The Development of School Websites Management System and Its Trials during School Field Work in a Distant Place

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Summary
This paper presents the School Website Management System (SWMS) which includes (1) a system for creating websites using a CMS (Content Management System) tool, and (2) a certification system which allows access to the website. SWMS allows teachers to easily publish a webpage on the web without any other tools, such as FTP software or homepage creating software. SWMS was trialed in three schools as a part of field work, and was assessed by parents and teachers. The result of the trials, teaches responded they wanted to use SWMS in the future since they could update their webpage easily from a distant place in collaboration with other teachers; also, the parents showed high interest in the webpages created by SWMS because they could know about children's activities during the event time and communicate with teachers and children.

Key words:
School website, CMS tool, communication with teachers and parents

1. Introduction

School webpages have been increasing recently in Japan. According to a survey of the Japanese Ministry of Education, Culture, Sports, Science and Technology (official acronym MEXT), the number of school webpages increased to 72.8% of elementary schools, 72.5% of junior high schools, and 98.4% of high schools (March 31, 2006)[1]. Our research team thinks webpages will become one of the principle communication tools between school and parents [2]. A Center for Education Computing survey shows 70% of parents have seen a school webpage, and 90% of parents want to receive reports of the student activities, the school schedule, or messages from school [3]. However, most Japanese schools are publishing only general information on their homepages, such as school goals, the annual schedule, access routes to the school, etc., and do not include individualized information, such as students' learning outcomes, reports of student activities, etc, because, teachers think the two main problems for disseminating information regarding student activities through webpages is protecting the students' privacy and the difficulty in making and updating webpages.

To overcome these problems, we have developed the School Website Management System (SWMS). The SWMS consists of two parts including (1) a system for creating a website, and (2) a certification system for allowing access to the website. It was trialed in three schools as a part of field work, and the SWMS and website created by the system was evaluated by parents and teachers.

In this paper, section 2 present SWMS, especially its easy website management part, and section 3 explains three trials at Japanese junior high schools and elementary school and their results.

2. Overview of SWMS

SWMS consists of a website-creating part and a certification part. In the website-creating part, a Content Management System (CMS) tool, recently gaining much attention [4], was used as the engine of the SWMS and was adjusted for usage in schools [5]. The CMS tool (Fig. 1) is a web-based publishing system where (1) a person writes an article on the web browser, pushes the send button, and then the CMS tool writes the article to the database. The CMS tool manages the context and design separately; therefore, (2) when the creator pushes the rebuild button, (3) the CMS tool merges the context and design automatically, and (4) HTML files are created. The CMS tool allows webpages to be created through a webpage, and it can allow people to make the webpage

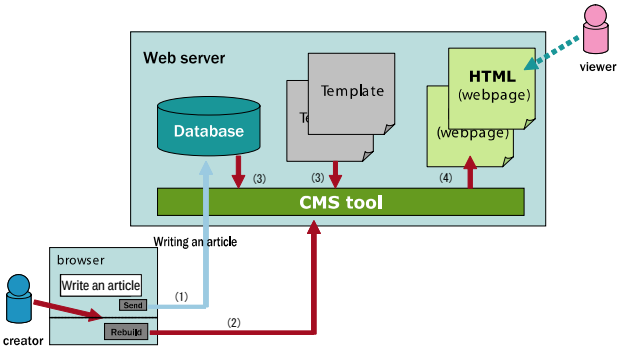

Fig. 1:Outline of CMS tool.

Manuscript received November 5, 2006.
Manuscript revised November 25, 2006.

without FTP software or homepage-creating software. Therefore, it is called a 3rd generation web system. One of the most well-known uses of the CMS tool is creating weblogs, or blogs [6]. However we believe it can be adapted for school use to provide teachers with easy management of their school website

The web-creating part of SWMS (Fig. 2) gives teachers the following capabilities for utilizing the CMS [7] functions:

- It can build a website with teacher collaboration using the multiple authors' function of the CMS tool, which can register multiple authors and set their access levels using the CMS tool's permission system. These authors are identified by their user-ID and password upon using the CMS tool.
- It can make a number of websites which have different themes. Teachers can make a number of websites, such as one for the classroom, one for each subject, etc. Also, it can group articles into categories; for example, it can create monthly, weekly, and daily archives of content.
- It allows Draft and Publish options for each article: Draft mode allows teachers to edit content, and the Publish mode allows an editor to send the article to be published on the website.
- It can grant visitors permission to post comments on certain articles. Therefore, teachers can communicate with parents if they want to.

