HTML5-BASED RESOURCE IN E-LEARNING SYSTEM AS COMPLEMENT TO SCORM PACKAGE

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ABSTRACT

MOODLE, as an e-learning system, presents the content in SCORM packages to learners, and saves data from learner interactions with the SCORM packages. To any user using Apple as device platform, such as iPad or MacBook user, it is still a problem to display them on their device, since the vendor still insists to continue plan not to support for any flash-based material. No matter how sophisticated device they have, they will not be able to experience viewing SCORM material in that e-learning system.

One way to solve this problem is by providing resource based on HTML5 technology. This research show step-by-step process for users in MOODLE learning system in order to enable users with specific platform to view an equal SCORM content as part of its package, tools required, and other aspects to consider. This also includes evaluation process to the procedures. Result of this research is step-by-step process and completeness of the e-learning resources to other user’s platform.

Keywords: MOODLE, SCORM, e-learning system, HTML5

1 INTRODUCTION

The use of Shareable Content Object Reference Model (SCORM) in Learning Management System (LMS) was based on the need of tracking the user progresses in learning process. One of the purposes to provide any learning material in SCORM format is to enable delivering learning materials and tracking their actions and scores. Existence of LMS should not be barrier to users with any platform.

The tough situation of SCORM on Apple platform become worse for there are none many options, no captivate to this platform. Sometimes this will force the Apple users to install multiple operating systems on their device. Fortunately combining HTML and JavaScript may be a fantastic solution to the problem. From a previous study, any learning system, not yet sufficient to guarantee an “optimal training” experience because they do not take into account some significant variables of the learning process [1]. Another study described a survey of proposed relations in content can increase learning effectiveness. [2].

2 CURRENT MODEL, ANALYSIS, DESIGN, AND IMPLEMENTATION

In this section, current model, its analysis, design and implementation will be discussed. The current model embedded SCORM is widely used particularly to any platform exist. Unfortunately everything is not always smooth as planned. In uncompromised event occurred between Apple and flash application provider may influence the use of it in an LMS.

2.1 Current Model

Formula SCORM [3] is the Shareable Content Object Reference Model; it is an initiative of the ADL (Advanced Distributed Learning Network) to modernize education and training and to promote cooperation between government, academia and business. It is aimed to provide high quality instruction anytime, anywhere, tailored to individual learners’ needs with the underlying specifications and standards. Figure 1 shows the Learning Management System (LMS) of SCORM can be applied to simple course management systems or highly complex enterprise wide distributed environments.
A decision to use SCORM in LMS is in order to fulfill the advantages of getting feedback for the lecturer from the student activities. A proposed of SCORM-based systematic assessment mechanism intended to enhance interaction between students and teachers developed to bring convenience, stability and flexibility in learning. [4]. Another research by Casella suggests implementation of the run-time environment to support the “anytime and anywhere” learning paradigm [5]. In research conducted by Chang, In this research, an enhanced metadata model and an implemented system based on our model is proposed to help teachers in authoring examination [6].

2.2 Analysis

Providing a SCORM resource to an LMS is not always adequate without considering what kind of platform users have to access it. For the main structure of the resource contains flash application scripts it absolutely become barrier to users of the LMS using Apple platform either Macbook or iPad. The larger number of the users using Apple platform, the less number of users involved in learning process. Therefore to anticipate this, an alternative of other resource in different format may be provided in learning environment. HMHTML5 technology seems reasonable to this problem. Users with Apple platform devices do not have any problem to access any HTML5 based resource.

According to Maiti and Tripathy, The HTML5 performs in a similar way as the Adobe Flash in data exchange and interface design. The HTML5 however is a script rather than being an executable program. Hence it requires a program usually a web browser to run the HTML5 scripts. The mobile device nowadays contains advanced browsers that support HTML5 specifications. [7]

HTML5 in combination with necessary tools to move e-learning environments from being static web-based copies of traditional learning materials to collaborative web applications that provide multimedia content that is interactive, responsive and dynamic. [8] [9].

