Taxonomy and Unified Access of E-Learning Platforms

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Abstract In great majority of educational institutions, different e-learning platforms are simultaneously used for several reasons. As a consequence of this situation, learners must connect separately in every platform, which makes it a repetitive, redundant and time-consuming task. To address this problem, we propose in this paper to sweep most known existing platforms and extract theirs important features, and then to make an unified access to the e-learning platforms being used by learners, which means here that the learner will be invited to make a single authentication and then will be automatically connected in all platforms under use.

Keywords E-learning · Platforms · Taxonomy · Unified access

1 Introduction

Nowadays, e-learning has become one of the most interesting components that must be included in the pedagogical process. Its goal is to use technology in order to create a synchronous and asynchronous communication independently of time and location of both teacher and learner. Consequently, many e-learning platforms were created which offers a large choice to users of e-learning platforms. This diversity makes the choice of one platform so specific and personal. In an institution where many platforms are used, learners must be connected independently to these platforms used by their teachers. Whereas, learners often do not have links to switch from one platform to another. For these reasons, we suggest in this paper to unify access to e-learning platforms. This paper is structured as follows: first, we will

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introduce e-learning, than we will propose a classification of eight popular systems. After that, we will present issues of multiple accesses and finally we present our technique to unify the access to different platforms.

2 E-Learning and Platforms Classification

Many definitions were given to e-learning. It refers to the use of electronic tools in delivering instructions including: CD-ROM, Internet, Intranet, Extranet, audio, video, etc. [1]. This way of learning allows learners to access information independently of their locations which decreases the cost of learning and makes this operation easier, faster and more efficient. Many e-learning platforms were developed and commercialized. In a previous work [2], we have classified the most used e-learning platforms using the Classification Tree Method (CTM) [3] and its software tool Classification-Tree Editor. In this paper, we include new criteria for classification and new platforms. E-learning platforms allow their users to have environment to work collaboratively in order to share knowledge and manage the pedagogic content. Developers and searchers are more and more interested by this field. Basically, we find two main families of e-learning platforms: Open source systems and appropriate solutions. Also, architectures of these platforms are various and different. Behind the large choice of platforms offered, the user finds difficulty in choosing the most suitable system for him, and consequently, a clear classification is necessary in order to make the choice of a platform easier. The Fig. 1 illustrates a classification of eight e-learning platforms: Atutor [4], Blackboard Learn [5], Chamilo [6], Claroline Connect [7], Dokeos [8], e-front learning [9], Moodle [4, 9] and Olat [10]. Our classification is based on Classification Tree Method and on many essential criteria on which every user should be informed about in order to choose the most suitable platform for him.
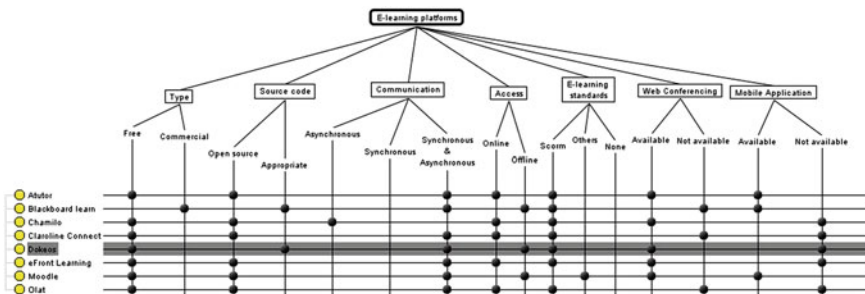

Fig. 1 Taxonomy of some e-learning platforms

3 Issues of Multiple Accesses

Due to the very large choice of e-learning platforms, teachers choose different systems according to their necessities. In an institution where the e-learning platform is not unified, student is obliged to connect in all platforms used by all his teachers. This means that the task of authenticating will be done in all platforms used by all teachers of the same student, which makes them less encouraged to discover all those platforms. In order to resolve these problems, we propose in this paper an architecture of a system serving to unify access to multi e-learning platforms. Using our system, students will avoid authenticating in all platforms used by their teachers. Our solution will be a real benefit for all actors of the e-learning process including: the institution (or the administration), teachers and students.

3.1 Case of Administration

Having more than one platform used by teachers of the institution makes the management of data difficult. It must be collected from every database independently, because there is no communication or interconnection between all systems used by teachers in the same institution. Our architecture will facilitate the management of data concerning students. Using our system, the manager will not need to extract data from every platform separately one by one due to the centralized system management of all platforms used by teachers of the same institution.

