

Web Site Design and Evaluation for NHK High School TV Programs: A Trial Study for Blended e-Learning Environment

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Abstract

A prototypical Web site was designed and developed for 2 TV lessons in NHK's series of chemistry for distance learning high school students. The Web site was aimed at better understandings of the students who learn at home in isolation by viewing the TV program in two ways: (1) Pre-viewing Study: to verify their prerequisite knowledge and to activate their expectations for the program, and (2) Post-viewing Study: to review the content of the program and to check and submit their understandings. Evaluation data were obtained from 76 high school students, showing positive reactions about structure and content of the site, as well as learning on the Web for the first time. Through the addition of the Web site to the educational broadcast, it was also found that the roles of TV program can be more focused as a part of the blended e-learning environment.

Keywords: Web-based Education, Educational Broadcast, Television, Distance Learning, Blended e-learning, Instructional Design

1. Educational Broadcast for Distance High Schools in Japan

NHK (Japan Broadcasting Corporation), Japan's public broadcasting station, offers weekly series of 22 TV and radio programs for most of the high school curriculum to support distance high school students studying at home. Many of 128 Distance High Schools nationwide, public or private, holding a total of 192,000 students, are using these programs as a part of their curriculum. NHK Academy of Distance Learning is a private high school affiliated to NHK, which utilizes all of the NHK's Distance Learning Programs, whose students are wide spread throughout Japan.

NHK's enrichment programs for regular classrooms in elementary and secondary schools have been in the process of creating Web sites for both teachers and pupils^{[1][2]}. Such information as teachers' guide, related links, lesson plans are available for some TV programs for teachers. For pupils, on the other hand, video clips from TV programs or other sources, educational games, BBS for collaborative activities are available for other TV programs.

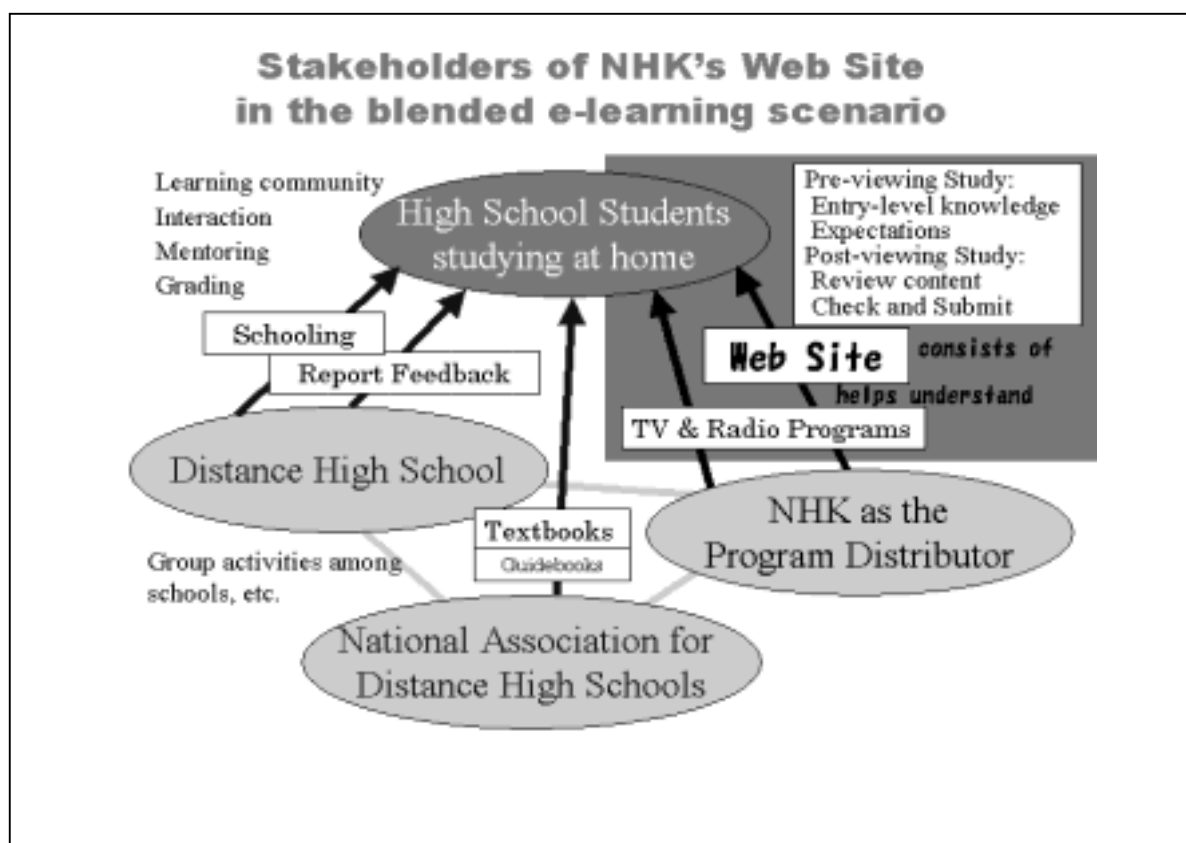
The purpose of this study was to design a prototypical Web site for students studying in isolation at home, to supplement the existing educational broadcast for distance high schools. The structure of the Web site was designed so as to enhance the understanding of the program content, as well as the motivation for self-regulated study at home. It was the NHK's first effort toward establishing a blended e-learning environment for distance high school students

