INTRODUCING ELEMENTS OF KNOWLEDGE MANAGEMENT FOR E-LEARNING

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ABSTRACT

This paper briefly discusses the state of the art of e-learning at Erasmushogeschool Brussels, reports on today's shortcomings and proposes new ideas and plans for the future. Erasmushogeschool successfully introduced Bb level 1 in its ten different departments. Today it is facing the problem of managing, personalizing and leveraging the existing and future learning content. Its association with Vrije Universiteit Brussels has generated new master programs geared towards working professionals in industry. These master programs need flexible learning solutions with modular, personalized, "just what I need" content. Moreover, our involvement in a knowledge management project directed to medium scale companies, motivates to intimately link knowledge management and e-learning. After showing the limitations of today's solution, we explore the possible ways to introduce a content management building block into our Blackboard system in order to reduce redundancies via reusability and re-purposing of learning resources.

KEYWORDS

E-Learning, Course Management, Content Management, Blackboard

1. INTRODUCTION

The **ICTO** (ICT and "Onderwijsinnovatie") work and steering team of the Erasmushogeschool chose to introduce Blackboard (Bb) 5.5 level one in 1999 as a learning environment for all departments. Our strategy to promote the use of the new tool, consisted in the organization of "encouragement seminars", training sessions and continuous support of individual lecturers. The innovators and early adopters were encouraged to start pilot projects. The majority was immediately introduced to Blackboard by a tree hour hands-on training. Within two years ICTO became a regional **Blackboard encouragement and training center for Brussels and Flanders**, jointly through the creation of a Bb user group and through the collaboration with other institutes of higher education in Belgium.

The choice for Bb 5.5 (level one) was driven by the ease-of-use for lecturers and the affordability for small-scale institutes. As the amount of content grew exponentially, the drawbacks of the system with respect to manageability of users and content became clear. Currently we are investigating the use of Bb Learning System to shape an association between the Erasmushogeschool Brussel and the Vrije Universiteit Brussel, targeting at a digital support for the future master and bachelor degrees. Bb Learning System is a new and more elaborate (and more expensive) solution that, among others, allows the automatic coupling of existing student databases with Bb. It also supports the integration of Building Blocks developed by other software vendors. Building Blocks can add functionality to the Bb system. The specific functionality that we would like to introduce is content management. The need for a content management building block into the Bb system will be highlighted in this paper.

2. COURSE MANAGEMENT ISSUES FOR BLACKBOARD 5.5

This part reports, from a course and content management perspective, on the current e-learning solution implemented at the Erasmushogeschool Brussel. Both drawbacks and benefits of this system will be discussed. We start by illustrating the use of metadata for the storage and the retrieval of courses. Bb 5.5 uses the course level for searching and retrieving content, but offers no support for retrieving smaller learning units (chapters, exercises and others). Bb5.5 does not allow for the re-use of learning- or other content and as such violates the 'store once use many' principle.

2.1 Course storage and retrieval: the role of metadata

A user with the appropriate permissions can create a new course in blackboard. This user is asked to input part of the metadata associated to the course (see figure 1.):
- ? Username: the name of the instructor(s)
- ? Course-ID: a unique course identifier
- ? Course-Title
- ? Course-Description (optional): Keywords and short summary

Additional metadata, automatically generated by the system is:
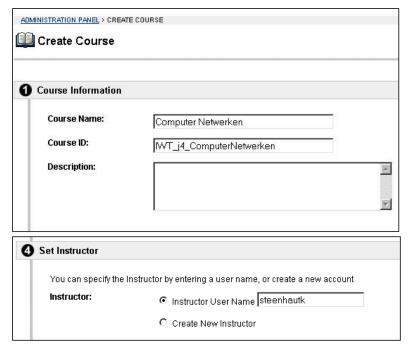- ? Course-Creation date

Figure 1. Creating a course

Our institute has introduced a mandatory Course-ID convention. A Course-ID is composed of three concatenated meta-data fields:
- ? Department code
- ? Grade(s) to which the course belongs
- ? Course-Name (Example: words from Course-Title concatenated)

This allows retrieval per year and/or per department in order to support management and accounting.

In general when one wants to retrieve a course in Bb, a search can be done on the metadata-fields as shown in figure 2.
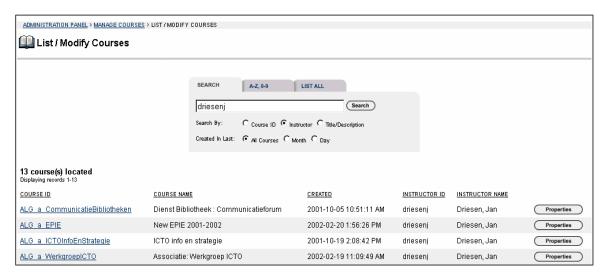
Figure 2. Retrieving a course

It is possible to make your course visible to the worldwide Blackboard community. To achieve this, one must classify the course using the fixed classification tree provided by Bb. The course must be classified into the tree according to the topic it covers.

