

THE USE OF LMS POTENTIALIZED BY THE INTEGRATION OF CUSTOMIZABLE TOOLS: THE DEVELOPMENT OF BUILDING BLOCKS

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Abstract

This article intends to explore the use of LMS as learning environment in distance activities, presenting beneficial and limiting aspects in the teaching and learning process. It also presents a proposal to potentialize the use of virtual environments enhancing their functionality: the development of Building Blocks. To illustrate such proposal it presents a few cases developed by Senac São Paulo.

Key-words

Virtual learning environment, LMS, Building Blocks, learning objects, reusability

1. Introduction

Distance learning has been more and more a choice among students. The number of students enrolled in under-graduated, post-graduated and distance sequential courses has grown 88,7% in the year of 2005 if compared to the previous year. In order to attend this demand, the quantity of courses has also increased. In 2004 they were 382; in 2005 the number has grown to 467 courses, a growth of 22,2%. (ABRAED, 2006)

It is important to notice that, when we talk about distance learning modality, we are referring to courses that can be completed totally at distance, with or without tutoring; semi-presence based courses and the utilization of virtual environments as support for presence based teaching and the practicing communities.

There are many bonds between distance learning and technology. However, it is worth remembering that more important than the technological tools used in the educational process, is the teachers' formation so that the adequate technological use can occur in learning situations.

Teachers' continuing formation allows them to participate in moments of formation for reflexive thinking about best practices, besides enhancing their practice by living everyday situations.

To Schulman (in MIZUKAMI, 1994), there is a set of principles that can explain the efficiency in educational practices for teachers. Among them, he distinguishes mutual collaboration and community formation.

There are many ways of delivering the materials and sharing information in distance learning. One of them is using a LMS - Learning Management System.

There are many kinds of LMSs in the market, be them national or not, free or licensed. It is up to the institution to know its characteristics in order to opt for the one which best meets its needs.

This article intends to explore the use of LMS as learning environment in distance learning, presenting beneficial and limiting aspects in the teaching and learning process. A proposal is presented, which aims at the potentialization of the use of virtual environments, enhancing their functionality from the development of Building Blocks. As examples, some cases developed by Senac São Paulo will be presented.

2. Learning Management System – LMS

With a Learning Management System it is possible to make available contents and activities, as well as to keep track of the student in his or her distance activities and even evaluate them. Besides, it makes available communication and interacting tools integrated in the same environment.

Many are the advantages of using a LMS for distance activities: the teacher has more control over the actions developed by the students who, on their turn, find all the information in the same environment, making their organization easier.

However, some barriers must be overcome so that the use of LMS brings benefits to the educational process. One of them is the resistance the teachers

have in using environments such as this. This resistance can be directly related to the fear of what is “new”, that is to say, the use of the technologies. Many teachers are still distressed with the idea of using such resources.

Therefore, there must be investment in the teacher’s continuing formation as well as the promotion of the development of the culture of the use of virtual learning environments. It is important to show the teacher what the benefits of using environments such as this are for his job, as well as for the teaching and learning process.

Another barrier to be overcome is the limitations of the tool. The LMSs have a structure in which some strategies can be hard or impossible to perform without any interference in their programming.

Being aware of these limitations and knowing how to overcome them is a crucial point for the good use of the learning management systems.

Since the final objective of using technology in education is the student’s learning, one must think about strategies to minimize the restrictions offered by a LMS. For this reason, some LMSs allow the integration of new tools in their programming. Such tools can be developed in such a way as to customize the LMS for the use of a specific teacher or institution.

To continue we will deal specifically with the development of tools for LMS Blackboard. In this environment these new tools are called Building Blocks.

3. What are Building Blocks?

To exemplify the development of tools it was chosen the LMS Blackboard, which has as one of its characteristics the possibility of development of new solutions, enlarging the original functionalities of the platform.

The LMS Blackboard makes available an open architecture that enables the development of new functionalities to the system as a whole. This architecture is called Blackboard Building Blocks and is formed by a collection of application programming interfaces (APIs), a Software Developers Kit (SDK) and specifications of integration that aim at reaching the core of the Blackboard, thus allowing the exchange of data and interoperability between applications (PITTINSKY, 2003).

The Blackboard Building Blocks use standards-based integration for data exchange, user authentication and content packaging, also offering freedom in the choice and use of the internal applications of the institution.

