INTRODUCING THE INTERNET TO PRIMARY SCHOOLS IN JAPAN
100-School Networking Project, NTT Konet Plan, and Related Projects

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The Ministry of Education has declared that the internet will be connected to twenty-thousand elementary schools, ten thousand junior high schools, and six thousand senior high schools by the year 2003. We must, however, overcome many difficulties before introducing the internet in primary education. Since the 1980s, I have been a member of a teachers computer networking group studying the educational possibilities of computer networks in schools. I first met most of the members who are collaborating today on research for educational uses of the Internet through local computer networks. There are now many elementary school teachers who are nationally active in promoting the educational uses of the internet.

Furthermore, on the eve of the Internet boom in Japan, I was able to connect an elementary school in Hiroshima to the internet under the authority of the Ministry of International Trade and Industry and the Ministry of Education's "100-School Networking Project" in 1995. Then in 1996, NTT (Nippon Telegram and Telephone Corporation) inaugurated the "Konet Plan" with the cooperation of the Ministry of Education. In 1995, I also organized an elementary teachers' research group in support of the educational uses of the internet. This study deals with that educational supporting system and its use.

The Suzuhari Elementary School UUCP Connection

Before 1992 in Japan, the internet was an academic computer network limited to colleges. The first commercial internet service provider was not established until 1993. Before this time then, there was no way to connect elementary schools directly to the internet.

In 1994, I worked together with the Suzuhari Elementary School in Hiroshima in an experiment to connect schools directly to the internet. CSI (Chugoku Shikoku Internet Council) played an important role in this trial. CSI is the academic provider for the Hiroshima area, and most universities there are connected to CSI for their Internet access. Because of their concern for primary education, however, CSI accepted the Suzuhari connection, and further, owing to their continued

support, we were able to apply to JPNIC (Japan Network Information Center) to register Suzuhari's own domain name: suzuhari-es.asakita.hiroshima.jp.

Table I. Domain Information for Suzuhari Elementary School (25 June 1998)

next1> whois -h whois.nic.ad.jp suzuhari-es.asakita.hiroshima.jp/e
[JPNIC database provides information on network administration. Its use is]
[restricted to network administration purposes. For further information, use]
['whois -h whois.nic.ad.jp help'. To suppress Japanese output, add '/e' at]
[the end of command, e.g. 'whois -h whois.nic.ad.jp xxx/e'.]

Domain Information:

a.	[Domain Name]	SUZUHARI-ES.ASAKITA.HIROSHIMA.JP
g.	[Organization]	SUZUHARI Elementary School
j.	[Address]	Suzuhari 1896, Asa-cho,Asakita-ku, Hiroshima-city, Japan
l.	[Organization Type]	Municipal Elementary School
m.	[Administrative Contact]	KS100JP
n.	[Technical Contact]	MT077JP
p.	[Domestic Nameserver]	ns.suzuhari-es.asakita.hiroshima.jp
p.	[Domestic Nameserver]	marrella.mri.co.jp
s.	[Network Number]	202.249.140.0
	[State]	Connected
	[Registered Date]	94/07/15
	[Connected Date]	94/09/30

For the Suzuhari experiment, we selected the UUCP connection protocol, a part-time connection using public telephone lines. UUCP allows only for E-mail transfer, but the running cost is low: 2000 yen per mouth. To supplement this connection, Yasuda Women's University supported the opening of Suzuhari Elementary School's World Wide Web homepage on the university's server. Suzuhari receives E-mail at user@suzuhari-es.asakita.hiroshima.jp, and the homepage can be accessed at http://www.yasuda-u.ac.jp/suzuhari-es/index.html (the present URL is now http://www.suzuhari-es.asakita.hiroshima.jp). With this initial connection, Suzuhari Elementary School became the first elementary school domain in Japan.

The 1000 Cranes Project

The Suzuhari Elementary School homepage gain recognition throughout the world because there were few elementary school homepages at that time. As 1995 was the 50th memorial anniversary of the atomic bombing of Hiroshima, this became the topic of the homepage and in February 1995, we received the following E-mail from California:

Table II: E-mail from Alianza School

Hello! I just found the Suzuhari School home page on the WWW. I'm doing a project with my 3rd and 4th grade class in Watsonville, CA, and I would love to have a sister school in Hiroshima to exchange e-mail about Sadako and the 1000 paper cranes . Please let me know if anyone at your school might be interested in participating. Thank you very much for any help you can give.

