Chapter 25

Development and Support of E-Learning Systems in Tomsk State Pedagogical University

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ABSTRACT

Processes of IT development in modern society and closely related processes of IT development in all forms of educational activities are characterized by the process of improvement and mass distribution of up-to-date information and communication technologies (ICT). Similar technologies are used extensively for communication and collaboration between the teacher and the student in modern open and distance learning. A modern teacher must not only have knowledge of ICT but also must be an expert on their application in his/her professional activity. In this case, application of such technology is closely related to distance learning and e-learning. In this paper, we intend to simulate and show outcomes of the development of e-learning support systems on the example of Tomsk State Pedagogical University (TSPU).

INTRODUCTION

Processes of IT development in modern society and closely related processes of IT development in all forms of educational activities are characterized by the process of improvement and mass distribution of up-to-date information and communication technologies (ICT). Similar technologies are used extensively for communication and collaboration between the teacher and the student in modern open and distance learning. A modern teacher must not only have knowledge of ICT but also must be an expert on their application in his/her professional activity. In this case, application of such technology is closely related...
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to distance learning and e-learning. In this paper, we intend to simulate and show outcomes of the development of e-learning support systems on the example of Tomsk State Pedagogical University (TSPU).

Objective – illustrate outcomes of the information systems implementation, technical and technological support of e-learning in TSPU subdivisions.

In the broadest sense, distance learning is the process of learning at a distance with the help of using modern technologies where the Internet plays the main role. One of the most convenient ways of interactive distant learning activities is a web conference mode. Web conference is a technology and a set of tools for arranging online meetings and real time collaboration on the Internet. Such an approach provides online presentations, collaborative work with documents and applications, simultaneous net surfing, watching videos and images when each participant is in his workplace at a computer (Obukhov, 2012).

Table 1 depicts some comparative characteristics of different solutions for web conferences in accordance with the desired outcomes and requirements (in this case, multithreading refers to transfer of video, audio and presentation materials by different threads; by autonomy we mean an opportunity to provide installation procedures within the corporate network; installation implies the complexity of the installation process of the solution, the need to attract qualified personnel to deploy this software).

The following selection criteria were used: price, autonomy and open-source. As a result, hardware and software complex for arranging learning activities in a web conference mode was organized on the basis of BigBlueButton (Gazizov, 2012). Due to collaboration with the students, the service called webinar.tomsk.ru was launched on the basis of the established hardware and software complex. The complex allows conducting seminars, making presentations, courses, and any other educational activities in the distant mode.

This open solution has a number of advantages as well as a number of disadvantages compared with other products used for distance learning. Advantages: full autonomy, stream splitting (multithreading): audio, video and presentations, number of participants is determined by its own material and technical resources. Disadvantages: complexity of initial setup and configuration. The system allows delivering online lectures with different status: the teacher (host) and the student (listener). In the “teacher” mode you can browse presentation slides (in the navigation menu), modify presentations (using a marker, highlight important information), let students take part in discussions (connect and disconnect the microphone of a particular participant/student). The main window makes it possible to observe all the windows at the same time. The main window comprises the following elements: “Participants”, “Audio conference”, “Online video”, “Chat” and the window for working with documents.

Table 1. Comparative analysis of software applications for web conferences

<table>
<thead>
<tr>
<th>Features Name</th>
<th>Price</th>
<th>Thread quality</th>
<th>Multithreading</th>
<th>Open-source</th>
<th>Autonomy</th>
<th>Installation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SonyPCS, Tandberg</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>webinar.ru, join.me</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
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<td>+</td>
</tr>
<tr>
<td>Skype, ichat</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
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<td>-</td>
</tr>
<tr>
<td>WebEx</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>BigBlueButton</td>
<td>+</td>
<td>-</td>
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