In the certification part, SWMS can protect specific parts of webpages. On school webpages there are two types of information: public information for the community, and private information for parents, students, and teachers such as photographs of student activities and student, learning outcomes. When parents enter the private section, the system asks for the parents' user-ID and password. Parent participation is achieved in the following way:

1) A teacher distributes to parents a piece of paper upon which is written the URL of the registration webpage and the common password.
2) The student's parents access the registration webpage by using the common password, and register the private information that can identify the student, such as the student ID number and name.
3) The system creates an individually different password and sends it to the parents by e-mail automatically, when the information which was entered by the parents matches the student information stored in the system. In this case, the user-ID used the parents' e-mail address.
4) The parent accesses the private section using the above password and user-ID.

Therefore, the certification part of SWMS gives teachers the following advantages:

- It can reduce the teachers' burden through automation of registration.
- It provides a record of usage of those who access the private section.

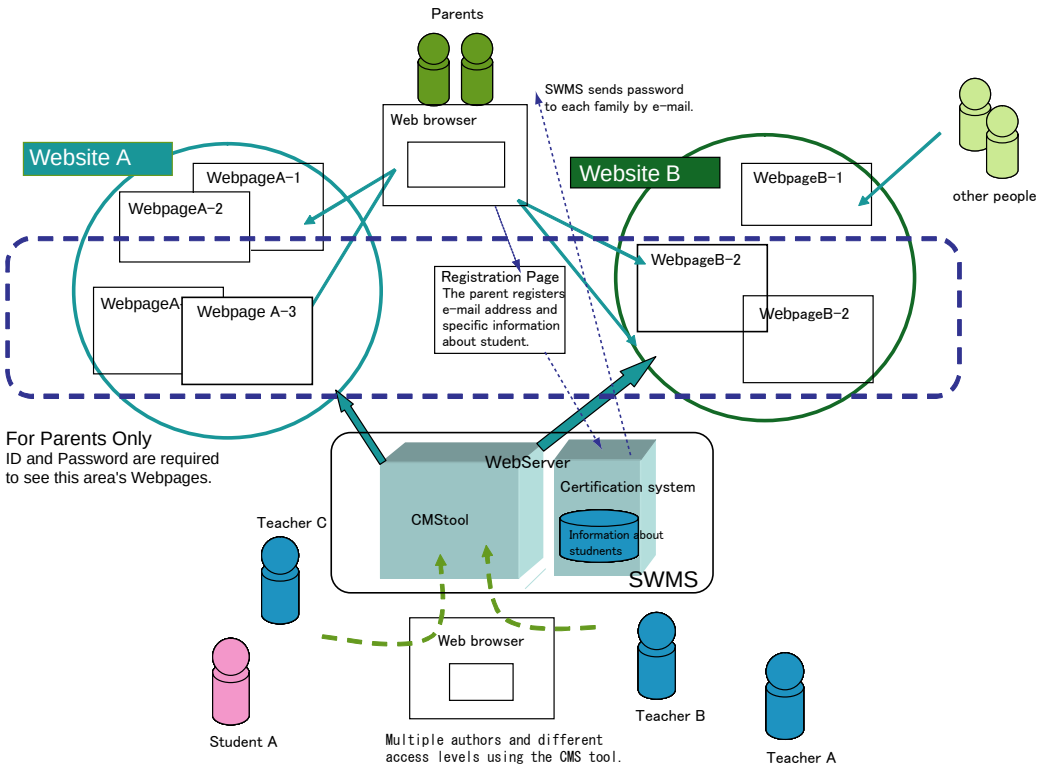

Fig. 2: Overview of the SWMS.

Finally, the SWMS can do all the work on the Web, such as making a new page, deleting pages, or changing the design of the webpage. Teachers can easily create a webpage by using the CMS tool without any FTP software or homepage-creating software.

3. Operation of SWMS

SWMS was trialed by three schools as a part of field work; that is in an Investigation trip of a junior high school in 2003, in a visit to a sister-school in the USA of an elementary school in 2003, and in a visit to a sister-school of two junior high schools in Malaysia in 2005.