Therefore, it is possible to develop a tool with pedagogical use specific for a certain school subject and add it to the set of tools already existing in the LMS. It is also possible to perform the integration of the LMS with the academic systems of the institution, such as ERP, School Secretary System, among others, besides allowing the login authentication integrated with the system of the institution.

Following is the general view of the architecture. The Building Blocks make the integration of the internal tools, or any third party system, with the LMS (Blackboard Learning System), in a level of applications, as well as allowing more complex integrations such login authentication and also data integration directly from the School Secretary:

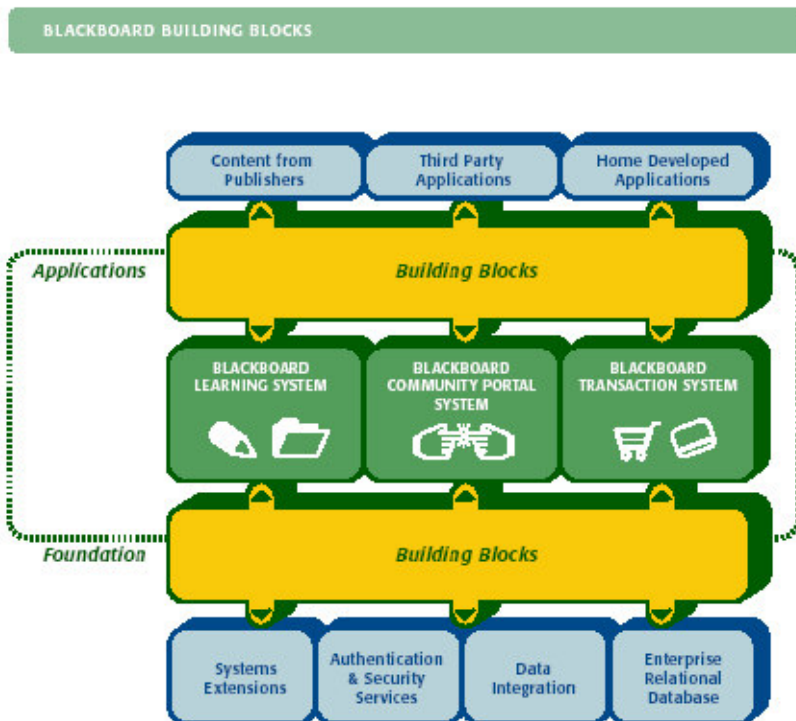


Figure 3.1: Blackboard Building Blocks Architecture

4. Using Customizable Building Blocks

For institutions that have a developing team, the use of customizable Building Blocks also presents gain in the creation time, reducing the re-work of those involved in the process.

With the development of tools that have a very specific scope, it ends up being common to see the appearance of similar tools, but with small differences among them, duplicating the work and enabling the appearance of tools that meet the needs of a teacher or school subject in particular.

Besides, small modifications such as texts alteration, configuration of permissions and functionalities end up being necessary whenever there is a change in context in a school subject or course, what makes it possible for changes to occur constantly.

Customizing the Building Blocks the teacher can configure the tools personally, according to his or her needs, optimizing the time of the developing team for new proposals.

This thinking of development can also create a library of broader solutions and codes that serve the platform as a whole, reducing the time for the development of new applications.

5. Why use the Building Blocks?

The main reason for using Building Blocks is enabling the teacher to implement in the virtual learning environment his or her teaching methodology, regardless of what it is. In order to do that, he or she must have at his or her disposal a series of resources that allow him or her to make his ideas and

practices come true, without the need of modifying his or her working methodology in order to adapt to the environment.

Usually the LMSs have a very restrict set of tools, be it for communication, content delivery or even evaluation.

In its majority, such tools do not privilege the sharing of information, the collective authoring and other practices that are common in the presence based classrooms, which obliges the teacher to re-think his or her activities in order to adapt to the resources offered by the LMSs.

The limitation many teachers find in virtual environments when they want to propose an activity that is not in accordance with the stated standards can take them to use resources that are external to LMS, decentralizing the teaching and learning process, thus making it difficult to administrate. The teacher can also abandon his or her teaching strategies in favor of the functionalities of the virtual environment, depriving his or her teaching methodology of its characteristics and often limiting and harming the learning process.

The use of objects can solve this demand once with the Building Blocks it's possible to expand the functionalities of the virtual environment and enable it to truly be a support for the teacher and a learning facilitator.

