

# New Pedagogies and Sites of Learning ( 1 )

## Can Computers Be a Tool in Teaching and Learning?

Masako Kamijo

### **Introduction**

In recent years under the situation that IT (Information Technology) has been advanced worldwide, of which wave affected educational field. Governments seem pressed educational institutions to introduce computers not to behind the wave of adopting IT. The advanced IT has been working as if a magic to change the whole education system.

This is the overall preliminary study to look into new pedagogies for teaching and learning with computers and other issues. The study firstly outlines the present state of using computers in education and secondly examines teaching classes with computers as a case study.

### **1. The Present State of Computers in Education**

Recently, an introduction of computers in schools and institutions of higher education in the world has been advancing rapidly. The state of computers in education are observed from a degree of installation of computers in schools and educational institutions,

#### **1.1. Installation of computers**

In England and Wales in 2001 many schools and higher

education institutions already installed a great deal of computers, which were connected to inter-networks. For example, approximately 400 computers were installed for the use of students besides computers installed in rooms of teaching and administrative staff (Reading university). In the United States, it is reported that the number of computers in schools is approximately 4 times more than that of Japan. The present of papers in three international conferences held in 2001 in England shows the installation of computers in schools and institutions of higher education in many other countries.

## **1.2. Initiation of computers and aim of introducing computers**

### **1.2.1. Initiation of computers**

In Japan, the Ministry of Home Affairs and the Ministry of Education and Science started the plan to equip with computers in all elementary schools (22 computers in each school) and secondary schools (42 computers in each school) during 6 years from 1994. The Ministry of Home Affairs has been also advancing the 6 years' plan from 1995 to equip "the Basic soft-wears" for word processors and making figures and "Educational soft-wears" for the use of specific subjects. By 1996 the educational environment for using personal computers at least one computer per 2 pupils in secondary schools was realized and elementary schools are approaching nearly the same situation as the former (Saeki, p.2).

The Ministry of Home Affairs and the Ministry of Education and Science started in 1994 "100 Schools Project" which promotes utilising the inter-network in schools and offered these schools necessary machineries and funds for connecting to the inter-network. NTT (Nippon Telegraph and Telephone Corporation) cooperating with the Ministry of Education and Science began "Connecting-plan", which offered 1000 elementary and secondary schools facilities, funds and technical support for connecting to the inter-network. "Media kids" by the Apple Computer also involved in the

similar plan. Besides these schools, other schools connected to the inter-network have been increasing (Saeki, p.3).

In the fifteenth Central Educational Council to discuss a formation of the educational curriculum to cope with the 21<sup>st</sup> Century, which started in 1995, it was stated that educational institutions such as universities are to form the inter-network with schools. In this respect, the Ministry of Education and Science promoted to install the computer network in universities by funding for the installation (Saeki, p.4). The researcher's Department installed the computer network with its fund in 2000. The computer network is also installed in most of all other universities in Japan.

The promoting system of computer education in schools in Japan is far behind of the United States, which is dealt later.

### **1.2.2. Aim of introducing computers in Japan**

Persuasive arguments for need of the computer education seemed not found in the Report of the Central Education Council. Saeki (p.8) suggests that introducing the computer education in schools seems in the state of confusion. It aims at adapting to, coping with and reforming schools for the advanced IT society.

#### **(1) Aim at adapting to the advanced IT society**

Digital techniques will increasingly progress and utilising a computer and a use of internet will more sophisticated and widespread than that of present. In order for children to adapt to such a society, it is urgent for children to get used to IT, to let children learn "an ability to select appropriate information" and informational moral.

#### **(2) Aim to against the advanced IT society**

In the advanced IT society, children face a flood of information, which accompanies sides of light and shad. Regarding the former, the advancing IT expands various possibilities. Regarding the later,

it results to thinner human relations, lack of experiences of life and nature, affect of health etc. It is to make children acquire “power to against” an expecting big power or flood of information. For this reason, education to let children know about what is a computer and education focused on real experiences of voluntary and community activities is necessary.

### **(3) Aim to reform schools for the advanced IT society**

In the Report of the Central Education Council, it is stated that the school needs to change to “new schools” to cope with the advanced information society. For example, computers complement the role of teachers and teachers’ individual teaching according to each child’s characters. Each school utilises positively and processes education in relation to outside institutions and people.

## **1.3. Use of computers in schools and educational institutions**

### **1.3.1. CALL, CAI , CSILE**

In schools and institutions of higher education, computers are used to teach subjects, for CALL (Computer Assisted Language Learning), also CAI (Computer Assisted Instruction) with which learners can study by themselves (Saeki, p.21) and CSILE (Computer Supported Intentional Learning Environments) are gradually being introduced in schools.

CAI is a teaching system by using computers, which developed having adopted a mechanical intelligence technique. When CAI technique begins being used positively in schools, sooner or later it will be sold and spread in markets and it will begin being used at home. As the use of personal computers at home has become widespread already that the educational industry provided to set up to sell a large quantity of CAI software to users at home with the aim of “CAI software to Home !” (Saeki, p.22).