For accessing courses published by instructors from other institutions, one must surf to the course cartridge library and search for the required course cartridge. Once found, a mail must be sent to contact the course owner. If permission is granted, the owner will provide a key, which is needed to download the course cartridge into your own Blackboard system.

2.2 Violation of "store once use many" principle

Once a course has been created, the instructor can add and remove course material. Figure 3 shows the course document area of a blackboard course. In this area, the instructor can create folders and upload files of various types. The example shows folders referring to different chapters in the course. For each file that is uploaded to a course, a copy of the file is created on the Blackboard server. If one wants to upload the same file to another course, Blackboard will create a new copy of this file. This violates 'the store once, use many' principle.
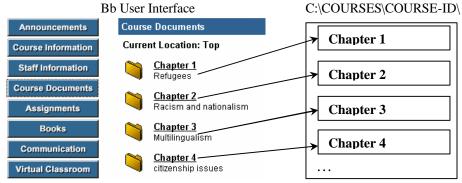

Figure 3. Blackboard User interface and its underlying file storage
(each course chapter resides in a directory dedicated to the specific course)

Figure 3 shows the typical Bb interface for a course. Apart from the course document area, other information is available such as staff information. For uploading information into these areas, the same problem arises as in the course document area. This increases the workload of the instructors and creates possible inconsistencies in the stored data.

3. BB LEARNING SYSTEM AND LEARNING UNIT MANAGEMENT

Blackboard promotes Blackboard Learning System, a new environment that supports the 'Store once use many' principle and supports the management of learning units. A course is built up by assembling several learning units. Several courses can include the same learning unit. Blackboard learning system alleviates most of the problems of Bb5.5 mentioned above and allows the introduction of powerful content management building blocks for managing the learning units, which are the basic content elements in Bb Learning System. Content management involves version control, authorization, workflow, reuse, metadata and retrieval and classification of fine-grained content elements.

3.1 Reuse and granularity of Learning units

In order to stimulate reuse and to satisfy the 'retrieve just what you need' principle, learning content must be split up into small manageable, reusable learning units. Figure 4 shows two course views, which use the same learning units. Each learning unit will only be stored once.
A decision must be taken on the granularity of the learning units such that the reuse is eased and the access to this content via other interfaces such as KM systems is efficient in terms of relevance and precision. The "sharing" of learning units raises new questions such as who will be authorized to update/delete that "shared" content. Specialized content management solutions from other vendors can be integrated in Bb via the Blackboard Building Blocks interface to cope with these problems.
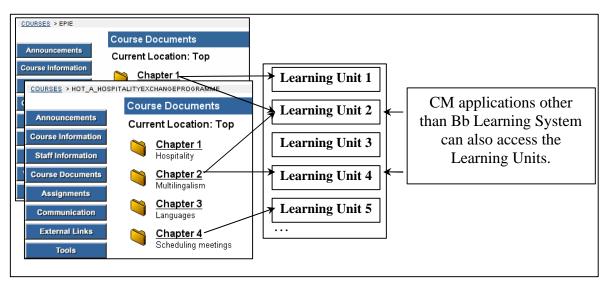

Figure 4. Reuse of learning units in different courses.

3.2 Content management

Individual lecturers at Erasmushogeschool and VUB have created high quality course content. This content must be kept modular and created for reusability. Blackboard will also be used to support new master-programs offered by EHB-VUB, which focus on people working in the industry. These people want modular content, which can be personalized. A content management system helps to enhance the documentation and the visibility of this content, while being able to restrict the access to a predefined group of people. Further investigation is necessary to decide on the actual content management system that fits our needs, while still coming at an affordable price. The Concord Content Management system must be evaluated in this context, as it offers the basic functionality expected from a content management solution while it also exists as a Building Block for the Bb Learning System.

Creating and valorizing high quality learning content for student and working professionals is the challenge of Erasmushogeschool and VUB. We are sure that the introduction of a content management solution will help to reach this goal. Moreover, we believe that the enhanced visibility of content will be an

aid for improving its quality, via "sharing" and learning by example. In the near future part of the content will be used to feed a knowledge management system. Is this the ultimate solution for the "just what you need" learners?

4. CONCLUSION AND FUTURE WORK

In this paper we discussed the techniques that are currently used at our institute to manage courses in the Blackboard 5.5 system. We pinpointed the main problems associated with the current implementation and explain how Bb Learning System tries to alleviate most of the problems, by introducing small manageable reusable learning units. The manageability that Bb Learning System offers is limited and therefore more sophisticated content management Building Blocks are recommended. We motivated why the purchase of such a system is of prime importance for our institute.

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