3.1 Investigation Trip of Junior High School

An Investigation Trip as done by a Japanese junior high school is field work. In this trip, each team of students decides its destination, and teams are allowed to visit anywhere in Japan. There are 160 students in 33 teams with six central places in Japan serving as accommodations and as home bases for the trip.

This time, four accommodations in Japan, Tokyo, Osaka, Hyogo, and Gunma, were able to connect to the Internet. One room that was connected to the Internet was prepared at the headquarters in Tokyo, and in the other three places teachers used SWMS through a dialup connection. In the daytime, teachers took photographs and movies of some of the student teams' field work. At night, teachers edited the movies, and created the webpage, titled "Homepage In" using SWMS.

In this trial, 5 teachers created 111 articles in total using SWMS in seven days (April 10, 11, 14, and 15-18, 2003), of which 106 articles, including 45 movies and 43 photographs, were published on the "Homepage In." Ten articles were created before the trip (April 10, 11 and 14) and 101 articles were created during the investigation trip (April 15-18). This shows SWMS made it possible for teachers to easily create webpages, because with the normal method of creating webpage, it would be difficult for teachers to do the same tasks during the trip.

After the trial we gave an evaluation questionnaire to the 6 teachers who used SWMS during the trip. The result showed that 4 teachers felt SWMS was very easy to use, and all teachers thought that they wanted to continue to use it. Teachers particularly commented that SWMS could organize work from several remote places and they could do all the work on the Web. On the other hand, teachers requested a more user-friendly interface for SWMS.

Analysing the result of the number of family accesses to "Homepage In" (Fig. 3), there were 291 accesses from 43 families (160 families in all) during the trip. Judging from the above figures, we cannot say many parents looked at the webpage. However if we look at the 43 families who accessed the webpage, 1/3 of the families visited it every day, and more than 90% of the families who looked at the webpage in the beginning two days of the trip visited it again during the trip. These figures show that if the families have visited "Homepage In" once, they were interested in it very much. But, one note, this trial allowed only one-way information, sending from teacher to parents.

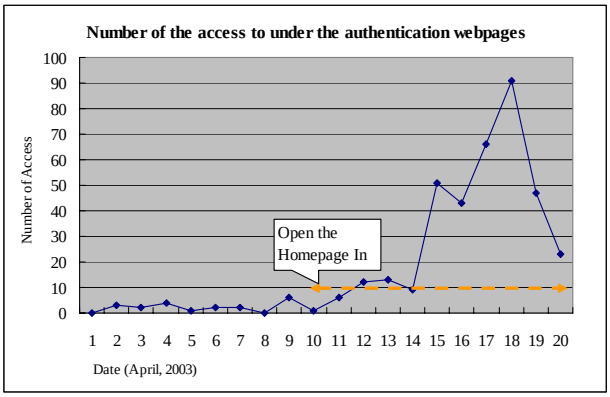

Fig. 3: Number of accesses to the authentication webpages. During the trip, access rapidly increased.

3.2 Visiting a Sister-School in the USA

Twenty Japanese students, about 11 years old, of a Japanese elementary school visited its American sister school in Burris, Indiana. Through the special website using SWMS, teachers and students who visited Burris could inform parents and student who stayed in Japan of their activities. Moreover, parents, students and teachers who stayed in Japan could comment on the Burris report on the special website.

Mainly, the webpage was produced by two teachers in collaboration, the leading teacher in Burris and a teacher in Japan. In some cases, the leading teacher created the webpage in the morning, or the leading teacher sent messages or photographs and the teacher in Japan arranged those materials to create the webpage. In a certain article, there was the sentence "This article was created by K teacher (who is the leading teacher) in a short time, and I (the teacher in Japan) edited it. So, this is a collaboration article between the U.S. and Japan." In this trial, the public range of this webpage was limited to the student and teachers on the campus, and the parents who sent their children to the U.S.

In this trial, 2 teachers published 60 articles in total using SWMS, including 18 movies and 218 photographs. A total of 54 articles were created during the visiting period (September 4-14, 2003). This figure shows that teachers could create many articles in the middle of the

event, the same result as in the trial with the junior high school.

