Expansion of the i-mode Drill "The World of Kanji" with Review Functions for m-learning

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Abstract: *This study suggested some ways to improve "The world of Kanji," a Web site for mobile phone users, which provides many features to support users to learn Kanji (One of three ways of Japanese writing which originated in Chinese). To strengthen review functions of the present version, the expanded version of "The world of Kanji" was designed and developed by adding/changing the following functions: (1) mail delivery of the drill, (2) correctness of response in feedback, (3) more user control over areas and number of items for reviewing. User reactions in formative evaluation studies were favorable of the expanded version.*

Keywords: Mobile phone, Web-based learning environment, Drill delivery, Kanji proficiency test, m-learning

1. Introduction

There are many Web sites in Japan for i-mode[1] users that offer learning materials. Web site "The world of Kanji" that helps users to prepare for the Kanji proficiency test[2] is an good example of such an advanced learning environment by using E-mails and Web browsing for mobile learning. Although the screen is not suitable for displaying large contents, mobile phones will make learning-on-demand possible whenever the users want regardless of the user's location.

Learning Kanji, one of three ways of Japanese writing which originated in Chinese, is classified in the domain of verbal information. Suzuki (1989) pointed out that it is effective for learning verbal information to eliminate the items that has mastered, so that the learner can concentrate the items that have not yet mastered. In this study, the expanded version of "The world of Kanji" was designed and developed in order to suggest more effective learning environment on the mobile terminal.

2. Design and Development

A registered user of "The world of Kanji" can choose a level and take an exam. After finishing the exam consisting of fifty questions from five sections, the result (pass/ fail) will be sent by an E-mail. On the Web, such pages as "See your rank", "See the answers", "Your points", "Your studying history" and "Advises" will be made available. After taking the exam, "the personalized drill" will become available, which consists of thirty questions. It contains more questions from the area that the user missed more in the exam.

Although "The world of Kanji" has many features to support learning, it has some limitations. E-mails were used only to receive the result of the exam, which could be done by using the next screen of the Web. There was no information of the correctness of user's responses for each item of the exam, although the correct answers are given. There are no functions to concentrate on the missed items,

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[1] Internet connecting service for mobile phones by NTT Docomo. The number of the user is about 30 million as of December 2001.
[2] A test aimed at Japanese to certify the level of Kanji (one of three types of Japanese letters which has its origin in Chinese). Knowledge of 6,000 Kanji characters is required to pass Level 1, the highest level.

even in the personalized drill, nor to change the order of the items for reviewing.

The present version of "The world of Kanji" was first recreated using Perl and HTML, and it was placed on the Web server with restricted access. The movement was checked by an i-mode mobile phone while developing. After having developed the present version, the expanded version was developed by adding or changing functions as follows:

1) Mail delivery of the drill: URLs for the drills of each area depending on the days of the week are sent by e-mails, starting on the day after taking an exam. The drills of the weak areas are delivered again in the same week. More frequent learning is to be signaled by not only waiting the access from the user, but by pushing from the learning site.

2) Correctness of responses on the explanation page (Figure 1): The user can select to see "Only wrong items", "First wrong items and next correct items" or "In the order of the exam" when checking his/her answers.
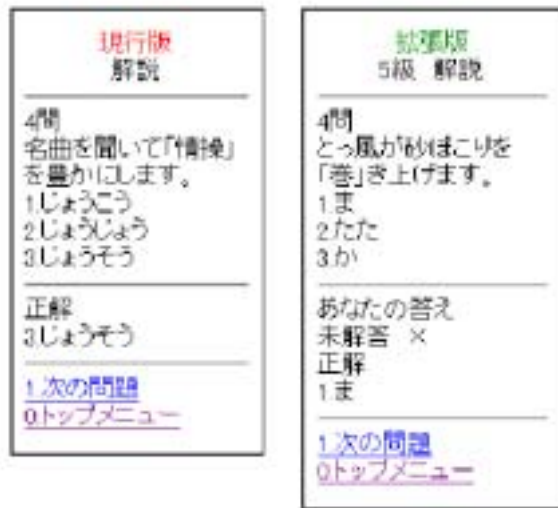

Figure 1. Comparison of the "Explanation" pages in the present version and the expanded version

3) Announcement of the test result on Web: No e-mail is used to announce the test result to make the user free from changing from Web to e-mail screen only to know the result.

4) Personalization of the personalized drill: the style of the personalized drill was changed so that the user can choose only the areas with difficulties. Also, the number of the question is not limited so that the user can practice as much as wanted. The questions in the drill are at first presented in the same order as in the exam when reviewing. The question that is answered correctly twice will be eliminated from the review drill. When all the questions in the exam are finished, new questions will be given from the item pool.

3. Formative Evaluation and Conclusion

To compare reactions for the original and the expanded version, one college student was asked to use the expanded version for fifteen minutes after studying with the original version for forty minutes. Favorable reactions were given for the functions of the expanded version, and some advises for further improvement were also obtained. After some improvement were made, two more college students were asked to try the improved expanded version for one week. The original version was shown on the last day and their opinions after comparison were collected. Favorable views were given about the function of the expanded version.

In this research, the expanded version of "The world of Kanji" was developed so as to make m-learning by i-mode mobile phone system as effective as possible. Data from formative evaluation studies supported that the expansion. Our future tasks are to conduct further evaluation studies to compare the original version and the expanded version for supporting learning in longer terms.

References

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