-fashioned recently, but it is still popular among some educators and has been used widely.

2. 3. 2. Computer as workhorse

Secondly, the computer can serve as a workhorse. Users can take advantage of a number of different and useful functions from a single computer. For example, tools like word processor as a writing machine or a database as a source of information are derived from the computer.

Foreign language learners take advantages of these facilities. For instance, a word processor is suitable to help practice, write and present a piece of writing such as compositions in neat and tidy way. It is suggested by Keith and Golver (1986: 62-83) in their article that databases can be practically used as a resource when learners are engaged in a project-based lesson.

2. 3. 3. Computer as stimulus

The third role of the computer is stimulus. This method is used to provide learners stimulation in the forms of topics for discussions. Programs such as simulations or adventure games seem to be effective to help learners become interested and hold an active and lively discussion in their target language.

2. 4. Advantages of CALL

In this section of Chapter Two, some advantages of CALL will be analysed by itemising them one by one. Initially, I pointed out some advantages I have observed before discussing those observed by authors such as Kenning and Kenning (1983),
Ahmad et al (1985), and Hananto (1992). There have been several major changes due to using a computer in language teaching and learning.

During contact hours, learners are able to control what and how they want to learn in class as the pace or contents of their study can be adjusted by each terminal by individuals, even though a whole class is managed by one teacher. Outside the contact hours, learners are able to obtain the same quality of materials even if they miss certain classes. Materials programmed in computers are easily reproduced by individual learners in accordance with their specific needs.

Without help from a computer, some students who finish their task more quickly or slowly may have frustration because they cannot fit their pace to that of other students. Similarly, it seems difficult for any students who absent themselves from a class to gain the same information in their private study. Some materials can be replayed, such as video recordings; however, they are not always sufficient in terms of catching a clear grasp of key points unless there is a teacher there to explain there.

Previously, teachers had to manage their time to administer students all the time when the classes were held, even the very basic lessons, such as spelling practices or filling gaps in passages in teaching English. In other words, individual-based practice, that is, the one which requires repetition need not be conducted in class as this type of exercises can now be done by the use of computers instead of by teachers. This allows teachers to manage their time more flexibly, and this can lead them to organise more effective classroom activities by making better use of their time.
Some of the problems which are related to these restraints have been solved by the use of computers. For example, activities which involve interaction, such as role-playing-games or project-based exercises appear to be more suitable in class. One of the group projects which occurs in the actual Japanese class is to plan a trip and present it in a class. Then, exchange opinions between groups. A certain amount of discussion is involved among learners in their target language when they make decisions within a group, then ask and answer questions when they present their plans.

As discussed by Hatasa (1995: 65) and Fukada (1995: 103-106), computers are not only a useful tool for classroom activities but can also be utilised as a tool for a teacher to manage the language course he / she is in charge of. The use of computers in this manner is called Computer Managed Instruction (hereafter CMI) (Mizumachi: 1992: 33). Teachers are likely to have more opportunity to create and conduct more appropriate lessons if the time and trouble of managing classes or students is reduced by the use of computers for clerical work.

One piece of the software which seems to be activated for this purpose is called a spreadsheet. It is a computer application for displaying and manipulating rows of figures automatically and is widely used for business purposes such as accounting.

There are several uses of spreadsheet for teachers of Japanese, as pointed out by Hatasa (1996a: 64), included in this category. Some of these are: (1) recording results of students' examinations or assignments, (2) summing up of total marks of each student, (3) comparing results between different groups of students, (4) assessing lessons or entire courses, etc. Readers
who need detailed information on CMI are referred to Hatasa's article (1996a: 64-67).

2. 4. 1. Tirelessness

Tirelessness is the key feature that only a machine can possess as compared with a human being. The computer is a self-pacing, self-access medium, therefore, learners can study as long as they like, whenever they want to. The computer has been programmed to have sufficient ability in adapting itself to learner's speed and requirements. Unlimited repetition is also possible from computers.

2. 4. 2. Edutainment

It is assumed that if lessons were entirely interesting to learners, they would be more encouraged to learn. This can be possible by adopting the computer as a learning tool, since another advantageous property of the computer is that it can make the learning entertaining.

In recent years, the expression "edutainment" has been appeared in the explanations and advertisements of multimedia software. This word was coined by combining two words, "education" and "entertainment". The word means the software which is meant to be programmed for learning is also interesting. In other words, it is the software which allows users to learn something in an entertaining manner by adopting some elements of games, such as colour graphics, still and moving pictures or music.

That learning a foreign language is hard work seems to have been the stereotyped idea in learner's (and some teacher's)
minds up to the present. However, that image may be eradicated if this new concept, "edutainment" is well integrated into the language teaching curriculum. It definitely brings its ability into full play when executed to the learners who enjoy computer games, namely younger generation who were born and brought up in this computer era.

In the article of Erikawa and Sakamoto (1995: 21-22), experiments of using edutainment software in classrooms are reported. Though these pieces of software are not designed for foreign language learning, the fundamental nature of edutainment software, namely, to provide a learner with entertainment to encourage them to become more interested and active, can be applied to foreign language learning. Several types of simulation software, such as "Balance of the planet" or "Nobunaga no yaboo (Ambition of Nobunaga)" were used in social science and Japanese history classes at Japanese schools with satisfying result, that is, more enthusiasm in participating in the lessons as recorded due to the introduction of the new educational material.

Erikawa and Sakamoto surmise that the successful outcome of this experiment was brought by the increased motivation of the students. They participated in the classroom activity more actively as a computer game is more familiar medium than other learning tools for them. The number of "edutainment" software programs has been increasing steadily since software suppliers have noticed the potential market being created slowly but gradually.

Unwelcome results were also expected on account of the introduction of computers into classroom, that is, losing interests
or enthusiasm in learning because of computers. This will be discussed later in the section named "problems in CALL associated with users".

2. 4. 3. Novelty

   Novelty, pointed out by Hananto (1992: 22) by citing Cook (1985) and Dhaif (1989), is also one of the features of computers that helps make learning more attractive to learners. The computer allows teachers to present information and learning style in different ways by adopting for example, game-like programs. Students can enjoy studying even if what they are doing is monotonous and boring because the computer is a different medium for them, and the wide range of software offers encouragement to them. According to Scarbrough (1988: 305), there are various kinds of software for English language learning, and although many of them appear to be games, they are actually instructing students.

2. 4. 4. Interactivity

   Interactivity is perhaps considered another crucial feature that the computer offers to the learner, as can be seen in the articles by many authors such as Ahmad et al (1985); Hananto (1992); Kenning and Kenning (1983) and Underwood (1984).

   When a reply from a learner is input, the assessment to the answer appears on the screen in the form of messages such as "Yes, it's correct" or "Wrong, try again". Graphics, music or recorded voice etc. can also be presented in alliance with courseware. In addition, some programs are capable of recording the answers from the learners, pointing out mistakes, presenting
the explanations (Kenning and Kenning: 1983: 2) whereas written materials, for instance, textbooks and handouts are only able to convey the messages to the learner such as rules on grammar, important points, hints and how to solve the questions.