Developing objects that meet the exact need of each teacher is a benefit for education using virtual environments, for it is important for the teacher to have a tool that respects his thinking and language, in accordance with his practical reality. Nevertheless, there is also the risk of cumulating a series of different objects that serve the same purpose or even creating so specific objects that they will not be useful in any other context.

To avoid re-work in the development of the objects and in order to optimize the production of the courses, it is possible to adopt the use of customizable objects. (BARRITT, 2004).

Practically speaking, the development of Building Blocks remains the same, making them possible of being reused in different courses, but it also opens the possibility for the teacher to choose some aspects and functionalities of the tools. They can have different levels of customization, varying from the possibility for the teacher of altering only the name of the areas, to modifying its functioning configurations.

It is, however, important to think about the level of customization of a tool, for when one develops a "matrix-tool" adaptable to many contexts, there is the risk of making its management difficult for the teachers who, in its great majority, are not totally familiar with computers and the use of virtual environments. Besides, many teachers have difficulty visualizing the result that will be obtained when there is not a very well defined objective for the object.

When the teacher uses a tool that has been personalized by him or her, that meets his or her needs, he or she is more confident of his work, his posture and his actions in the virtual environment, thus consequently increasing his motivation to continue using the environment and also exploring its possibilities to the maximum level. Once the Building Block in the LMS is projected and implemented, the teacher stops depending so directly on the developing team,

enhancing his or her autonomy, having more freedom to explore the environment and its possibilities.

According to Fanciosi, Medeiros and Colla (2003):

In order for the technologies to be more efficiently used in the support of learning environments, it is necessary to dispose of an environment project conceived according to a dialogic logic that searches for a synergy between vision and action, theory and practice, dream and reality, the whole and the part, individual and collective, each one and with oneself. It includes the proposal of spaces that also extrapolate dichotomized and polarized actions. (free translation)

Therefore, “emphasizing the electronic pedagogy, instead of the technology, in the teacher’s formation will make them (the teachers) feel thrilled with the potential and the force of this environment.” (PALLOF and PRATT, 2002). (free translation)

6. Some cases

Senac São Paulo has been developing Building Blocks in its LMS Blackboard for some time in order to attend a growing demand of teacher’s need for customized tools. With time, the creation of more generic tools that could attend a greater public and yet satisfy the specific needs of each course proved necessary.

Bearing this in mind, some tools with different levels of customization were developed, until we got to objects which were highly adaptable to the several learning and teaching situations faced everyday in the courses offered by the institution.

It’ll be giving three case examples using customized Building Blocks: Gallery Tool - customization of the permission levels; Routine Diary Tool – customization of texts and subtitles and Form Tool – customization of functioning.

6.1 Gallery

The creation of the Gallery tool arose from the need of some teachers for a space in the virtual environment in which students could publish their work and share them not only with the teacher of the course, but also with his peers. Besides viewing the work, everybody could make comments and leave hints to the “author”.

The Gallery had the following working dynamics: the teacher created a category and wrote a description, such as the orientation for the activity. When accessing the tool, each student could visualize a list with all the available categories. Selecting one of them, he had the possibility of visualizing the work that had already been sent by other students and also send his own work, attaching a file of any format. He could also complement his activity with a text. After sending his work, it was visualized immediately below the last work that had been sent for that category, in increasing order of date. From that moment on, all the students, besides the teacher, could read the description of the work and

select the attached file, visualizing it with the possibility of writing a comment for the student. Only the teacher had the privilege of creating, modifying or excluding a category.

As time went by, teachers from other courses showed their interest in using the tool. However, they questioned the possibility of modifying some of its functionalities so that the tool could be used in another context. For example: some teachers would like to use the tool as a collective repository of materials that served as support for classes, a kind of digital library collaboratively built. In order to do that, the students should have the possibility of generating categories, permission that was only granted to the teacher of the course.

Firstly, we had to modify the tool in order to attend to this need; however, other teachers continued to ask for customizations and we ended up with several Gallery tools with different functionalities.

In order to avoid the constant re-work we decided to adapt the object created in the beginning so that it would accept customizations from the teacher himself or herself, in such a way that he or she could personally choose which levels of permission each user could have.