Fred Mindlin, Alianza School, 440 Arthur Rd., Watsonville, CA 95076 USA

Miss Sadako Sasaki is an atomic bomb victim who tried to make a thousand paper cranes before her death: the symbol for "Realized Dreams" in Japan. She died, however, from the effects of atomic radiation received during the explosion, when she was twelve years old and was unable to complete her goal. Since her death, Sadako has become a symbol of peace for children. Mr. Motohiro Tamai, a Suzuhari Elementary School teacher, talked about the e-mail with his class and decided to help the Alianza School project. They sent information about how the Children's Peace Monument was established. Yasuda Women's
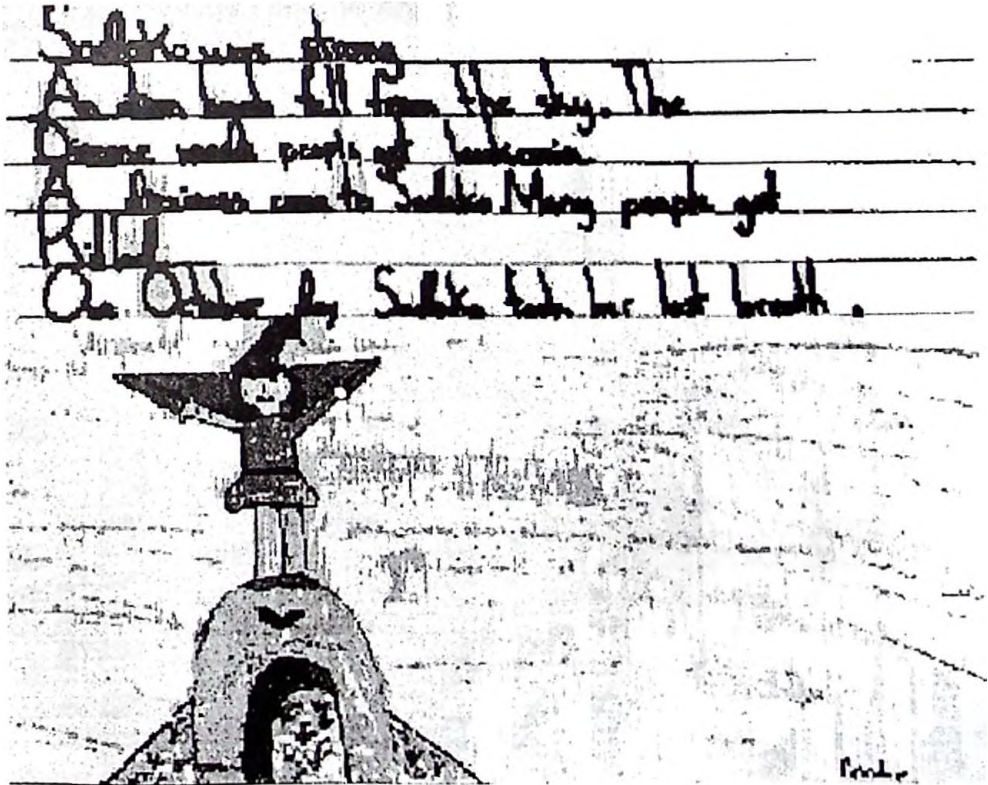

Fig. 1: 1000 Cranes Project Home Page Symbol.

University helped to open the 1000 Cranes Project Homepage. The URL for the project is http://www.csi.ad.jp/suzuhari-es/1000cranes/. The children of the two schools exchanged information by e-mail and through the WWW homepage.

In November 1995, Nagatuka Elementary School opened their homepage. Their headmaster is also an atomic bomb victim and during a school organized peace ceremony he talked about his experience when the atomic bomb was dropped on Hiroshima. His talk was uploaded to the Nagatuka Elementary School homepage in both Japanese and English and awakened a great response throughout the world.

In 1996, 5th grade students of Nagatuka Elementary School started their "Kids' 1000 Cranes Project." They announced on their homepage: "Please send paper cranes! We will take them to the Children's Peace Monument in Hiroshima Peace Park. Let's pray for the victims and that our world might live in peace together." Thirty-thousand schools gathered from around the world in this project, and fifty-thousands paper cranes were received. This Kids' 1000 Cranes Project still remains active in 1997 and 1998.