in the era of terrestrial digital broadcast by 2005.

2. Stakeholders of NHK's Web Site

Figure 1 depicts the stakeholders of NHK's Web site, who would have an effect as to how and how much the site would be utilized. The design effort of the NHK's Web site was initiated by taking into consideration of opinions and expectations of each of the stakeholders by calling a meeting. As the result, it was decided to limit the purpose of NHK's Web site to facilitate the understanding of the broadcast program, leaving much of grading and interaction, mentoring, group activities, information beyond the content of broadcast programs to be handled by others.

It was then decided that students would use the Web site both prior to viewing the program, and after viewing the program. Prototypical Web site was created based on these positioning analyses and made available at NHK's Web site on January 27, 2002, a week prior to the broadcast of program of Chemistry #38, to which the Web site was prepared.



3. Basic structure of NHK's Web Site

The top page of the Web site for Chemistry #38 was as shown in Figure 2. For Pre-viewing study, students were (1) able to review basic terms from previous lessons that would be used without explanations in the next program, and (2) activated their expectations toward the next program. Multiple choice quiz format was adopted to get students' guesses, the tally would then be displayed as to how many students guessed which would be correct, but answer would only be provided in the TV program.



Figure 2: Top page of Prototypical Web Site for Chemistry Lesson #38.

For the Post-viewing Study, content of the TV program was made available sequentially, based on the storyboard of the program. Such visuals as diagrams on flip charts and pictures of experiments were reused from TV program's resources.

Post-study questions were given in the multiple-choice format, so that the students could check their understandings of the program that they just saw. Feedback message was given so they check the correctness of their answers. E-mail sending function was also equipped so that they would get the results of their responses to the address they specify.

This was done because NHK was not allowed to keep individual record on its server, despite of potential needs to submit their results to the high school as a partial fulfillment for grading. The ratio of responses to each question item was also provided that showed difficulty level of the item.

Backyard stories were also given in the Post-viewing Study to help the students interested in the making of the program.

The materials for Pre-viewing Study were made available one week prior to the broadcast of the TV program. The Post-viewing materials were made only after the broadcast. The Pre-viewing materials for the next week's program were made available at the same time, since they broadcast on a weekly basis. To check this automated feature of the access timing, prototypical Web site consisted of materials for two weeks broadcast programs, Chemistry #38 and #39, which were used in the experiment below.

4. Evaluation of the Web Site

A meeting was called to get initial reaction from each of the stakeholders described in Figure 1. Their comments were positive in general, showing their positive reaction to the prototypical Web site, possibility of NHK's Web site as a new learning resource when Web will made available for all programs. Further dialogs were initiated as to the roles that each of the stakeholders should be taking for the benefit of students in distance high schools.

