

# Web-based Rapid Authoring Tool for LMS Quiz Creation

SUGI Yuuichi, KITA Toshihiro, YASUNAMI Seisuke and NAKANO Hiroshi

Kumamoto University, Kumamoto, Japan

Email: e2435@st.ecs.kumamoto-u.ac.jp, t-kita@cc.kumamoto-u.ac.jp,  
yasunami@ge.kumamoto-u.ac.jp and nakano@cc.kumamoto-u.ac.jp

**Abstract**—Web-based learning management systems and course management systems provide an effective and instructive environment with interactivities for online teachers and learners. Self-exams or auto-graded quizzes are good ways to confirm how well you understand the contents and to get to know which part should be learned more. In most LMS/CMS it is not so quick and easy to create auto-graded quizzes in effective various formats. We have made a prototype tool enabling rapid creation of quiz data importable to Moodle, a popular opensource LMS. The tool is a Web application supporting almost all the common Web browsers and it has only minimum number of input boxes so that quiz creators only have to make fewer copy-and-paste actions needed to complete quizzes. You can use the authoring tool intuitively like wysiwyg applications without many trials and errors to get your quizzes in a preferable form.

## I. INTRODUCTION

In recent years, application of e-learning has been widely spread over various fields as the Internet connection has been very common at home, schools and anywhere. Many kinds of Web technologies have been employed to enhance instructional effectiveness of online learning activities. Web-based learning management systems (LMS) or course management systems (CMS) are important tools for e-learning management as the functionalities like educational resource content management, discussion forums, chat, quiz and assignment management, etc. are effective to promote interactions between teachers and learners. Moreover, LMS/CMS are often equipped with auto grading of multichoice type or shortanswer type quizzes. It enables learners' repeated self-checking of their skills and compensation of lacking of interaction during teachers' non office hours.

However, creating auto-graded quizzes is often time-consuming. The more instructive questions data you want to make, the longer time it takes to make them. The quiz authoring interface is usually designed as a typical HTML form and many copy-and-paste actions are needed to complete one question with feedback messages to learners.

In this paper, a prototype of rapid quiz creation tool developed with Ajax techniques is reported. With the tool, it is possible to make Cloze type quizzes in a short time that are importable to Moodle quiz database.

## II. MOODLE AND THE AJAX TECHNIQUES

### A. About Moodle

Moodle [1] is an opensource course management system offered free of charge, and it is permitted to be modified and

redistributed because it is distributed based on GPL. Moodle has a lot of functions such as grading management and delivery of educational contents. There is also a quiz management function in Moodle. Moodle is written in PHP, and we also have developed the tool basically in PHP.

### B. Creating Quizzes in Moodle

There is a function to create quizzes as one of the functions of Moodle. The supported quiz format is as follows: Multiple Choice, True/False, Short Answer, Numerical, Embedded Answers (Cloze), etc. There is an editing form for each quiz format, and a quiz creator can make a quiz by using the editing form. However, no GUI editing form is prepared for the format of Embedded Answers, and creating the quiz of this format is not so easy. Therefore the GUI tool which can easily edit quizzes in Embedded Answers format would be useful.

### C. Ajax-based Sites and the Features

We used a technique called Ajax [2], [3] and developed a tool which could easily perform quiz editing. Ajax (Asynchronous JavaScript + XML) is a technique to display Web pages dynamically with a communication function of JavaScript. Ajax is not a new technology but is a combination of existing techniques and formats.

Google Maps [4] and start.com (MSN) [5] are good examples of Web sites using Ajax. These sites shows the attractive possibilities of Ajax techniques.

## III. HOW YOU CAN USE THE TOOL

1) *Input Sentences*: Fig.1 is the initial screenshot of the developed tool. It shows that a document has been already input. You can load sentences from a text file by clicking the icon on the left side. Alternatively, you can write sentences directly.

2) *Select a Word*: When the conversion button at the center of Fig.2 is clicked, input sentences are written to the form that can edit the sentences. The words in the sentences are split separately. We can click each word, and a clicked word becomes an embedded answer. (Fig.2) In this way you can easily increase embedded answers.