Yoshijima-higashi Elementary School also opened their school homepage. It contains their "Machinto: Last Message from a Little Girl" project. Machinto is a children's theatrical about a little girl who was an atomic bomb victim. The
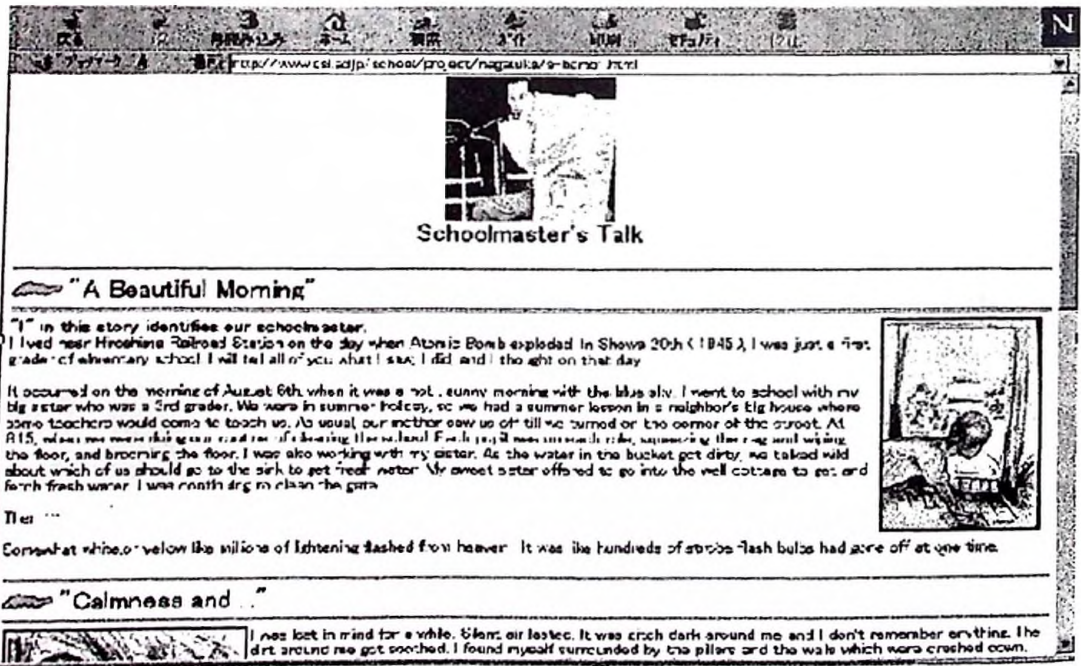

Fig. 2: Nagatuka Elementary School Headmaster's Page
(http://www.csi.ad.jp/school/project/nagatuka/a-bomb1.html)

Fig. 3: Kids' 1000 Cranes Project Homepage
(http://www.skr.or.jp/~kids/project/98/index_e.html)

URL for the Machinto page is http://next1.yasuda-u.ac.jp/machinto/htm/index.html. This homepage remains active in 1998.

Suzuhari Elementary School, Nagatuka Elementary School, and Yoshijima-higashi Elementary School are municipal schools in Hiroshima. The teachers have experience in using the network for education and several university professors have joined in support of their work.

100-School Networking Project

100-School Networking Project is a joint project of the Ministry of Education and the Ministry of International Trade and Industry. It examines the worthiness of the Internet in the education of elementary, junior high, and senior high students. IPA (Information Technology Agency) and CEC (Center for Educational Computing) started this project in 1993, and a call for participation was released in 1994. At this time, the term "Internet" was still new and Suzuhari Elementary was the only elementary school connected to the Internet. At this time, large commercial computer networks such as Nifty-serve or PC-VAN played an

important part in providing internet access and most teachers learned about the 100-School Networking Project through the commercial computer networks. Nevertheless, 1543 schools applied to the first call for participation.

In June 1995, 18 elementary schools, 29 junior high schools, 40 senior high schools, and 25 other schools were connected to the internet. Suzuhari Elementary School was also involved. Twenty-four-hour full-time IP connections and internet client/server machines were installed in all the schools. At this time, CSI supported the schools in the Chugoku-Shikoku area.

The 100-School Networking Project remained active from 1995 to 1997. During these two years, this project developed various applications for the educational use of the internet. Most schools used their equipment successfully. Suzuhari Elementary School changed their connection from the UUCP to a full-time IP connection. They have their own homepage at http://www.suzuhari-es.asakita.hiroshima.jp/. A newly formed 100-School Networking Project will continue until March 1999, and 108 schools maintain their internet connections now. At this time, 66 of them plan to continue their connection beyond 1999 because they have been able to find support, but 42 schools will not be able to continue their connection after 1999.