3.2 Case of Teacher

The teacher will have the possibility to use more than one platform or even to change the usual one. Using our proposed architecture, he/she will be able to change his/her usual platform without any fear of lose and without need to recreate courses, learning resources or users in the new platform.

3.3 Case of Student

Using our system, students will have a common interface of all platforms used by their teachers. They will be able to connect only one time to be automatically connected on all platforms included in our system and to switch between those platforms easily. First, the student must be connected via our interface. The system checks if connection elements are correct and according to special access rights already predefined in each platform, the student is switched to convenient platforms.

4 Our Technique of Unified Access

Our proposed architecture comes to help all actors in e-learning process to improve their participation in this process. It comes as a radical solution to institutions where more than one platform is used. First, it will allow students to avoid signing in all platforms connected with the proposed system. The administration should add easily all platforms installed in the institution in order to give students the ability to sign in just one time in the common interface and automatically he/she will be connected in all platforms independently. This specification will encourage students to use e-learning platforms. Consequently, the diversity of platforms in an institution will not constitute a real problem to the administration. In addition to this, our architecture will offer to the institution a centralized system which makes all management tasks relative to e-learning platforms installed easier. Furthermore, our proposed architecture is easy to use and does not require special knowledge in computer science. As shows the Fig. 2, the administrator uses a web browser to choose the platforms to add to the system. Users of different platforms will be stocked in a Lightweight Directory Access Protocol (LDAP) to allow students to have access to all platforms added to the system. After this, students become able to use one unified interface using web browser to switch between platforms without need to login in all platforms independently. The performance of the proposed architecture resides in reassembling all existing platforms in the same institution in
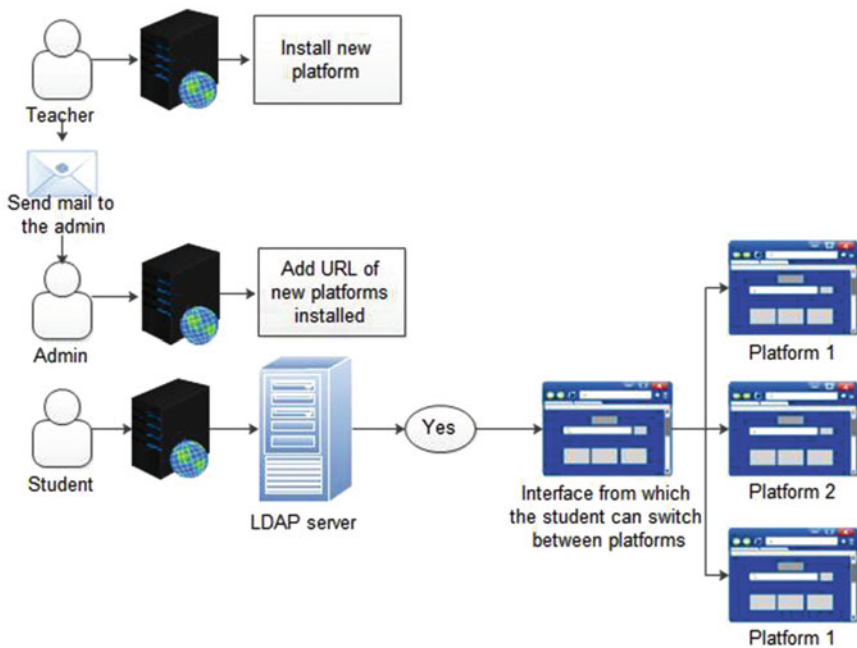

Fig. 2 Process of use of our proposed system

order to have a centralized architecture which can be more efficient for managers to administer data. Furthermore, this solution supports the rights of access of each platform, which means that only students having right to access in a platform 'A' are able to connect to the same platform 'A' using our solution. This specificity allows this system to take into account the security which stills a very essential element in such system.

5 Conclusion and Future Works

Many researches were done in the field of e-learning and so many e-learning platforms were created. Users face challenges to choose one of them from a rich list. As a consequence, institutions find difficulties to impose the use of a specific unified system and allow thus teachers to use their preferred systems independently of others. Consequently, students must be connected in every platform, which makes them less motivated. Our system comes as a radical solution to this problem. It helps institutions to control access to different platforms using a simple web interface that helps to install those platforms in our proposed system. Furthermore, using our system, students will be able to sign in just one time and automatically they will be connected on all platforms installed in the system. However, our actual system includes two platforms which are Moodle and Chamilo, in the perspective to generalize our idea to most locally used platforms.

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