A Research on Support for Revising Learning Objects with Learning Management System

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1 Background and objective

Web-based distance learning systems have been available by the spread of the Internet, some of which provide students with e-Learning courseware based on traditional instructional texts and classroom lectures. Such environments enable them to learn in self-directed way and it is expected to enhance learning without any geographic or time constraints. However, it is very hard for the student who reaches an impasse of understanding to learn advanced scientific and technological knowledge because it is difficult for the systems to control instructive contents depending on comprehension of each student and to provide nothing beyond contents stored in advance.

The main issue addressed here is how to help learning contents developers revise learning objects in Web-based distance learning system. My approach is to provide support facilities for revising the learning objects with a learning management system (LMS for short). Such Web-based distance learning system would require that each support facility have to work in close cooperation with each other through a lifecycle of e-Learning contents. In order to resolve this issue and realize more effective distance learning environment, this paper describes two support facilities with a

LMS based on the lifecycle model of e-learning contents that have been proposed. I have also developed the facilities and LMS using SCORM (Shareable Content Object Reference Model) that is becoming a global standard in developing LMS for the aim of standardization and wide use.

2 Support facility for providing information for learning objects

In order to revise the learning objects effectively, it is important to provide information which serves as a guide to search what to and how to revise a learning object. I have accordingly developed a facility for providing information for learning objects to be revised by using history information and SCORM metadata in a positive way.

It is first important how to search the learning object as a revising target. My approach is to provide the developers with a list which indicates the learning object to be revised. I have combined various distinctive trends of learning situation proposed by related work as activity patterns so as to estimate importance of revising information. Through analyzing the importance and number of the activity patterns, this facility could search the learning objects on which most students have some troubles or reach impasses and provide distinctive information of learning situation related the object This makes it possible to improve more important learning objects with sufficient information.

3 Support facility for metadata authoring

In order to make an effective use of the learning objects revised, it is important to update metadata which represent characteristics of the objects and are used to manage the objects on the LMS. To do this, generally, the contents developers need to understand LMS and SCORM metadata schema but they could not go that far. I have accordingly developed a support facility for metadata authoring depending on how to revise the learning objects.

In revising the learning objects, some metadata elements may be able to inherit their values from the before-revising objects. My approach is

to distinguish metadata elements to be updated according to the way of revising such as adding, improving, and deleting the learning objects. By linking the way of revising to activity patterns defined, furthermore, this facility could refine the metadata elements to be updated.

4 Conclusion

In this paper, we have designed and implemented revising supports facilities as the part of the LMS using the SCORM standard in order to help learning contents developers revise learning objects in a Web-based distance learning system. These facilities are positioned as support for the design and development phase of the lifecycle model which promotes design of more effective LMS. In the future, it will be necessary to improve and evaluate the validity of the system. We would also like to integrate these facilities with SCORM2004 and develop a more practical system.