Also, this website received 2,365 accesses, including 425 accesses from on-campus and 1,940 accesses from the families during the visiting period (Fig. 4). About 2/3 of the families looked at the website every day, and about half of the families looked at the website 7 days out of the 11-day trip. There were 97 comments from students and teachers on campus, 11 comments from students and the teacher in Burris, and 99 comments from 19 families. Table 1 shows that not only a few specific families posted comments, but almost all families joined in on the communication on the special website. This figure indicates the high interest of the parents in the website.

Finally, from the results of the questionnaire from the 6 teachers and 15 of the parents who sent their children to the U.S, all parents answered that the web site was very interesting and all the teachers answered likewise. The average of frequency to access the webpage for parents was 3.9 times a day, and for teachers was 3 times a week. This may indicate that parents were more excited about the website than were the teachers. Also, as for the question of the usefulness of this webpage, 14 parents and all teachers answered "it was useful for knowing the student activities

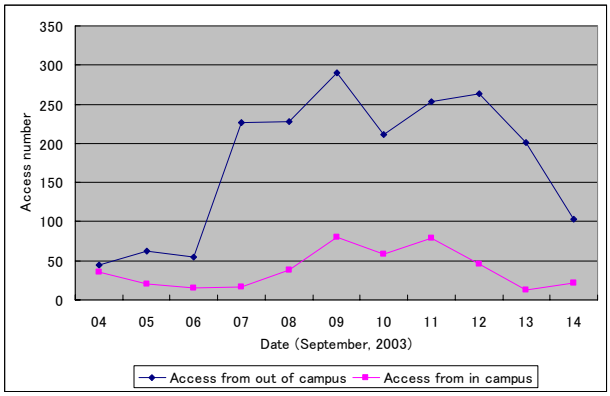

Fig. 4: Number of accesses to the webpage. During the trip, there was much access continuously.

Table 1: The distribution of the number of comments from families.

number of comments	number of family	
0	1	5%
1	2	10%
2–5	9	45%
5–9	5	25%
more than 10	3	15%
total	20	100%

at school," 7 parents answered "it was useful for communication with teachers," and 2 teachers answered "it was useful for communication with parents" (Fig. 5). It is reasonable to say that this webpage was useful for communication among students, parents, and teachers.

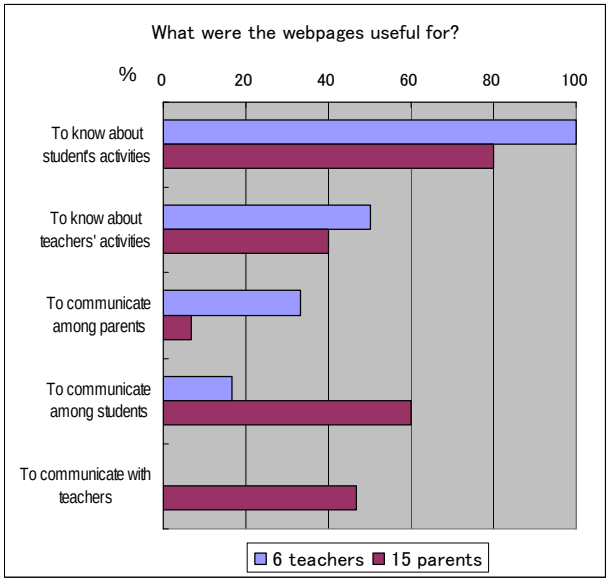

Fig. 5: Result of the question about usefulness of this webpage.

3.3 Visiting a Sister-School in Malaysia

About 22 students, who are 13-15 years old from two Japanese junior schools, visited its Malaysian sister-school in Kuala Lumpur. In the same way as in the Burris project, teachers and students who visited Kuala Lumpur could inform parents and student who stayed in Japan of their activities through the special website using SWMS. Also, parents, students and teachers who stayed in Japan could comment on the Kuala Lumpur report on the special website.

Mainly, the webpage was produced by two leading teachers from each school in collaboration, sometime students sent comments from Kuala Lumpur; however there was no teacher who managed the website in Japan. In this trial, the public range of this webpage was limited to the students, teachers and the parents.

In this trial, 2 teachers published 30 articles in total using SWMS, including 222 photographs during the project period (the webpage was published from August 9, 2005, and the visiting period was August 16-24, 2005). This figure shows that teachers could create many articles in the middle of the event, the same result as in the two previous trials.