NTT Konet Plan

The name "Konet" is coined from Japanese "Kodomo," which means "child," and network. NTT (Nippon Telegram and Telephone Corporation) started this project with cooperation from the Ministry of Education in 1996. In the fall of that year, 297 elementary schools, 369 junior high schools, and 39 special education schools--for a total of 1,014 schools--were selected. This project has been called the 1000-School Networking Project. Under the Konet Plan, ISDN dial-up equipment was installed in all the schools with as NTT PHOENIX video conference system and some client computers to all the schools. NTT donated a total of 300 million yen to this project.

The internet connection for the Konet Plan is a part-time ISDN dial-up and the connection charges depend upon the use, so that all the schools must be able to pay for these connection charges. However, the NTT PHOENIX video conference system has the same problems and several of the schools used up their annual budget within two months.

It seems that the Konet plan focuses primarily on the possibility of multimedia in education and many schools often use the NTT PHOENIX system. Using the internet is one part of this plan. The last Japanese last prime minister Ryutaro Hashimoto chatted with some school students using this PHOENIX system. There are thousands of educational uses for multimedia and networks in the Konet

plan, but it must change from a dial-up connection to full-time IP connection. They must learn to use the global Internet Protocol for their multimedia access.

The Multimedia Inter-classroom Linkup Project: "HAIKU Get-together"

Suzuhari Elementary School is located in the northern part of Hiroshima and is a member school of the 100-School Networking Project. They have a 64Kbps full-time IP connection. Misakaji Elementary School is located in the middle northern part of Kure, and is a member of the NTT Konet Plan. They have an ISDN 64Kbps part-time dial-up connection and the NTT PHOENIX video conference system.

In May, 1997, a plan was formulated to make exchanges through school@csi, a teachers' Internet mailing list. Sixth grade classes from both schools joined this project. At this time, there was no base link for the 100-School Networking Project or the NTT Konet plan. For the 6th graders, the final presentation and appreciation was considered very important for their HAIKU practice. We planned to link these two classes through the use of multimedia. For this project, we made the multimedia inter-classroom linkup system using an Internet video conference system called CU-SeeMe and the NTT PHOENIX system. To connect
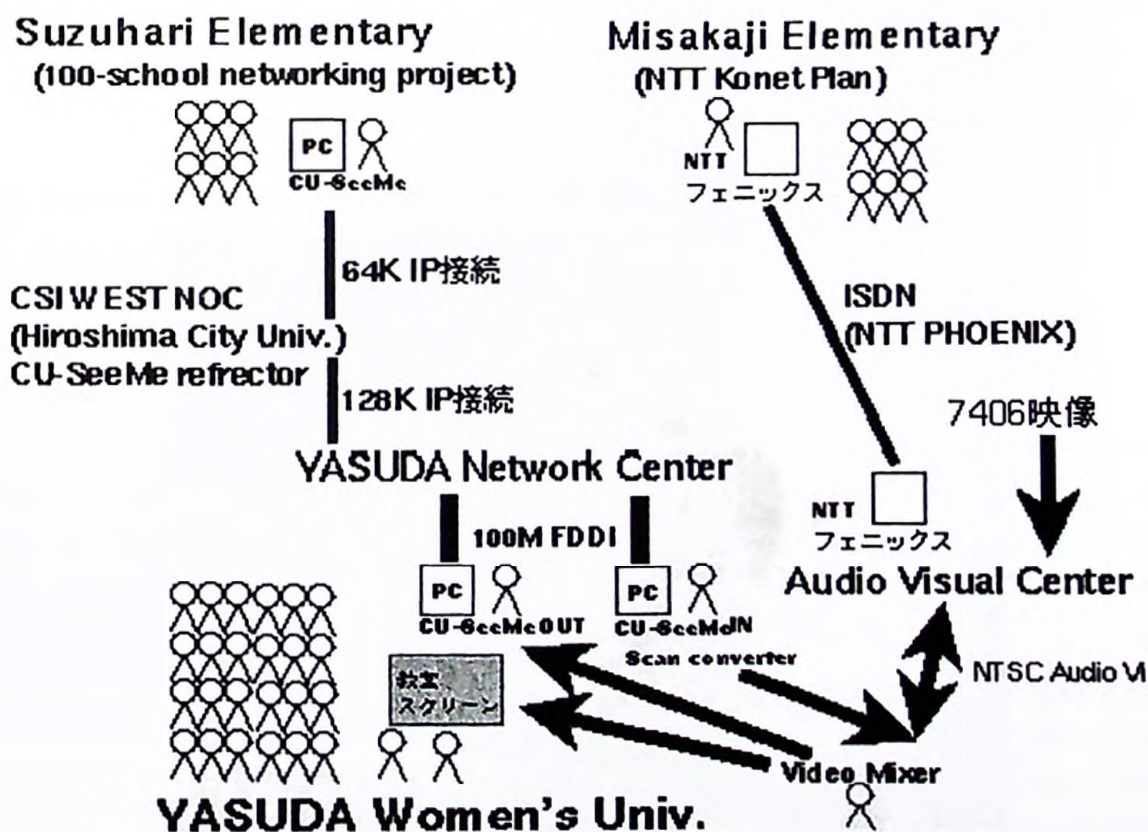