Ahmad et al (1985: 4) add the immediacy and accuracy of the computer to this point. The assessment returned from the program is practically instantaneous as well as precise.

There is, however, the danger that a learner can obtain correct answers by accident and proceed to next stage without understanding the previous one sufficiently. This is likely to happen when learners are required to reply in a form of multiple-choice answers.

2. 4. 5. Flexibility

Another notable point provided by the computer is its flexibility. Hananto (1992: 21) notes that the learner is given opportunities to select the styles of presentation from several choices. He also cites Ariew and Frommer (1987: 177) and mentions that learners are not forced to follow pre-determined sequences, but are free to choose options from the menu according to his / her progress, interests or level of proficiency.

This point also includes the danger that a learner may choose only his / her preferred questions. Weak points of that learner will not be overcome by this method.

The flexibility of the computer also brings benefits to the teacher if the computer is used in combination with other teaching equipment, as pointed out by Hananto (1992: 21). He quotes the Leonard's (1985: 14) article and comments that a wide variety of new teaching tools can be available to the teacher
if the computer is connected to other instructional media such as audio-cassette player, video-tape player, or over head projector. However, these types of equipment may become rather out-of-date in the near future. CD-ROM and laser disk, which are more advantageous have a great potential to supplant of them.

It is also indispensable to have appropriate knowledge about handling these sophisticated types of equipment. Otherwise, few people can benefit.

2. 4. 6. Opportunity for privacy and positive learning

Privacy is secured for the learner who is not brave enough to answer the question in front of his / her classmates when there is a possibility of making mistakes (Kenning and Kenning: 1983: 3). The individual learning style provides another positive influence since this encourages the learner to acquire active attitude towards learning. No response can be gained from the computer unless the learner makes the move to solve the questions, as a result, the learner is likely to tackle the task by him / herself by thinking and answering the questions given with their own initiatives.

2. 4. 7. Computer literacy

Computer literacy, which has become an integral part of modern society can be acquired through the use of the computer (Hananto: 1992: 21). According to Okamoto (1992: 10), computer literacy means the essential ability or knowledge of computer for leading a decent social life. Ability to understand the systems of computer and computer language, of keyboard skills, basic programming, knowledge of the use of basic application such as
word-processing or database are included here. In the broad sense, the concept of computer awareness, which means the understanding of the influence of computer over humans or society, and the relation between human and computer, is also added (Okamoto: 1992: 11).

It seems like a case of killing two birds with one stone if computer literacy can be acquired by the use of computer in language learning, as mentioned above. Computers are no longer a privilege to computer technicians nor scientists who are involved in the field of information technology. Zettersten (1986: 151) strongly insists that a training system to foster computer literacy should be included in language teaching / learning programs to allow both teachers and learners to cope with the utilisation of modern technology in education in this computer age.

It is commonly believed that some people's advantages may turn into other's disadvantages. Disliking foreign language learning may be caused by disliking computers and related areas. One solution to this problem can be training and aid from teachers. In addition to this learners' rejection of computers, may be shared by teachers. It is, therefore, necessary to provide teachers with sufficient opportunities, such as seminars or workshops, to become familiar with computers to make the most of them in classrooms.

As can be seen, a large number of practical benefits can be demonstrated to the foreign language teaching / learning if the specific qualities of the computer are utilised into the curriculum. Hananto (1992: 22-23) agrees that it is especially effective to
make learners motivated for productive study. He also quotes the statement by Bell and Scott (1987: 3) that there are some facts that prove effectiveness of CALL found in the classroom where the computer is used as an integral part of the curriculum. They are: firstly, the learning time is reduced, secondly the retention time is increased and finally, motivation is increased.

Supporting statements are shown in the report of Widdig and Esser (1988: 265) who conducted the program of computer assisted learning of foreign language vocabulary using the Apple Macintosh with the use of the authoring system, Word Editor and Word Trainer, developed at the University of Cologne. The emphasis of the program is placed on learning in situational contexts. Several groups of learners used the program to improve writing French commercial letters. Evaluation of the program from Widdig and Esser (1988: 270) is as follows:

The learners' reactions were generally positive and they showed an appreciation of the methodological advantages of the program. The flexible reactions of the program were felt to make the process of learning easy and increased learner motivation. The deficit in social interaction which is often feared when CALL system are used was not observed.

It is to be expected that more favourable results are being obtained from the use of computers at present as progress of related technology has certainly been achieved since the statement mentioned above was made, which is in the previous decade.

Some evidence which supports the effectiveness of the use of computers in the area of teaching and learning Japanese is now beginning to become available. Development of CAI
program and results of its pilot test are reported in the article, "Teaching and Learning Prosody in Japanese Using Personal Computers" by Mizumachi et al (1992: 79-91). Mizumachi (1992: 79) and his colleague explain the reason for developing this CAI program to help learners to overcome difficulties to understand invisible messages expressed in prosodic features. Learners are hardly provided sufficient training in class in spite of the fact that these features are an important part of learning Japanese. In this CAI program, learners are required to recognise the situations of dialogues by listening to the recorded voice. For instance, learners have to judge whether the utterance "soo desu ka" shown in the dialogue below is said hysterically, lightly, unhappily or surprisingly (Mizumachi: 1992: 84-85).

(In a company office, Mr Yamamoto's boss is telling a female co-worker the news about Yamamoto-san.) [Yamamoto-san = Mr Yamamoto]

Mr Yamamoto's boss: Kinoo Yamamoto-kun ga nyuuin shita yo
(Mr Yamamoto was hospitalised yesterday.)

Mr Yamamoto's female co-worker: Soo desu ka
(Is that so?)

Marks and assessment for learners' results will be presented after all questions are answered.

The experiment of this CAI program was conducted to observe its effectiveness by the cooperation of twenty learners of Japanese. Ten of them were at beginning and intermediate stages and the rest were at an advanced stage.
A favourable result due to this CAI program is presented by Mizumachi et al (1992: 87-89). That is to say, the rate of correct answers were higher, compared with the data collected before CAI program was implemented. Based on this finding, Mizumachi and his colleague (1992: 89-90) analyse that learners have better recognition in prosodic features in dialogues as a result of the use of computers in learning prosody in Japanese. It is also reported that learners enjoyed learning with the help of computers.

There is another project to develop "a CALL system for pronunciation of Japanese Mora Sounds", organised by Saita et al (1993). With this CALL system, the pronunciation of a learner is shown on the screen in the wave form, then it is compared with the one produced by a native speaker. Therefore, a learner is able to check whether his / her pronunciation is satisfying or not by not only listening but also looking at the differences appearing on the screen.

According to Saita (1993: 9, 54-55), there was a considerable improvement in learner's mora pronunciation with use of the CALL system. There is a notable example of this finding reported by Saita (1993: 9-10). A learner who had never shown an improvement in pronouncing a long vowel sound in the word "doboku koogaku" (civil engineering), even though he had had this pointed out by teachers several times. However, his pronunciation began to improve after this CALL system was used to practice. He finally realised that the vowel in "koo" was not short but long by checking his pronunciation that appeared on the screen. Saita argues that the effectiveness of visual impact in teaching and learning pronunciation is remarkable. It helps a
learner to discern the problem he / she has by him / herself. Once problems are recognised clearly, it seems to be easier for learners to take further steps for progress (Saita: 1993: 9).