3) *Edit Answers*: In addition, with this tool, you can edit the details of a quiz by simple operations. You can easily set the answer format, evaluation and feedback using the user interface. An input form such as Fig.3 appears when you click

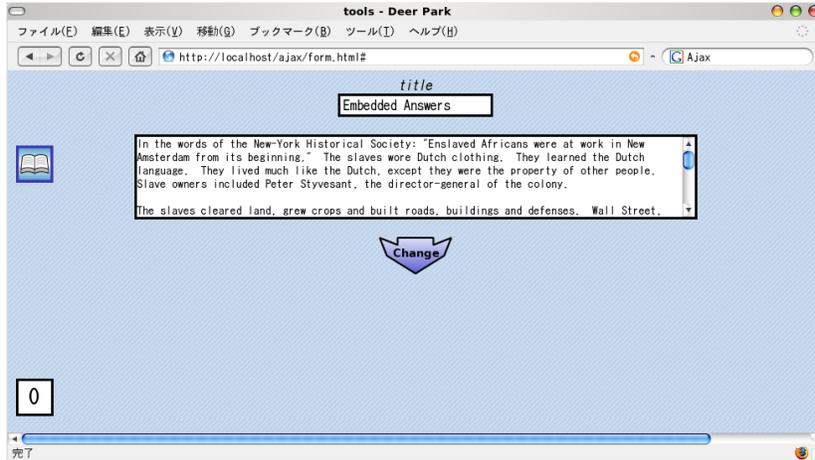


Fig. 1. Input Sentences

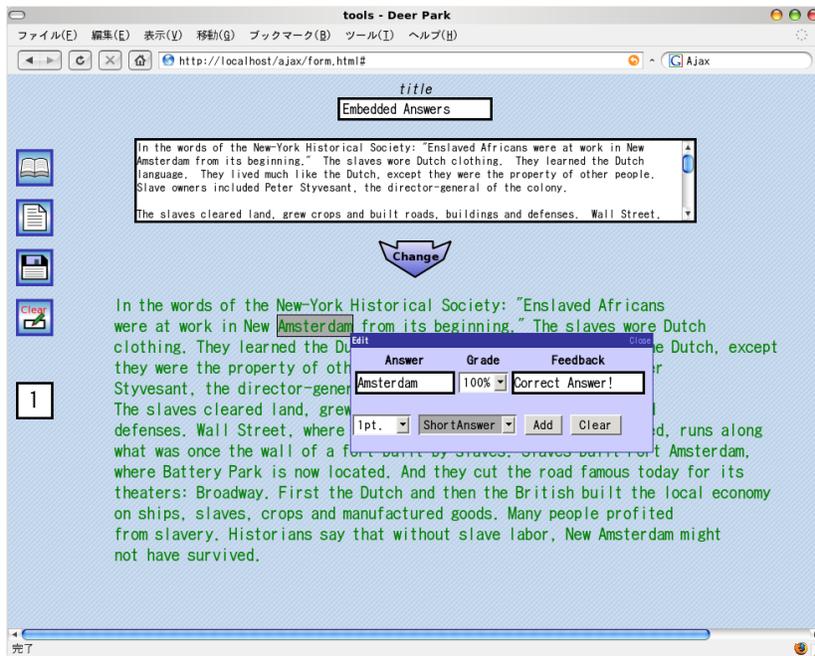


Fig. 2. Click Each Word to Set Answers

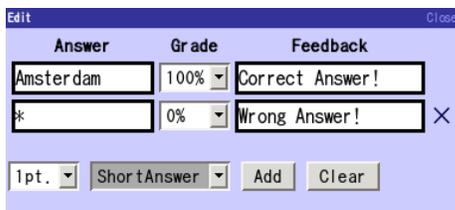


Fig. 3. ShortAnswer Example

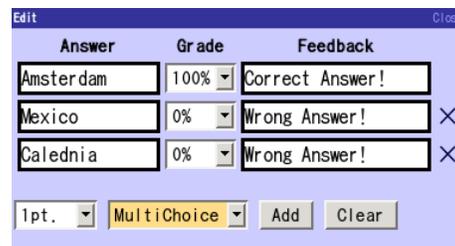


Fig. 4. MultiChoice Example

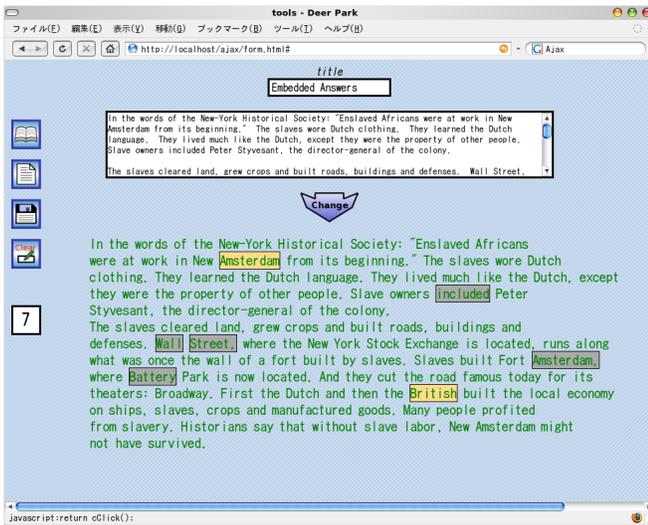


Fig. 5. Completed Cloze Quiz

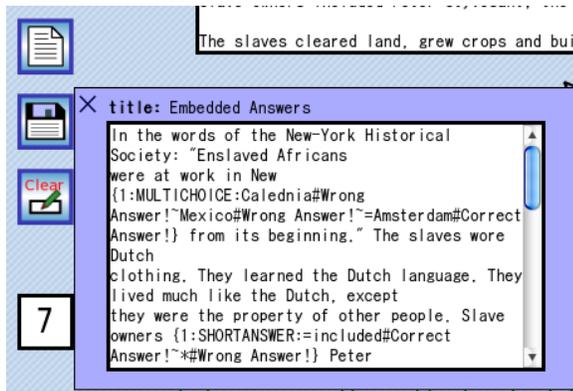


Fig. 6. Show the Quiz Data

a word. Initially only the grade value and the feedback to the correct answer are set, therefore you cannot set feedbacks for wrong answers. The reactions to answers can be increased. For example, as in Fig.3, you can set the feedback for an answer except the correct answer. And when you increase the number of answers, you can select one of the types of "ShortAnswer" or "MultiChoice" (Fig.4). In addition, you can prepare several correct answers for one selected word by setting each grade of the answers.

4) *Save and Output the Quiz Data:* As shown in Fig.5 when you finish the quiz edit, save the quiz. It is possible to save it by clicking the save icon on the left side in Fig.5. And this quiz data can be displayed by pushing the icon above the save icon (Fig.6).

5) *Import the Data to Moodle:* You can import the data file which you made with this tool to Moodle. Fig.7 is the quiz import screen in Moodle. Select "Embedded Answers(Cloze)" format, and upload this quiz file. You can try it as a Moodle quiz after uploading it. Fig.8 is a screen when solving this Moodle quiz (Cloze). Fig.9 shows the standard Moodle interface for editing Embedded Answers (Cloze) quizzes, and it