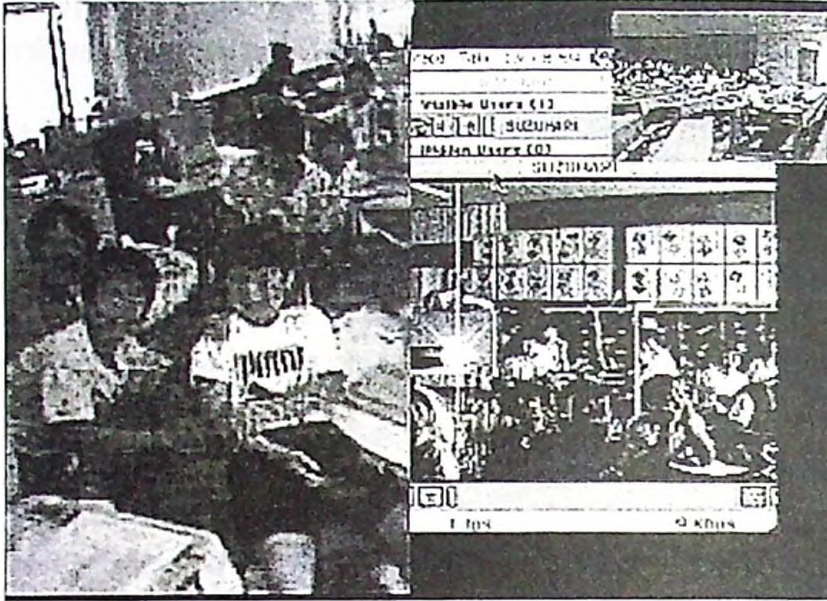Fig. 4: The Multimedia Inter-classroom Linkup System.

Fig 5: A Snapshot of "HAIKU get-together" 1
(left side: Misakaji Elementary, lower right: Suzuhari Elementary, upper right side: Yasuda Univ.)

Fig. 6: A Snapshot of "HAIKU get-together" 2

these video conference systems, we used a digital video mixer. The video mixer uses an NTSC video signal, and both CU-SeeMe and NTT PHOENIX can transfer NTSC signals.

Before the actual inter-classroom linkup, both classes exchanged their HAIKU poems using e-mail. Within their classes they picked their favorite works and wrote their impressions about the selected HAIKU poems.

June 10 was set as the day for the multimedia inter-classroom linkup project. At 8:30AM, Suzuhari Elementary School, Misakaji Elementary School, and Yasuda Women's University were visually linked through the Internet and an ISDN (PHOENIX system) connection.

After this practice, most students expressed their satisfaction with their experience of speaking with other students, but we had some trouble with the audio part as the Suzuhari audio channel occasionally went down.

Table III: Misakaji Students' Impressions of "HAIKU get-together"
(Total 28 students)

POSITIVE	NEGATIVE
Enjoyed (16)	We couldn't hear the audio channel (13)
We want more practice 8	Practice time is too long (7)
	Visual quality was bad (2)

The Virtual Comes True through the Internet

For children, the internet and related multimedia itself are "virtual" media. The communication goes through steps in which messages that arrive from a correspondent are then printed out by a teacher and shown to the children. This shows that we have entered the virtual realm.

Children sent out calls via the Internet and the results were clearly evident when folded paper cranes began to fill an auditorium, or when the HAIKU one child wrote provoked instant impressions from students in a distant classroom. What these examples present us with is not the void of the virtual world, but rather the emotions that accompany the children's true feelings.

The possibilities for the educational use of the internet lie in the creation of emotions through the person at the other end and from the virtual world around us. Students can benefit from using the internet by being able to have these experiences. This virtual experience holds the key to inspiring the students' pursuit of further learning.