2. 5. Limitations of CALL

Several virtues of computers have been discovered so far, however, it is not true to state that the computer is the perfect saviour of the foreign language teachers and learners, agreed by authors such as Hananto (1992: 23-24) and Ahmad et al (1985: 7-8). Teachers would never be replaced by the computer because it has limited function as an instrument.

One of the obvious limitations that the computer possesses is the range of activities to which the computer can contribute (Ahmad et al: 1985: 7). In many situations when a learner responds to a question, only selected types of replies are accepted by the program as the "correct" answer. In Ahmad and his colleague's (1985: 8) word, "the computer, in short, cannot effectively conduct an "open-ended" dialogue with the student." It is still impossible to hold a discussion or entirely free conversation with the computer.

Hananto (1992: 24) mentions the listening and speaking ability of the computer by citing Pollack (1983: 19ff) found in Savignon (1987: 17). He notes that today's computer is able to "speak" and "listen" due to the successful development in recording and play-back facilities but in very limited sense. To put it more simply, some computers are not capable of differentiating noise from a human voice (Pollack: 1983: 19ff). After all, as pointed out by Kenning and Kenning (1983: 4) it is certain that the ability to understand a wider range of learners'
responses and returning the feedback is greatly reliant on the ability of the computer programmer.

These limitations, however, may be overcome in the near future as some of the limitations mentioned in the articles written in the 1970s to the 1980s have been rectified today thanks to a marked advance made in computer technology in recent years.

2.6. Problems in CALL

There are several problems found in the use of computers in teaching/learning languages. In this section, some of the problems which have arisen from the classrooms where CALL has been implemented will be discussed. For convenience, these problems will be divided into three major categories: they are, problems concerned with hardware, software and users.

2.6.1. Problems in CALL associated with hardware

2.6.1.1. Expensiveness

One of the most commonly discussed problems regarding the hardware is the expensiveness of obtaining and maintaining this facility. Hardware means the computer (machine) itself. As pointed out by Robinson (1985: 2), hardware is not composed of only one piece of equipment. There are output device, such as a monitor, a speaker and a printer as well as input device, such as a keyboard, a mouse, a writing tablet and a microphone involved.

Due to the continuous decreasing in price and the general public's increasing interest in information technology, the computer has really become a "personal computer" available to many individuals and families. However, it is certain that
computers are still relatively costly as an teaching / learning material. Hananto (1992: 25) quotes the Hardisty and Windeat (1989: 145) and explains this as follows:

However much the price of micro-technology may fall, computers will still remain expensive in comparison with paper and books, and, even in the most affluent societies, education never seems to be adequately funded.

It is also relevant to mention that as computers are a machine, they are rather fragile and needed to be repaired when they break down. This is also expensive as well as troublesome, because in many situations it has to depend on the services of a trained technician and the availability of spare parts (Thomas & Kobayashi: 1987: 6).

2. 6. 2. 2. Location

Decision on the location of computers may be a problem to some organisers of CALL. A fully-equipped computer laboratory is the most ideal place but there are quite a few institutions where this facilities are not available. Classrooms, libraries or resource centres seem to substitute for the computer laboratory.

However, careful consideration is required for this selection since Robinson (1985: 4) points out that monitors become difficult to be seen if computers are placed where easily affected by bright artificial light sources or windows. Furthermore, chalk and other dust as well as oscillation ought to be avoided because computers are comparatively sensitive. Irregular behaviour of computers is likely to be caused if they are located at an inappropriate environment.
In addition, wherever computers are to be placed, security systems to protect them should be well considered in advance as they tend to be one of the most attractive targets for thieves among the equipment found at schools or universities.

2. 6. 2. 3. Obsoleteness

Obsoleteness, which is not applied only to hardware but also software, is another problem frequently pointed out by not only educators but also by general users. Hananto (1992: 25) explains that the reason for this is caused by the computers' nature of infancy. The degree of changes in models and functions is extremely fast and vast. In fact, new versions of popular models are produced on a regular interval. Supporting comment on this point expressed by Phillips (1985: 99) and Anderson (1985: 6) quoted by Hananto (1992: 25) is as follows (K stands for Kilobyte):

Yesterday's 16K machines have all but been replaced by today's 64K machines, which in turn will be supplanted by tomorrow's 128K and larger supermicros.

Hananto (1992: 26) mentions, Megabyte (hereafter MB) is regarded as the most general measurement to describe the memory capacity of computer's internal main memory or RAM (Random Access Memory) in 1992. Eleven years has passed since the comment was made by Anderson and during this interval, computer technology has successfully made a remarkable progress to be able to produce more powerful and capable computers. At the time in 1996, personal computers
with 1 Gigabyte (hereafter GB), which equals 1024 MB, are available and this is becoming the standard size of memory capacity.

2. 6. 2. Problems in CALL associated with software

First of all, the meaning of software has to be defined. Software is the program which is stored in floppy disk or CD-ROM. Computers are completely useless if software is not installed since the hardware itself does not work as a program, but the software makes a program operate properly or functions as a program itself so far. This is one of the major misunderstood concepts possessed by some organisers of CALL at the beginning stage.

However, the hardware which does not require software has been invented in Japan recently. This type of hardware may be the mainstream in a few years time.

2. 6. 2. 1. Expensiveness

In the same way as hardware, one of the main problems regarding the software is its price. It is true that software is not as expensive as hardware, but printed materials such as textbooks or handouts are undoubtedly more economical.

The main reason of high cost of software is explained by using the description; "a chicken-and-egg situation" by Centre for Educational Research and Innovation (hereafter CERI) in Paris (1989: 25). This means, a publisher is not willing to produce educational software because it has comparatively small demand on the market. As a result, educational software will remain expensive. Consumers tend to avoid purchasing it because it is
expensive. The market will not grow because the product is not highly demanded by consumers.

2. 6. 2. 2. Crash

One of the greatest fears for almost every computer user produced by software as well as hardware is "crash". This is the term used to describe the situation when software (or hardware) unexpectedly stops functioning without any apparent reason. A user often becomes flustered because all of a sudden, he / she may have lost a piece of information if it is not saved on a floppy disk. Help from a computer programmer is usually required to overcome this circumstance.

2. 6. 2. 3. Compatibility

Problems of compatibility of software has been expressed in a large number of related literatures. Among them, Davies (1982: 50-51) warns the readers, who are meant to be language teachers that the program may need to be rewritten when it is wanted to be run on another type of computer because the program created on one computer often fails in operating on different computer. This is caused by the lack of universal operating system (Hananto: 1992: 26).