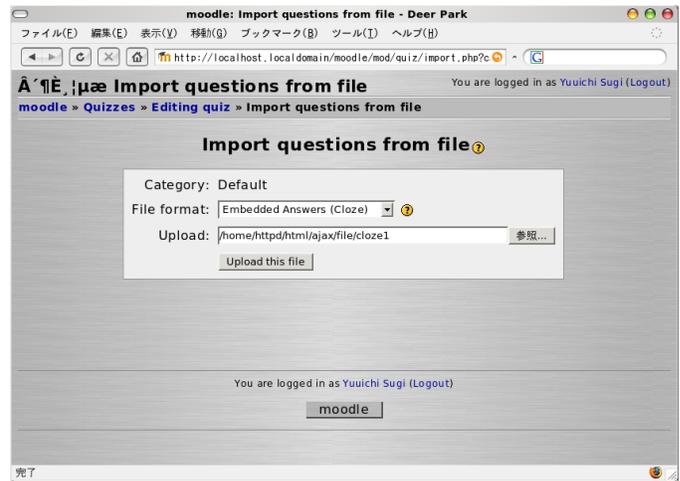


Fig. 7. Import Quiz Data to Moodle

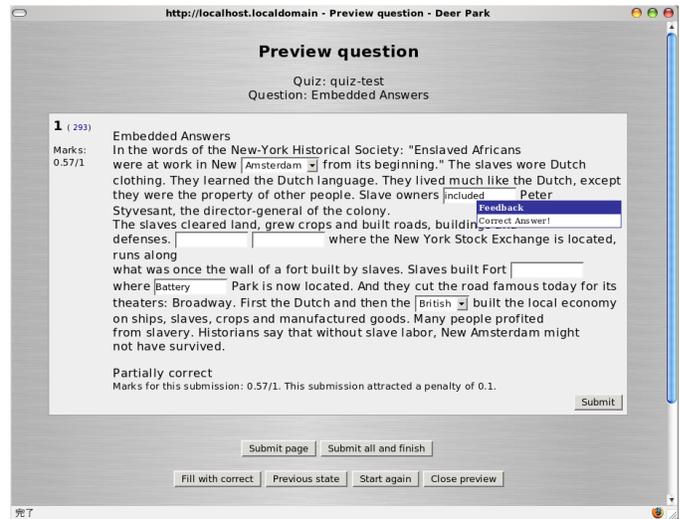


Fig. 8. Quiz Preview

indicates the Cloze quiz creation can not be done so intuitively.

#### IV. CONCLUSION

We have developed a prototype Ajax-based Web application for easily creating quizzes in Cloze format. Cloze format is so flexible as to provide various instructive questions, but so far it only can be created by writing question datum 'source code' in Textarea in Moodle interface. The developed GUI for Cloze quizzes is quite intuitively usable as it saves the data into the server each time any element is clicked or selected without redrawing the whole window. The quiz creation is so rapid and easy that it promotes quiz designers to make many good quizzes.

We have later plans to revise the tool to support other types of quizzes and merge it to Moodle as a subset of its quiz module and also add support to quiz data of other LMS.

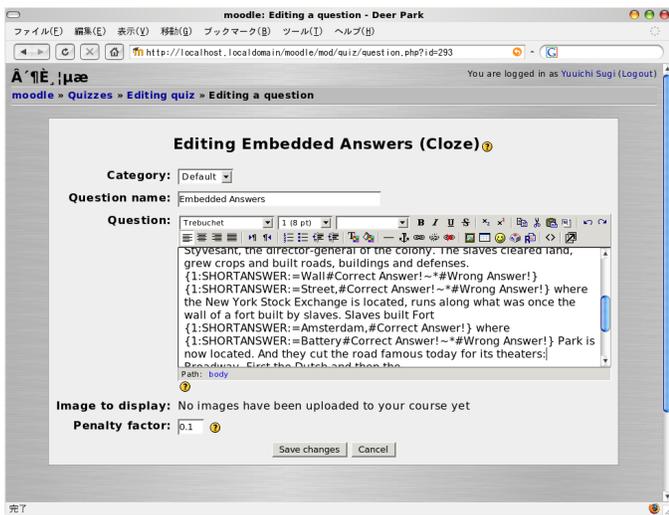


Fig. 9. Cloze Quiz Editing Screen of Moodle

#### ACKNOWLEDGMENT

This research is partially supported by the Support Program for Distinctive University Education under the auspices of MEXT (the Ministry of Education, Culture, Sports, Science and Technology).

#### REFERENCES

- [1] Moodle  
<http://moodle.org/>
- [2] Ajax  
[http://en.wikipedia.org/wiki/Ajax\\_%28programming%29](http://en.wikipedia.org/wiki/Ajax_%28programming%29)
- [3] I.Fujioka, *JavaScript Visual Reference*, 1st ed. Japan: MDN, 1999. (in Japanese)
- [4] Google Maps  
<http://maps.google.com/>
- [5] start.com  
<http://www.start.com/>