Figure 2 shows the current view of the SCORM resource in LMS. This can be viewed normally using any platform except Apple and figure 3 shows how view of the resource on iPad device. It is just a blank white screen.

To solve this problem, at least there are two aspects considered which are : 1) potential user platform, and 2) available tools. LMS with SCORM package will not be problem to its users a long as none of them using any platform incompatible with the package. Therefore providing alternative package to SCORM increases the effort and time required. To make sure no effort wasted the content management service of the SCORM as shown in figure one show evaluate whether the potential users of the LMS may use device from Apple manufacture, if so then there is no other option instead to create the
alternative package as complement to existing one. Flowchart to check this is shown in figure 4.

The diagrams in figure 5 shows process of creating both packages SCORM and HTML5 within one powerful application. This creates two new form of resource in one go. The significant different between those two is in the way how they are categorized. MOODLE make SCORM as one of its activities while HTML5 package will be treated as resource.

2.4 Implementation

In this section, the previous SCORM only packages will be complemented using HTML5 package. The step-by-step process are described as follow. The first step is to open the origin resource being converted using presentation application. Having installed the iSpring Pro, menu appears next on the menu bar as shown in figure 6.

The second step is, to convert sources by selecting the publishing menu. This process results four options of output which are Web, CD, iSpring Online and LMS. To continue converting source, the end output is LMS and particularly HTML5 also considered as Mobile type package. Third, HTML5 package is ready to used. Question now is, whether it will be used locally in current LMS or remotely in other site. To use the package in LMS, a specific folder to keep the package is required. Having created the folder, all files in the package should be uploaded to LMS, and after all done, a link to index.htm file must be made.

2.3 Design

In current LMS, SCORM packages are in the form of slide presentation. To create alternate package as complement to the current ones, the first step is to choose application to create the package. Tools for authoring SCORM are available in the market in three types and they are: 1) opensource, 2) freeware non opensource and 3) commercial. In this research, iSpring Pro, commercial 30-days trial application, is used. The origin source from creating the SCORM package will be reused to create another HTML5 package, new package will be attached to the LMS and for evaluation, the new package is compared to the SCORM one. Figure 5 shows the flowchart.
Figure 7 shows how the package should be viewed. The new package can also be viewed remotely and this is done either by uploading all files in package through FTP to a remote server or upload a zip file of all files in the package and unzip it in the server. The second way is quicker than the first one because the more files the longer time to upload them as shown in figure 8.

Figure 8. Uploading process through FTP

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Figure 8. Uploading process through FTP

3 RESULT

The new package in HTM5 format solves the problem of accessing sources for some users that use devices from Apple manufacture. Now no barrier to users in LMS to what device being used.

Figure 9. HTML5 package displayed on iPhone

Figure 9 shows display of the HTML5 content using iPhone. It worked well and was also tested using MacBook and iPad. Comparison between HTML5 and SCORM in LMS is shown in table 1. The most significant is the difference of place where the packages located. HTML5 is categorized as resource while SCORM is one of the activity. At the moment, HTML5 package loses the user tracking feature as in SCORM. The uploading process may take a while because all files in the package should be upload. This is different compared to SCORM that need only one compressed file to upload and the LMS server does the rest.

![Table 1. HTML5 and SCORM comparison in LMS](image)

<table>
<thead>
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<th></th>
<th>HTML5</th>
<th>SCORM</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Resource</td>
<td>Activity</td>
</tr>
<tr>
<td>User tracking</td>
<td>None</td>
<td>Yes</td>
</tr>
<tr>
<td>Upload process</td>
<td>All files</td>
<td>One zipped File</td>
</tr>
<tr>
<td>Platform</td>
<td>All supporting platforms</td>
<td>Non Apple platform</td>
</tr>
</tbody>
</table>

4 CONCLUSION

Addition of HTML5 based resources complements the current LMS SCORM package, solves the accessing problems of users using Apple platform and also increases completeness of e-learning environment.

REFERENCE


Distance Education Technologies (IJDET), 5(1), 2007, 19-36.