2. 6. 2. 4. Shortage of good software

The shortage of good software is even more frequently pointed out by many educators. For instance, Leech and Candlin (1986: xi) and Phillips (1986: 3) as noted by Hananto (1992: 26). The following is one of the typical comments expressed by an
English teacher presented by CERI through the quotation of Bigum et al (1987: 121):

"One of my main concerns is the language attached to computers. It really gets on English teachers' nerves - 'Computer friendly', and stupid instructions. You never have a capital letter or any punctuation. As English teachers we flog our hearts out, year in, year out, trying to teach punctuation, then the machine has none of that kind of thing in most of the programs. One would like a more suitable and contemporary Australian language as compared to this obnoxious and nauseous American salesmanship language"

First of all, there is a question of what criteria are involved in constituting a good educational software. According to the article written by CERI (1989: 31), the concept of quality in educational software is complex and elusive due to the fact that there are too many elements involved in this subject to define the idea clearly.

In terms of quality of educational software in relation to curriculum, some criteria for assessment are mentioned (CERI: 1989: 32). Some of them are as follows:

- the extent to which software fits the curriculum or has an appropriate place in it
- the extent to which it adds something to the curriculum or improves it by allowing something to be done which was not feasible previously

It is also necessary to understand quality of educational software in relation to teaching. Similar to the criteria in relation to curriculum, it is also difficult to share the exact concept with every teacher since the teachers and their ways of teaching vary.
The followings are several examples for assessment expressed by CERI (1989: 32). A piece of software is regarded as excellent because it:

- encourages co-operative learning when appropriate
- encourages the individualised learning that is desirable at a different point in time

Quality of educational software in relation to curriculum and teaching style has been considered so far. In addition to this, the view from learners on the quality of educational software should be mentioned. CERI (1989: 33) notes that the research on this subject has not been carried out much, however, findings of Malone (1980), Smith and Keep (1986) are cited to show readers some interesting facts about the quality of educational software in relation to learning from learners' point of view. It seems that good software, especially for younger learners are basically well-designed games. What is required to constitute satisfying software is that it has a goal and a sense of competition as well as the audio and visual effects, the facility to keep a score and so on.

Underwood and Underwood (1990: 10) analyse that the fact that lack of good software in the field of language education is referred by many teachers as a reason for showing negative attitude towards the implementation of CALL into their curriculum.

Even though excellent educational software is available, the lack of information about them can be another serious problem for teachers who wish to select the most desirable software to make use of it in their classrooms. CERI (1989: 25) argues that
absence of satisfactory information on software discourages teachers from using computers as teaching tools.

It is a time and money consuming task for teachers to find the appropriate software by themselves because they have no choice but to consult to each supplier one by one. Brochures distributed from publishers may be helpful but they are often made only to entice the public's consuming desire. Consequently, it is inadequate to rely entirely on attractive comments or colourful graphics appeared on commercial catalogues. CERI (1989: 25) presents the questions which are wanted to be answered, by teachers when they wish to search for a piece of suitable software. They are as follows:

- "What software capable of meeting my curriculum requirements has been produced?"
- "By whom and how much will it cost?"
- "For which microcomputers is it available?"
- "Is any special hardware or software needed for its use?"
- "What are its contents?"
- "What is it intended to do?"
- "Who is the target audience?"
- "Where can I preview it?"
- "Where can I obtain a copy?"
- "What do others think of it?"
- "How up-to-date is this information?"
- "Are there case studies, curriculum guides or descriptions of classroom implementations of the software that are relevant to my needs?"

It is necessary for teachers or CALL organisers to obtain answers to above questions from reliable sources. To bring this idea to realisation, it is hoped that a contacting system between educators and suppliers of software is established. It is also a
good idea to find a person in the same or similar situation and exchange opinions or information with each other.

Not only access to satisfactory information but also trustworthy reviews or evaluations for educational software are unavailable to teachers who are interested in managing CALL. Reviews and evaluations for software sometimes appear in publications such as journals or newsletters. However, they are often limited in quality because of a lack of quantity in information, noted by CERI (1989: 26). This organisation also emphasises the importance of reviews or evaluations since teachers are able to receive concise and accurate information in addition to clear descriptions of the major characteristics of the software, including good aspects as well as bad ones.

The final point concerned with the problems in relation to software is the lack of adequate previewing and demonstration facilities (CERI: 1989: 26). It is natural that a teacher seeks an opportunity to observe software he/she is interested in its actual use before he/she pays for it. A first-hand experience with the software certainly helps a teacher to make the most apposite final decision for him/her. Unfortunately, occasions allowing an individual teacher to preview or demonstrate the software are often relatively restricted.

Two tactics to solve this problem are introduced by CERI (1989: 26-27). The first method is to request and procure permission for an institution or a teacher to preview and demonstrate the software. However, caution is reported to readers that this is likely to be difficult due to the policies carried out by the publisher or supplier. For instance, previews or returning software are not allowed by some companies. The
second strategy to tackle this problem is to establish preview centres at various levels of societies. They would be similar to libraries as teachers can borrow software to test it by themselves. Although the number of such preview centres is still considerably small, they have proved a successful solution in several countries.

2. 6. 3. Problems in CALL associated with users

Not surprisingly, the users of computers, namely a teacher or a learner in this context, have possibilities of becoming problems with CALL. As an organiser of CALL as well as an instructor, it seems that a teacher is likely to be surrounded by more problems than learners. Teachers are confronted by a series of questions such as "is adding computing to the curriculum creating too much pressure for language teachers?" or "is it reasonable to expect language teachers to spend the time to become intimately familiar with the technology of computing particularly if they do not have ready access to a computer of their own (Kerr et al: 1990: 33)?"

In this section, problems which are mainly concerned with teachers will be discussed. Some of the problems certainly apply to learners as well. According to Hananto (1992: 27), problems of this kind can be classified into two major categories. They are: teachers' negative attitude towards CALL and the lack of sufficient training.

2. 6. 3. 1. Negative attitude towards CALL
It seems too optimistic to think that advanced technology is always welcome by every individuals. It is natural to expect that a wide range of people hold misconceptions to some extent.

Firstly, problems related to teachers' negative attitudes are frequently caused by misunderstandings or stereotyped images. For those teachers, CALL still appears to be a modern version of programmed instruction. Hananto (1992: 27) adopts Higgins and Johns (1984: 9) to explain this phenomenon. Programmed instruction was developed at an early stage of CALL, that is in the 1960s, in North America to overcome unfavourable staff-student ratios (Rushby: 1980: 19). The computer was merely used to provide learners programmed instruction in the form of drill and practice.

Some teachers have this image now and tend to apply it to all types of CALL programs. Moreover, they developed a hostility towards the use of any technology in the classroom (Higgins and Johns: 1984: 9). Jones and Fortescue (1987: 5) raise several important respects of CALL and claim that they are not adequately recognised because they are buried underneath the prejudice. It is relevant to present the points that Jones and Fortescue mention to reaffirm their importance. They are:

- it implies the substitution of computer for teacher - in other words a wholly self-access use for the machine.
- it suggests that a CALL lesson is determined solely by the interaction between learner and computer, and thus neglects vital methodological considerations in which the teacher plays a key role.
- by limiting the computer's role to that of 'quizmaster', it ignores other equally valid roles for...
the machine - roles which are very relevant to today's communicative classroom.