There were 49 positive comments from students, teachers, families, and staff of this project at Japan, such as "I am very much looking forward to seeing this page every day!!", "I was amazed to know about the children's

activities that happened just a few hours ago." Fig. 6 shows the number of accesses to the webpages. This number indicates access rapidly increased during the trip, indicating the high interest of the parents in the website.

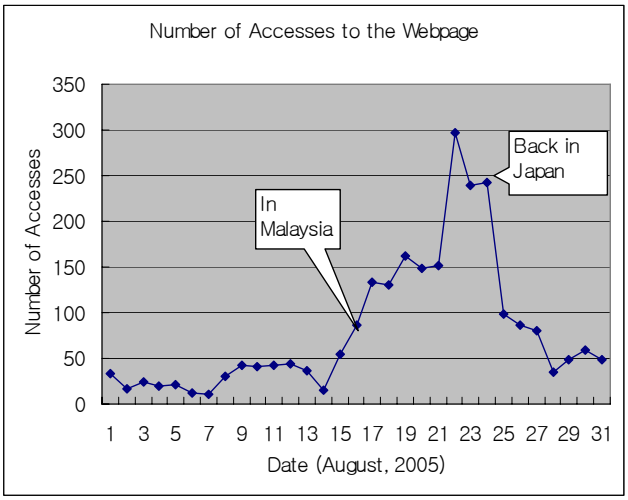

Fig. 6 : Number of access to the webpage. During the trip, there was much access continuously.

3.4 Discussion about the Trials

The following is a discussion of the results of the three trials. Through the three operations, 10 teachers could use the system, even though 5 of them had no previous experience in creating websites, and 9 teachers responded that they wanted to use the system in the future. From this viewpoint, we can say the web-creating part of SWMS is very convenient and useful for teachers in creating a webpage.

Moreover, teachers published on average about 25 articles with 14 images a day in the investigation trip, about 5 articles with 18 images a day in visiting the sister school in USA, and about 3 articles with 25 images a day in visiting the sister school in Malaysia. These numbers were prompt reports from teachers to parents, a valuable characteristic following from the ease with which SWMS allows teacher to frequently update webpages.

In the questionnaire, all parents admitted the necessity of the ID certification, though the registration involved a slightly complicated procedure. It seems reasonable to say our way of ID certification was accepted by parents.

Also, since 13 out of 15 parents wanted to tell other people about this specific webpage, we can say that parents were very interested to know about their children's activities in school, and they understood the advantage of using a webpage.

From the questionnaires we can see that these project teachers and parents gave high marks to SWMS and the website created by SWMS. One of the reasons was SWMS could inform parents of their children's activities during the event time.

4. Conclusion

At the beginning of the article we stated that the two problems with disseminating students' activities on the web are the teachers' desire to protect students' privacy, and the increase in the teachers' workload in making or updating the webpage. We felt that the three trials showed that SWMS alleviated these problems. The certification part of SWMS provided privacy. The website-creating part of SWMS allowed teachers to manage webpages easily, even though some of them were not experienced in creating websites. Additionally, it was found that parents also showed interest in the website created by SWMS through the post assessment of the questionnaires and the number of accesses. These results show the usefulness of SWMS for management of school websites.

In our future work, two activities are planned: 1) a study of long-term usage of SWMS and 2) improvement of the functions of SWMS.

Acknowledgments

This research was partially supported by the Ministry of Education, Science, Sports and Culture, Grant-in-Aid for Young Scientists (B), 16700558, 2006.

References

[1] MEXT. "Survey result about the actual condition of information education at school," http://www.mext.go.jp/b_menu/houdou/18/07/06072407/002.pdf, (2006).
[2] Johnson, D, "Teacher Web Pages that Build Parent Partnerships," MultiMedia Schools, 7 (4), 48-51, 2000.
[3] Center for Education Computing, "Study on the requirement of information-service-system in the school community applied protection technology for web information," Investigation report 2002 of CEC, 2002.
[4] Vidgen, R., Goodwin, S., Barnes, S., "Web Content Management", 14th Bled Electronic Commerce Conference pp. 465-480, Procedings of Electronic Commerce Conference, 2001.
[5] Powel, W., Gill, C., "Web Contents Management System in Higher Education," Journal of Educause Quarterly No.2, pp. 43-50, 2003.
[6] Blood, R., "The Weblog Handbook," Perseus Publishing, 2002.
[7] Six Apart, Movable Type, http://www.movabletype.org/, 2001

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