CSILE is a system installed in the tool on the internet, which bring children’s questions to scientific questions. The purpose of the

system is to build a base of cooperative knowledge and to create “a community for learning each other”, while children ask questions and searching answers each other. It is a trial to change the school as a place where teachers “give knowledge” to children to a place of “Knowledge-Building” by children themselves.

Besides CSILE, tools to create “a community for learning each other” by using the network are developing vigorously in the world (Saeki, pp.178~183).

There are two ideas of design in CSILE: “Knowledge of divided and shared” and “Learners-centred”. Regarding the first idea, “intellect” of human is not dealt only information of individual’s “inside of brain” but also it is “divided and shared” fundamentally with other people and artificial things (tools, facilities, symbols etc.). To sum it up, in the intellectual work learners or specialists work communicating with other people by utilising appropriate tools and various “symbols” (letters and charts etc.).

Hitherto education system did not promote such an education of “thinking with tools”. Rather the education up to the present encouraged children to think without using tools (or with only limited tools of pencils and paper) and without others help in the very unrealistic situation. CSILE knocked down such a practice of traditional education. With CSILE people learn with other people together, while changing our thought to data base through practical use of various information of outside and try to enhance “intellect” of a community (Saeki, pp. 185-186).

Regarding the second idea, knowledge is not given from others, but learners build knowledge by themselves through examining and searching for knowledge. Learning what knowledge, when and how learn it is decided each time according to learners’ voluntary research process. Regarding learning contents, it is a view of fluid curriculum, which is not a fixed curriculum of limiting gradually the scope of the content, but learners organise based on their own as “learners-centred”. It is considered that learners search necessary ways and

serve each other in the response to requests what learners wish learning and knowing.

### **1.3.2. Schools and educational institutions**

In UK Children at schools are studying with computers in classes and even at home for various purposes i.e., in searching information for reports by the inter-net and editing them, taking pictures in the computer by a scanner, sending and receiving mails, making his or her own home-page as well as finding information in others' home-pages etc. Teachers teach children with computers not only languages but also other subjects.

In schools in Japan a computer is used in teaching subjects such as Arithmetic or Mathematics and Science. Using a computer for teaching Japanese language and Social Studies is increasing. In the United States, a computer is used for all subjects. Software used in schools of both Japan and the United States are for drill or practice, personal instruction, writing sentences, drawing or creating pictures, musical composition, simulation, recreation, educational games, programming language, able calculation and database (<http://www2u.biglobe.ne.jp>).

Students in universities are using computers mainly for getting information by Internet, writing essays and thesis, sending and receiving mails, especially between students and their instructors of the courses. Some instructors use a computer for lectures and write the contents of their lectures in their own homepage for students to read anytime and anywhere.

### **1.3.3. Conferences**

Topics of papers related to computers and the presentation of papers having used the computer in the conferences held in 2001 below, indicated a trend of new education with computers in theory and practice at schools and higher education institutions in the whole world, as presenters participated in the conferences from various

countries in the world. The trend is categorised into new pedagogies for teaching and learning with the computer and their practice, a trend of research contents on computers, facilities of computers, making teaching materials with the computer, issues and problems on computer education etc.

In the Conference on Language, the Media and International Communication held by St. Catherine's College, Oxford, topics of 7 papers out of 72 were related to computers not only for language teaching but also the field of Media and International Communication. The topics on computers were Reliable authority: tabloids, film, email and speech as sources for dictionaries, Multi-user virtual reality and the word on the Internet: a case study, Websites and Web pages: metaphors of place and print, Why email looks like speech: proofreading, pedagogy, and public face, Gutenberg and the Internet: news media and information technology.

In the 35<sup>th</sup> International (International Association of Teachers of English as a Foreign Language) IATEFL Annual Conference in Brighton, papers specified to computers were 21 among 402. The papers were mainly related to TEFL (Teaching English as a Foreign Language). There was a Special Interest Group Programme on "COMPUTERS", where 5 persons gave a talk and there were 21 papers presented. Topics of five talks were Video conferencing: effective communication strategies in language learning, Can virtual reality become part of language learning ?, Computer SIG (Working group on Search Information) Open Forum, Putting a language course on line and ITC (Independent Television Commission) applications in higher education – abandoning paper for virtual weddings. Well known linguist worldwide Prof. David Crystal commented and analysed the use of emails by his experience at the Plenary Session.

Especially the Conference of 'C.A.L.L. – The Challenge of Change' was the conference on Computer education. The conference has been held for over 10 year. Naturally topics of all

papers were regarding computer education and all papers were presented with computers. The presenters of papers were 50. The topics of papers varied from CALL to making teaching materials and software, computer research and arguments of computer education etc. (See appendices).

It would be interested to analyse topics and their contents presented in the conferences, which will be in another occasion to do, as it needs a model or theory to analyse them.

## **2. Examination of teaching classes with computers as a case study**

The computer assisted teaching in five classes of the researcher's university is examined with the students' inquires. (The students' inquires will be stated in the same study No.2).