• it suggests that there is a single 'computer method', and one that is inextricably linked in many teachers' minds to the days of audio-lingualism and pattern practice. The emphasis on formal correctness has caused many to reject (wrongly, in our view) the computer's role as quizmaster altogether.

• it implies a one-to-one ratio between learner and machine, which is usually neither practical nor particularly desirable.

• it implies that computers can be made omniscient, which they cannot.

"Technophobia" is another main element which obstacles spreading CALL over language education. The term, technophobia means "fear or dislike of technology" and this phenomenon is not rare among people involved in the non-science disciplines; such as language teachers. Moore (1986: 106) writes: "there is no doubt that many people have absolutely no interest in machines of any kind and appear to have a complete mental block where any form of machinery is concerned." For them, it would be extremely difficult to consider this gift of civilisation as their convenient and reliable teaching partner.

A threat to personal contact with students is expressed in the Report of the House of Representatives Standing Committee on Employment, Education and Training (hereafter RHRSEET) (1989: 74) as another reason to cause a certain degree of resistance from teachers. Contrary to this apprehension, teachers are continuously demanded from students during their contact hours.

A supporting example is the statement made by Carss (1989: 488-489) from the University of Queensland's computer
managed learning program in the RHRSCEET (1989: 72). According to the report, teachers are needed by students to work as "a source of guidance and clarification for persistent and / or higher order problems" at the present time whereas they used to be busy with "undertaking considerable repetitive work answering individual students' questions".

Besides, there is another negative attitude of teachers towards mentioned by Underwood and Underwood (1990: 11). They note that "CALL may be rejected because teachers feel they can do the job just as well by conventional means without all the effort associated with organising a technological classroom." This attitude is more or less understandable because for a teacher who has accustomed to his / her own method to teach a subject for a reasonably long time, it would appear to be a waste of time and energy to learn, understand and take advantage of a new concept in a practical way. To put it more simply, it looks as though embarking on an adventure for them to take CALL into their classrooms because it is rather similar to exploring the unfamiliar world.

Furthermore, there is an interesting comment made in the RHRSCEET (1989: 74). It says that some teachers are anxious that their career prospects will be limited on account of the introduction of new technology into a classroom. It is true that some roles of teachers will be reduced since they can be taken over by the computer. However, it is also certain that new and different tasks, for instance professional training in both theoretical and practical aspects of computers will be given to a teacher. It is thus too pessimistic to think that teacher's career opportunities will be invaded by computers.
As can be seen, there are several misunderstandings or prejudices held by some teachers toward the use of computers in education. Their scepticism is often derived from ignorance of rapid and drastic changes happening here and there. It is greatly unfortunate that in case the potential ability of the computer is neither grasped nor exploited because of the obstacles created by teachers.

One possible method to remove a such prejudice mentioned above is to provide proper training sessions to teachers. In fact, another problem to be stated next is the shortage of appropriate training for teachers.

2. 6. 3. 2. Shortage of training

There is a rather disappointing statement regarding language teachers noted by Williams (1985: 59), quoted by Hananto (1992: 29) that "the majority of teachers do not even know how to switch on, let alone use a computer". This comment represents a more general problem such as teachers tend to have relatively poor skills to deal with computers because of the lack of proper training. The most advanced equipment will be a useless possession even though opportunities to make use of computers are provided, if teachers do not know exactly how to treat them.

Contents of training also needed to be considered carefully, because as found in the report from the CERI (1989: 27), the training programs which have been available so far have not necessarily been effective. Consequently, it is important to establish and implement a special program to train teachers to
produce the best result in the use of not only computers but also other new technologies.

The deficiency of access to computers can result in a serious barrier that prevents teachers from understanding the potential contribution of computers to language education as well as maintaining their enthusiasm and interests in CALL. Not surprisingly, not only language teachers but also those who engaged in the humanities and social science subjects have fewer opportunities to be involved with computers to a much greater extent compared with teachers specialising in scientific subjects, as referred by Hananto (1992: 30).

As can be seen, there are substantial quantity of problems concerned with CALL. Some of them, such as those associated with hardware and software will not easily be solved immediately by language teachers' contributions alone because they are difficulties constituted of mainly technical matters. On the contrary, problems associated with teachers are definitely removable even today with more awareness and proper understanding by teachers about CALL.

It is quite likely that problems in relation to hardware and software will be eased on account of rapid progress in computer technology being made constantly. If so, only the problems created by users, that is teachers and learners will remain as the most serious problems in the near future.
In the previous chapters, some aspects of CALL have been considered. They are, however, mainly concerned with the area of teaching English as a second language. This chapter, therefore, concentrates on the issues raised in the field of teaching Japanese as a foreign language.

In the first part of this chapter, several characteristics of CALL in teaching Japanese as a foreign language will be discussed, then some software packages related to this area will be introduced as a reference for interested teachers. The current situation in the use of computers will also be reported.

3. 1. CALL and Japanese language teaching

In comparing the teaching / learning of Japanese with that of English, the first major conspicuous difference is the writing system of Japanese. Unlike English where there is only one kind of script, the Japanese writing system involves three, namely hiragana, katakana and kanji. Among these, kanji seems to be a major concern when it comes to effective methodology in teaching and learning because it is so complicated.

Use of multimedia in learning kanji can be effective because learning kanji requires mixed information such as formation (components of each kanji), meanings and readings. As referred to in Chapter Two, one of the features of multimedia is that it allows users to receive information through various media at the same time. For instance, information on readings of
kanji can be acquired effectively by listening to the recorded voice, as well as information on meanings and formation through visual impact (Kano: 1995: 15).

Without the help of a computer, it seems to be rather difficult for learners to receive those types of information simultaneously when they are in the situation of private study outside classroom contact hours. Readings of kanji or correct pronunciation are conveyed if a cassette-player is used. Similarly, meanings and formation of kanji are passed on to learners if a picture or video-player is used. However, using those kinds of equipment at the same time may often cause interruption to concentration on study due to the burden of operating them.

Repetitive practice for writing is also catered for by the use of computer in learning kanji. During class, there are limited opportunities for learners to obtain the repetitive demonstration of how to write, including stroke orders, from a teacher. With a computer, however, a pile of learned kanji is easily sorted out in accordance with kanji readings or radicals. It is a tedious and time-consuming task for learners, especially those who have not been accustomed to using Japanese dictionaries, to conduct this manually. For these reasons, many pieces of commercial courseware for learning Japanese are designed to learn and practise kanji.

It needs scarcely be said that repetitive writing practice and memorising kanji is mandatory, dull work for some learners, which can turn into fun exercising by the use of computers. This is due to the game-like nature and novelty effect that computers
have. This often leads to learners becoming motivated and achieving better results.

The same principle is applicable to learning hiragana and katakana for learners at the beginning stage. Majima (1992: 145) explains the circumstances of developing a piece of courseware for learning hiragana and katakana at the University of Georgia.