Seventy-six students who were studying at NHK Academy of Distance Learning (59) and at other schools (17) participated in an evaluation study. Forty-five percent was male, and 55% was female. Sixty percent was under 20 years old, 19% between 20 and 40, and 21% was over 40 years old.

They evaluated the Web site from the perspective of students who had already taken the course in the past. They were first asked to use the Pre-viewing study part of the Web site, then viewed the program Chemistry #38, then used the Post-viewing study part of the Web. For the Chemistry #39, they did the same. After their study, they were asked to answer to the questionnaire concerning the usability and general reactions to the Web site they studied.

The students' reaction to various features of the Web were shown in Figures 3. Although the students didn't feel the Backyard stories were effective in learning, more than half of them felt that the other features were helpful. Among the features, Post-viewing Check was most favorable: 84% of students expressed it was helpful for learning.

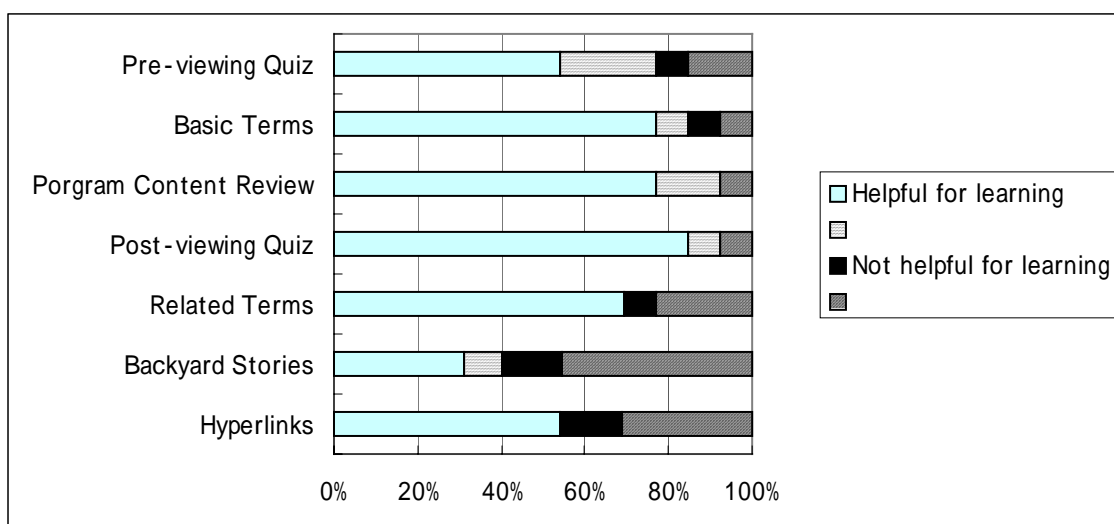


Figure 3. Students' reaction in the evaluation study toward the Web features

The questionnaire had free response items asking what they liked, what they didn't like, and other comments for the Web. The features of the Web they liked were as follows:

- 1) Easy access to the kinds of information I wanted
- 2) I could take as much time as I wanted to study
- 3) I could view as many times as I wanted
- 4) Basics before watching TV since I am not good at Chemistry

On the other hand, they expressed their desire to see motion pictures, instead of a series of still pictures for showing experiments, and lecturer's voice over the still diagrams, among others. This may become available when broadcasting itself will go to the digital format and all the programs are to be served on demand of each student.

5. Conclusion

In this study, Web site for distance high school students studying at home was designed and developed based on stakeholders' expectations. Initial reactions from the students in evaluation study were affirmative. NHK's decision has been to follow the basic structure proposed by this study as their standard for the Web site in all the programs.

It is yet to verify if this basic structure can be applied to all of the subject matter, depending on the characteristics of their content. ISD theories suggest that as long as knowledge and skills are the learning objectives, the same format should serve as the common structure of all subject areas.^[3] However, empirical study should verify if it is in fact the case. It is also a challenge to design the Web site for radio programs that have no visuals to reuse. Well-designed Web sites are expected to help the students studying with radio programs more than those with TV programs.

References

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