### **2.1. State of installation of computers**

The instauration of computers has been increasing every year in the university. The number of computers for the use of students managed by the Centre of Promoting Information in the university is approximately 800 at present. Besides computers are installed at classes for students, faculties, departments and each teacher's room as well as administrative offices.

Among five classes, two are lecture subjects (Introduction to Inter-cultural Communication and Special Lecture on British and American Studies) and two are practical subjects (Creating Writing and Inter-cultural Communication and the last is a research Studies for Graduation Thesis).

Regarding the classroom facilities for the above teaching and learning, three classes of two lectures and one practice are taught at classrooms where new facilities are recently installed for the use of a computer, which has to be brought into by an instructor, along with the display of materials and Video. These classes are provided with



seats from 169 to 300. One class is taught at LL class where the master computer for instruction is already installed with 64 computers for the use of students. Other class is taught at the lecture room with 120 seats, where the facilities of using computer, Video and OHP.

## **2.2. How the instructor and students use a computer**

The instructor's opinion: In the lectures, teaching materials are mainly prepared and presented by Power Points. However teaching materials such as pictures or up to date articles are shown by the facility of display, the related video is played and students present their reports. The teaching method is the combination of new and classical, again something neutral method is added. Here, the outline of the teaching content is shown clearly and appropriately with colorful letters, background, some pictures and other materials such as tables and charts. This would be effective teaching in every respect and attract students' learning.

However, students may feel like watching TV. In order to avoid such learning attitudes, other schemes such as a short questions and answer or presentation of students' report should be applied there. At any rate, lecturing by power point alone is not effective for students' learning.

Students in Creating Writing prepare and present their writing by using appropriate writing application software i.e., Power Point, Word, Excel depending on each topic. The students also apply to their writing necessary information and pictures etc. from Internet and other sources prepared in computers. In front of all the students, the instructor can check each student's writing, discuss checking points with students' opinion and correct it at last. Here, the way of using computers seems very effective for both the instructor and the students. Problems may be pointed out that all written papers cannot be checked during the class hour if there are too many students in the class. Traditionally the instructor checks students' written papers

outside of the class and the corrected papers are return later to the students. In the new instruction with computers, this is carried out in the class, again each student can save the written work in a floppy and the instructor can check it with the floppy later and correct the written work with colored letter.

Students in Inter-cultural Communication prepare and present their speech scripts mainly by Microsoft word. The students' speech in English is corrected while they are speaking. Therefore, using the computer is only effective for writing and correcting language by each student oneself. When the speech script is typed and saved in a floppy, it is easier for students to correct grammatical mistakes. Students could also make speeches with presenting an outline of the speech or any other materials such as pictures made by writing or drawing software. Using computer promotes students' interest in preparing a speech script and making an enjoyable speech.

Students in Studies for Graduation Thesis prepare and present their written work with Microsoft Word in the class. Using the computer is most effective in presenting, discussing and checking. Traditionally, each student presenting his or her work wrote it on the black or white board, otherwise they printed it out and distributed to all students. The computer replaced such extra work and helps greatly as an editing tool to write thesis. Since the number of students is not large and a few students present his or her written work in each class, there is no difference between the traditional or new instruction.

### **2.3. Assessment of new pedagogy by the instructor and students**

#### **2.3.1. Assessment by the instructor**

Above all, in view of the instructor, the new teaching by using computers in the classes is more effective than the traditional teaching as long as computers is used as a tool to assist teaching and teaching plans are elaborately prepared. The problems would be a

lack of computer facilities, an insufficient education for students to use and understand computers.

### **2.3.2 Assessment by students through the inquires**

The majority of the students answered to inquires that the computer assisted teaching is very effective, however that there is a lack of computer facilities and some students have limited computer skills. The students' opinions to the new teaching were almost similar to that of the instructor.

New pedagogy by using computer for teaching university students seems working quite well, although it will be necessary for both the instructor and students to keep learning the advanced information on computer and to communicate not only through the computer but direct communication.

## **Conclusion**

Under the IT society, new pedagogies for teaching and learning with computers were looked into by the state of using computers in schools and institutions and international conferences, which showed a trend of using computers in the world. The case in Japan seemed behind of many other countries, for which the initiation of computer and aims of computer education by the Japanese government were examined. The aim of introducing computer in Japan seems in the state of confusion. It was suggested that the introducing the computer education in schools seems to aim at adapting to, coping with and reforming schools for the advanced IT society. In adapting to the IT society, children need to learn an ability to select appropriate information and informational moral in the flood of information. Children also need to learn how to use a computer as they face various problems in using computers such as thinner human relation, affecting to their health condition etc. The Report of the Central Education Council stated that schools needs to be changed to new schools to cope with the advanced information

society.

A case study of using computers for teaching to students in the researcher's university was examined through inquiries to students in order to find any effectiveness and problems in using computers. Majority of students felt it effective. Although it may take some time to let them realise that the computer is a tool.

This study is the overall preliminary step to examine and analyse using computers for new pedagogies. This study will continue in the next study to consider issues of public good, problems and important points which arise from using computers, then to consider how new teaching and learning affect traditional and professional control.

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