The use of word-processing software in teaching Japanese has also been studied by several educators. In the articles of Harado (1984: 54-65) and Yamamoto (1984: 71-82), the relevance of using word-processors to teach writing Japanese is mentioned. They comment that the use of a word-processor in writing practice encourages learners to work on their compositions by allowing revising as much as they wish, and this helps them to produce more thoughtful pieces of writing.

3. 2. Availability of courseware


3. 2. 1. Software for learning writing scripts
Many pieces of software in learning Japanese are designed to help learners to memorising characters. The following is a brief description of such software (Kantaro Features: 1993).

Kantaro is an interactive multimedia, kanji learning software created by the collaboration of Macquarie University and Fujitsu Australia. It consists of theory module and game modules. Theory module presents kanji and their meaning in the form of animation and still graphics, then full details of kanji is shown such as readings, examples of usage in context with pronunciation, meaning and stroke order in animation. After the recognition of kanji through the theoretical understanding, learners are encouraged to reinforce their acquired knowledge by attempting a wide variety of games, for instance a flip game, meaning match game, reading match game and stories at different levels to supply context to the kanji.

This software is suitable for basic to intermediate levels of learners as the number of kanji covered in Kantaro is fundamental two hundred. They are, for example, numbers, adjectives of size and quantity, basic compounds, family members, verbs, animals and colours.

There are some other pieces of software for learning Japanese characters. They are:

Kana-Kun, Katakana, Hiragana, Remembering the Kanji: The Program! & HyperKanji!, HyperActive Hiragana, Kanji Master, Eastword, Gambare-kun, Kanji-Flash V0.97, Kintaro-Sensei, Kanji Exercises, Hiragana / Katakana Exercises, Kanji Compounds, Kanji Match, Mac Sunrise B-100
(Beginning level), Mac Sunrise Script 2000, Kanji works, Kanji Moments, JapanEase Vol. 1 - Katakana, Japanese Word Master, MOKE V2.0 KANJI-Guess, Smart Characters for Student, HyperKanji V0.8, KanjiSama, Japanese CAI-Hiragana V1.0 KatakanaV1.0,

The followings are some examples of other types, such as listening, speaking or reading comprehension software.


There are also other software for such as word-processing and dictionary. The following are pieces of software recommended by some educators for learners of Japanese.

3. 2. 2. Software for word-processing

Kanji word 3.0, Twinbridge Japanese, Turbo Writer J, EGWord

3. 2. 3. Software for dictionary
3. 2. 4. Others

J-Support (Japanese grammar checker)

3. 3. The Current situations in the use of computers

In the latter part of Chapter Three, reports from two Japanese universities whose use of computer is well integrated into their Japanese teaching curriculum will be presented as samples for practical uses in various ways.

There are quite a few universities both in Australia and Japan making use of computers in their teaching Japanese course. They are, for instance, University of Tsukuba, Chubu University, Nagoya University, International Christian University, Keio University, Tohoku University, Hiroshima University and Hitotsubashi University in Japan (Otsubo: 1992: 12). In Australia, universities such as University of Sydney, University of Melbourne, Queensland Institute of Technology, University of New England, Griffith University, University of Wollongong and Macquarie University are using computers in their Japanese program.

3. 3. 1. The Case of University of Tsukuba

At University of Tsukuba, computers have been used for overseas students learning kanji and grammar since the 1980s (Shimizu and Kano: 1992: 92). The CALL programs implemented at International Students Center at University of Tsukuba can
roughly be divided into two categories. One is the occasional use of commercial software and the other one is regular use of self-produced software.

Firstly, commercial multimedia software called "Let's Learn Nihongo: Basic Kanji, Kanji Dictionary with Writing Practice" is taken into teaching Japanese classes (Kano: 1995: 15-19) to be used as an occasion demands. The part of "Basic Kanji" is composed of a set of four CD-ROM and their contents can be put into six categories as follows:

- Introduction to Kanji: orientation material to teach the basics of kanji - origins of kanji, rules of "on" & "kun" readings, basic rules of writing (stroke order etc.)
- Kanji Functions 1: reading of basic adjectives, inflectional endings, differentiation between the uses of on & kun readings, step form word-reading to sentence-reading levels
- Kanji Functions 2: reading of basic verbs, nouns, compounds
- Kanji Forms: the concept of radicals as components for its sound and meaning, using this as the basis for writing kanji
- Various Applications: classifying kanji from various points of view, practical application exercises
- Kanji in Everyday Life: game-style practice of kanji for places, names, objects encountered daily
Introduction to Kanji is used to introduce some concepts of kanji to learners from non-kanji backgrounds. They are explained the origins of kanji with recorded voice either in Japanese or in English, then provided exercises of reading and writing with the aid of animated graphics or writing tablet. Learners are instructed to repeat the same practice until more than seventy percent accuracy is achieved. Learners, then, gradually proceed to advanced levels by using Kanji Functions to Kanji in Everyday Life.

Self-produced software for learning kanji named "Situational Functional Japanese no Kanji" (hereafter SFJ) and "Total Basic Kanji" are used to teach learners of Japanese at the beginning stage on a regular basis. They correspond to the vocabulary in textbooks "Situational Functional Japanese" volume 1 to 3 and "Basic Kanji Book" volume 1 and 2. These pieces of software are used in class combined with CALL software for learning grammar every second day.

SFJ is composed of three types of practice. The first program is called "yasashii sensei", which supplies clues for reading of self-learned kanji. This program is used when learners need to revise what they have learned so far or for learners who are not accustomed to have learning kanji yet. The second program is called "kibishii sensei", which does not offer any hints for learners. This is used at the end of the lessons to check what they have learned is acquired. It is also beneficial to advanced learners or learners who have learnt kanji enough to revise by themselves. The third program is called "revision", which allows learners to check all the readings of kanji that they have learned in the last four lessons.
Total Basic Kanji is a program that offers kanji reading exercises as well as meanings in English. There are sections for preparation, practice and revision with levels from basic to intermediate.

These pieces of self-produced software may appear to be unattractive compared with commercial multimedia software to some learners because of the lack of sound or colour graphics. However, it is beneficial when used for quick review as it easy to operate and operation can be finished in short time such as ten to fifteen minutes.

Kano (1995: 19) emphasises that it is essential that CALL software should be synthetic, that is being composed of not only practices of readings and writings or understanding the meanings but also practices to understand usages or structures to be integrated.

In this connection, a pre-course diagnostic examination by the use of computers is also conducted by International Students Center at University of Tsukuba (Ichikawa and Yamamoto: 1992: 106-118). It is reported by them that this system not only helps accurate and immediate assessment but also to determine the areas in which learners need to practice more intensively.

3. 3. 2. The Case of Chubu University (Komori: 1995)

Chubu University, located in central Japan has been implementing the use of Internet in reading and writing classes of Japanese since the end of April in 1995. The project using the mailing list named "Subaru" has been organised and managed by one of the teachers of Japanese. According to Komori, who is a moderator for this project, the purpose of the adoption of the
mailing list is to provide materials which bring real contexts to learners of Japanese in the form of E-mail.

