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The Research on Learning Management System with Navigation Functions

Hiroshi Abe

School of Information Science,
Japan Advanced Institute of Science and Technology

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1 Background and Purpose

Many accumulation type distance learning systems were developed and used for the purpose of learning by learners itself because of the less binding time and place restrictions by the spread of the Internet.Most of these system would give learners courseware that is based on the paragraphs and chapters structure index. However, it's seemed that there are problems to give learners only that kind of index based on paragraphs and chapters structure. The problem is like this. It is difficult for learners to look for a content which really want to learn by themself. For example, a distributed learning system in our university was developed same as accumulation type and is learned by learners self, would give learners an index which was based on chapters and paragraphs structure. However, learner's can not find easily keyword relations or precondition between learning contents from only index structure.The problem which is difficult for learners to find contents that really want to learn is not only specific problem on our system. It is usual problem and the navigation functions solving that problem seems to be important on the distance learning systems which are accumulation contents and learned by learners self types. So, I will give an answer for solving that problem using an approach to realize these navigation functions.

To solve the problem, we would realize a navigation function which give learners index that matches learners purpose. Then, to realize the navigation function, we will use Learning Management System(LMS) to manage learners information and material information effectively. Also we consider using SCORM that is becoming de facto standard

whendeveloping LMSs for the aiming at being standardization and wide using and we proposed navigations effectively for a lot learners purposes realizing using SCORM information and we will propose to a framework of a navigation to realize various purposes effectively by using defined and arranged various information.

Then, we express learning status getting from material information and learner's information from the LMS to know the learner's state when learners advances learn. Furthermore, the navigation strategy which has a role of determining a candidate learning content from learner's purpose and learner's learning condition is realized by modules.

2 Learning Management System and SCORM

2.1 Learning Management Sysytem

The way to manage learners information and material information generally uses a Learning Management System(LMS). The LMS give learners to learning contents and managing learner's information effectively.In this research, we would use the LMS to get information about material and learners. And to develop the LMS, we will use the de facto standard called SCORM.

2.2 SCORM

SCORM(Sharable Content Object Reference Model) is one of the standard for making common learning content and deliver it. SCORM is made of some standard from choosing good points from them. This is why SCORM promotes recycle the learning contents and exchanges contents between LMSs.SCORM also define some information and definitions. One is a Model called Contents Aggregation Model(CAM). The CAM is including Content Model which is a rule of naming way(Asset, SCO, Content Aggregation), Metadata, Contents Packaging which is the way for the import, export SCORM contents.

In this research, we would use the Medadata information and Contents Structure information to realizing Navigation Functions.

3 Navigation Function

Navigation Function is based on two parts of Module. One is Learner's Status Modules and the other is a Navigation Strategy Module. The role of Learner's Status Modules is selecting candidate SCOs from using material information and learners' learning history information.The Navigation Strategy Module would get these candidate SCOs and would process them to making the best index forstudent. The Navigation Strategy Module adds to the weight to candidate SCOs and decide to the best SCO which would match the learner's learning purpose. There are two learner's purpose. One is big mode, like Normal study mode or Review Mode or Browse Mode. And also learners has own learning

purpose. First, adding weight to 3 big mode. Then, whenever learn progressing, the weight would be changing for the learners' select or learners' learning history.

4 Improvement

In this research, Navitaion Function was realized. However, it would need some improvement. First one is a problem of a particle size of navigation. Our navigation function is based on the service for the size of SCO unit.But, learner want to get more small unit like slide with movie or exact movie time. We need to consider small and exact fine service for learners.

Next, it seems that user interfaces are important when the system navigate learners. In this paper, we proposed the emphasising candidate contents in the index that is gevin for student. However, there are much possibility to be cause of changing learner's choice using different index. So, we consider an optimal user inteface for learners.

Then, the third problem is using learner's history information. In this research, we didn't use so much learner's information. However, there is a lot of learner's information which can use for navigation like the history of another learners. Using these informations, the navigation function would be rich more.

The last one is about the distribution of learning contents. If learning contents which learners want to learn was not be in their schools or company, they could not learn it. But if they could get from another schools of company over the Internet, it is seemed to be very useful and effective for learning. There is a way to realize this distributed delivery system is using Web Service technology. The Web Service technology is one of the concept which gives client any web service over the Internet. It is based on the SOAP which is one of a protocol over the HTTP. Using this technology, distributed contents delivery system would be realized sooner.

5 Conclusion

In this paper, we designed and implemented the Learning Management System with navigation Functions to solve some major problem for learners and help them to choosing the best learning contents.It was made on JAIST distance education system using SCORM standard and adding navigation functions.Now, our system has only navigation functions, however, we are also researching about evaluate learning contents using AHP evaluating method, and also developing authoring tools to make the best learning contents for students. Unifying these research, the system would improve more and it would help learners' learning.