Adicionar Galeria

1 Informações do conteúdo

Titulo da ferramenta

Descrição

2 Privilégios dos Alunos

Opções de menu:

O link "Adicionar Trabalho" estará disponível? Sim Não

O link "Editar Categoria" estará disponível? Sim Não

O link "Visualizar" estará disponível? Sim Não

Opções de Operação:

Pode comentar tópicos?

Pode fazer downloads dos...

3 Privilégios dos Tutores

Adicionar trabalho Módulo 1 - Atividade A

Módulo - Atividade A

Titulo > Justificando Escolha

inserido por > Marco Borges

Descrição > Olá, bom dia! Gostaria do seu comentário sobre a Atividade e se posso melhorar, por favor indique. Aguardo, Abraço e boa semana.

> SALVAR > EDITAR

Figure 6.1: Example of the area of configuration and use of the Gallery tool.

6.2 Routine Diary

The routine diary was a request from a teacher who would like to have a tool in which the students could send, on a daily basis, images that illustrated their everyday life, followed by a few comments, a kind of personal diary, but with the possibility of also sending images.

The use of the Gallery tool was suggested, but once we expected the students to send a greater number of tasks it would be too much work to

download each one of the images sent in order to be able to visualize it. Therefore, a new tool was developed and implemented.

Other teachers showed their interest in using the Routine Diary. Nevertheless, they were not comfortable with the name of the tool and also with the texts for labels and messages. Some, for example, would like to call it “Blog”, while other would rather have only “Diary”, and so forth.

In this case we developed a Building Block that enabled the teachers to alter not only the name of the tool, but also all the texts of its interface.



Figure 6.2: Example of the area of configuration and utilization of the Routine Diary tool.

6.3. Forms

The tool forms was requested by a teacher to meet the following need: he would like to create questionnaires in which the students could answer, in an open way, to questions related to a specific image, besides sharing the answers with the other peers.

We thought then about developing an object that would make it possible to insert not only an image, but also a file in the Flash format, which could be an animation, a video, an interactive exercise, a simulation, etc. The number of questions that could be inserted was also unlimited, so that the teacher could customize his or her questionnaire in different ways. In the following example, the tool was used so that the students could interact with the graphic simulator, in this case, the Bézier Curve and, in the sequence, answer the two questions related to the topic.



Figure 6.3: Example of the area of configuration and utilization of the Form tool.

7. The Sharing of Building Blocks Among Entities

Society gradually begins to be aware of the importance of sharing knowledge, exchanging information and interacting with the collective.

The network, the Internet, Orkut, Blog, among other interaction tools, enable people to think and act collectively.

The sharing of information, disseminated in the work with virtual learning environments also enables that a great number of people, mainly educators, share the materials they developed with a group of interested people.

To make it possible to share contents, it's necessary to think about a standard structure of development that attends the greatest number of institutions that use different technological resources. For this reason it is important to develop learning objects that follow the international standards, which enables the reutilization in several environments.

Because they have this characteristic, the learning objects can be reused in several situations, by different teachers, school subjects and institutions.

It is up to the institutions that have a better structure concerning technological and human resources to develop and make available its objects in public compilations, making it possible for the less fortunate institutions to access them. There would therefore be more equality in education along the different social levels.

An example of public Building Blocks compilation is in the Blackboard website (BLACKBOARD). This is a website where several institutions worldwide that use the Blackboard tools develop Building Blocks and make them available in this big catalog that can be accessed by any other institution.

It is not a reality in Brazil yet, but the future will show us some initiatives in this direction.

8. Final Considerations

Due to the characteristics of shared information and net interactions that the present society is incorporating, the virtual environments are becoming important spaces for the production of knowledge.

The LMSs have resources that can help teachers and students to create these virtual environments. In order to make these spaces flexible and adaptable to the specific needs of a group it is possible to use the integration of the new tools to the LMSs.

Based on experiences with the LMS Blackboard it is noticed that the integration of Building Blocks adds value to the LMS and makes it friendlier, meeting the needs and expectations of the users.

However, it is also important to know that technology presents itself as a means, as an instrument to cooperate in the development of the learning process; it has its importance merely as a meaningful instrument to favor someone's learning. That is to say, it is not the technology that will solve all the educational problems, but it may cooperate, if adequately used, with the educational development of the students. (VAYASSORI and RAABE, 2003)

As a final comment, we reinforce the importance of creating a compilation of objects like this to be shared among institutions, thus diminishing the distances among them and enabling gains for the public of teaching institutions of all social levels.

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