There are about thirty participants involved in this project. They are roughly divided into four categories. Firstly, there is a group of learners, namely first and second year students who are studying Japanese at Chubu University. Another group of learners is the students of University Texas at Austin who are studying Japanese. Thirdly, there is a group of native speakers of Japanese, who are studying at Chubu University. Finally, there is also a group of others such as coordinator or supporters of this project.

Learners of Japanese at Chubu University are first instructed on how to use mailing lists in their Japanese class. Then, they are supposed to check a mail message and write a reply to their counterparts during their spare time. A exchange between learners and native speakers of Japanese begins with self-introduction, and moves to general matters and current affairs such as religious groups in Japan, cooking, food, languages, honorifics, dialects, family and the aged society etc. Learners of Japanese, firstly asking questions about Japanese customs or opinions, then answers delivered from native speakers are used as references of compositions to be written in Japanese assigned for learners. Learners are also occasionally asked questions by native speakers.

Over 360 mail messages had been exchanged between the members at July in 1995. Creating a home page is also in progress at the moment. It is a combined project between learners of Japanese and a member of technical staff.
Komori raises several issues regarding using the Internet in her Japanese class. They are, firstly, the differences of levels in Japanese between learners. Secondly, the method of assessing the activities. Thirdly, the roles of a teacher as a moderator. Finally, the preparation of educational environment for using Internet.
CHAPTER FOUR
SURVEY IN AUSTRALIA

Having analysed the significance of using computers in Japanese language learning and teaching as a foreign language as well as availability of courseware, it is worth checking the current situations of CALL in Japanese. In this chapter, the survey is conducted in Australia aims to find out whether computers are used at Australian universities or not, and if they are used, what, how and to what extent they are used.

Before looking at the results, the procedures of the survey will be explained first. Three types of questionnaire were prepared for the possible three target groups. They are: questionnaires for both teachers who make use of computers in teaching Japanese and who do not make use of them, and learners of Japanese. Each questionnaire is divided into three sections. The first section is concerned with hardware, the second section is about software, final section asks about uses of computers. These questionnaires were distributed to twenty-one universities where Japanese is taught around Australia by mail.

Unfortunately, the response to questionnaires was considerately poor, that is only five questionnaires were returned from teachers and no response was obtained from learners. It is assumed that the reason for this outcome was caused by the timing of this survey. It was conducted close to the end of the teaching period for most universities and this may have strongly influenced the returning of questionnaires.
Five universities which kindly participated in this survey are as follows:

- University of Sydney
- University of Melbourne
- University of Queensland
- James Cook University
- University of Canberra

Two universities among them are making use of computers in teaching Japanese.

4.1. Hardware

At present, there are two major types of hardware commonly circulated in general. They are known as Apple Macintosh (hereafter Macintosh) and IBM / IBM compatible. According to this survey, both of two universities where CALL is implemented use Macintosh for their Japanese teaching programs.

The reasons for the popularity of the Macintosh is not particularly specified but in my view, Macintosh is preferred because it is widely known as a so-called user-friendly computer. For Macintosh, GUI (Graphical User Interface) is adopted to allow users to operate it without many difficulties even if they are computer-illiterate or inexperienced using computers.

There are about fifty to sixty computer terminals with colour monitors facilitated at each university for the purpose of CALL. They are located in computer laboratories. One university has two computer laboratories and twenty-five terminals are stored in each place. Colour monitors seem to have become
common for CALL equipment. They are perhaps indispensable now to cater for multimedia software.

Computers at one university are connected to other equipment such as a video-recorder, a tape-recorder, a projector and a printer. The question of how they are used in teaching Japanese was not answered. It can be imagined that they are used to perform as interactive audio or interactive video. The other university do not have their computers connected to other equipment except for a printer.

Computers are connected to each other to form a Local Area Network at one university to communicate to each other as well as having access to Internet. E-mail is also used in teaching Japanese, however it is uncertain how it is used. Exchanging a mail message in Japanese between learners is one possibility.

Teachers are basically satisfied with the hardware that they are using at the moment because what they are using is a relatively late model. However, one teacher commented that the reliability of hardware sometimes becomes problem to him.

4. 2. Software

Software used at both universities are not commercial software but self-produced one. One teacher explains the reason for this as follows. Commercial software is not appropriate for her own course, thus it is not effective nor efficient. Neither teacher consulted with another organisation to produce it. Hypercard for Macintosh, which is a popular authoring system, was used to develop their own programs. The popularity of this authoring system derives from its simplicity to create materials composed of text, graphics and sound. In regard to the question
about difficulties with creating the software, both teachers answered that there were technical problems, such as difficulties with the high level technique of programming as well as knowledge. Time and money were also problem for one teacher as she mentioned the "enormous amount of time to develop the software and considerable amount of money for equipping machines as well as tools." It is an understandable statement as programming tends to be a time-consuming and troublesome job for a teacher engaged in a non-science discipline subject to organise and complete.

The type of software created and used at the two universities is drill and practice. It seems that this is the easiest type of software to develop with authorising system by teachers themselves. It is also expected that drill and practice exercises with a computer can be an effective activity if they are integrated. At one of the universities, computers are also used for class discussion. The notion of "the computer as stimulus" mentioned as the roles of the computer in Chapter Two is put into practice here.

Software which is not produced for the purpose of CALL is also used in teaching Japanese at one of the universities. Types of software are Simple Text for word processing and Eudora to use E-mail as well as Netscape to access to WWW. Adventure games or simulations were not found at these universities. The programs are stored in hard disk as it is convenient because it can act as a big file.

4. 3. Uses
Computers are used during classes (as opposed to using them for private study) at the two universities. At one of them, computers are also used in teaching Japanese for testing, for self-studying and for homework. At that university, use of computer consists part of the Japanese classes when class is conducted in a language laboratory. Students are allowed to take the software home for self-studying at one university but the other one does not allow it due to the copyright.

At both universities, computers are used in teaching Japanese on a regular basis. For instance, CALL is conducted once a week at one university and the other one spares time for CALL for twice a week.

Regarding levels of learners, CALL is provided only for learners at beginning stage at one university because it is designed to teach beginners whereas CALL is available to learners at intermediate and advanced levels as well as beginning levels at the other universities.

Computers seem to be well used according to the answers provided for the question, "for what aspects of Japanese language skills do you use computers for?" Five aspects of language skills, namely listening, speaking, reading, writing and grammar are taught by the use of computers at both universities. In addition, both teachers consider that all these skills except for speaking are effectively developed by the use of computers.

Two teachers who participated in this survey find using computers in teaching Japanese is easy and enjoyable. Moreover, they claimed that they do not have any problems in using computer in teaching. Successful integration of computers into their teaching programs may lead to this favourable result. This
hypothesis appears to be cogent judging by the answers to the question "do you find use of computer in teaching / learning Japanese useful for both you and your students?" Both teachers expressed affirmation to this, and they also provided several reasons by stating as follows (These responses are in the original). Using CALL in teaching / learning Japanese is advantageous because

For teachers: it becomes

- easier to assess teaching
- possible to get individual feedback on students
- possible to provide a systematic instruction
- possible to encourage students to study Japanese

For students: it

- becomes possible to work at their own pace
- is interesting
- encourages learners to learn as much as possible

One of the most important aspects of implementing CALL is its effectiveness in classrooms. Some tangible results from the use of computer is teaching Japanese observed teachers are reported as follows:

"results from listening comprehension tests show improvements in students' ability"

(tangible results are obtained) "through the students' evaluation towards computer assisted Japanese learning by the use of the packages"

At the end of this questionnaire, both teachers claimed a few points. They are as follows:
"It needs to look at collection of data on individual learning."

"If we use the appropriate software for the course, computer assisted Japanese learning will turn out successful."

Information obtained from teachers actively engaged in use of computers in teaching Japanese will be useful and provide some concrete ideas for teachers who are interested in managing CALL. For such people, it is essential to examine these samples closely in order to turn this knowledge to practical use successfully.

4. 4. Opinions of teachers who do not implement CALL

As shown in the examples above, it seems that there are sufficient benefits yielded by the use of computers in teaching Japanese. However, there seems to be more teachers who do not make use of computers in their teaching Japanese courses. It is also worthwhile considering what has prevented them from seizing on this valuable idea by interpreting the answers returned from a few teachers.

The main reason for not using CALL in their courses is the lack of facilities, namely there are no or not enough computers equipped at their educational institutions. At some universities, financial problems are one of the major concern for teachers to prevent them using CALL.

One of the teachers claims that he cannot find pedagogically sound teaching materials. All the pieces of software he has seen so far are based on methodology that he does not favour, that is
grammar drills as well as pattern practice. The lack of good software, which has already been discussed in Chapter Two as one of the problems in CALL, is proved here. He, thus, comments that he would surely take an opportunity to use CALL if he encountered good comprehension texts based on authentic materials.

Another teacher expressed keenness to establish a multimedia laboratory at his university to gain the access to Internet as well as television broadcast, satellite and the latest newspaper. He assumes that word-processing will be beneficial in teaching Japanese for script-reinforcement activities. Fortunately, the department he belongs to has just been granted funds to install a multimedia laboratory.

As seen from above, there are some difficulties with putting a CALL plan into practice. Although there are problems which cannot be solved by teachers themselves such as financial constraints, it is not fruitless to consider planning a CALL program while waiting for the opportunity.

It is unfortunate that any opinions from learners could not be reviewed because of the lack of data in this survey. Interested readers are referred to the article written by Fujiwara (1992: 75). Learners' evaluation of grammar instruction by the use of computer at Nagoya University is reported.
CHAPTER FIVE
CONCLUSION

Analysis of CALL in teaching and learning Japanese has been made throughout this sub-thesis. Three topics have been dealt.

Firstly, the significance of using computers in teaching and learning Japanese is discussed. Because related research in Japanese CALL is comparatively limited due to its rather short history, more general concepts of language learning and teaching, namely CALL in teaching and learning English, are adopted in examining this subject. There are large advantages in using computers in teaching / learning a foreign language. As expected, limitations and disadvantages of CALL also exist to some extent.

Secondly, current situations for using computers in teaching / learning Japanese have been reported by the survey conducted for Australian universities and observation at Japanese universities. Positive attitudes of teachers who are making use of computers have been found from the research. The fact that there are quite a few commercial software programs for teaching / learning Japanese has also been discovered. Having recognised all these crucial facts, finally the potential use of CALL in teaching / learning Japanese will be summarised as future prospects.

It is obvious from the research that the development of advanced technology, such as multimedia, Internet and Artificial
Intelligence will bring about further potential uses of CALL for teaching / learning Japanese. Circumstances for Japanese learning may look dramatically different from the ones at present. The following is a situation which may occur in the near future.

Outside the contact hours, word-processing software is used by a learner to write compositions for his / her assignment. This saves his / her time from re-writing the rough drafts repeatedly.

Authentic materials about Japan can be obtained from the Internet services to write compositions. There are several home pages related to learning Japanese, for instance, "Japanese Language Plaza" (Nitoguri: 1996: 20), "Nihongo Forum (Japanese Language Forum)" (Takezoe: 1996: 23) and "JP NET" (Miyagawa et al: 1996: 26). "GAKUSEI-L" is also a forum especially for learners of Japanese to exchange opinions and information with each other in Japanese (Hatasa: 1996d: 72-73). Through the Internet, a learner can check the latest multimedia materials for learning Japanese around the world. If he / she finds a suitable one, it is possible to copy and use it as though it exists right in front of him / her (Tajima: 1995: 12). If a learner has a question, he / she can ask it to his / her language partner called, "keypal" (Hatasa: 1996d: 73) in Japan by using E-mail. By the use of "chat", they can even hold a real-time discussion across a long distance.

Computer terminals are equipped with an English-Japanese or a Japanese-English dictionary and a thesaurus as well as a grammar checker. These facilities are time-saving and keep a learner's concentration. The courseware for CALL can be chosen from a wide selection and a learner can use it for studying every
language skill such as reading, writing, listening, speaking and grammar at his / her spare time.

Activities conducted in classrooms may also be altered greatly. Learners can experience, for example, "virtual shopping" in Japan by using real maps or advertisements available on WWW. This means a learner is assigned to go shopping at a certain place of Japan. He / she plans what to buy at where and how much he / she should spend, etc (Mine: 1995: 24-25). Mine also suggests to use advertisements for translation exercises as they usually contain explanations in both English and Japanese.

An environment mentioned above may seem unrealistic to some teachers or learners, however, many of the activities above have already been realised at some institutions. In fact, Japanese government agencies, for instance, Bunkachoo (the Agency for Cultural Affairs) have announced that a system, which aids learners of Japanese who reside overseas will be formulated. This system is aiming at allowing learners to gain access to multimedia courseware for learning Japanese through the Internet. It is aimed that this multimedia courseware will be compatible with the current multimedia age (Maruchimedia de kyoozai hasshin: 1995: 3). Moreover, in 1992, Monbushoo (the Ministry of Education) has launched on a series of research in the use of multimedia to examine its potential in an educational context. Practical advice, such as on methods of obtaining information on multimedia courseware or procedures for creating a piece of multimedia courseware, is provided to school teachers (Monbushoo: 1994: 48-58).

As can be observed from the result of CALL survey, the situation in Australia is not the exception. It seems that the use
of computer is becoming an important part of Japanese language education. Advanced technologies such as multimedia or the Internet have a great potential to be well integrated into teaching / learning of Japanese in Australia without a lot of difficulties as there is a successful history achieved with the use of technology in distance education.

With the improvements being made in the learning environment, it is necessary for both teachers and learners to be aware of this positive change. It is also important for them to take this opportunity to make further improvements in teaching and learning Japanese. If the efficiency of computers is recognised and fully utilised, it is only a matter of time before the field of teaching and learning Japanese as a foreign language to take an additional step towards its objective, that is to provide and to encourage learners to acquire accuracy and fluency of communication in Japanese.
BIBLIOGRAPHY

In this bibliography, long vowels in Japanese names and terms are written double unless they are otherwise specified in the original materials.


