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# THE USE OF LEARNING MANAGEMENT SYSTEMS IN TRANSYLVANIAN HIGHER EDUCATION INSTITUTIONS

Original  
Research

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## Keywords

LMS;  
Transylvanian higher education;  
Online education;

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## Classification-JEL

A23;

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## Abstract

*Learning management systems help the learning process by providing a central location to access material online and to develop content. As most of the educational institutions moved their classes to online courses from spring of 2020, the importance of LMS raised. In this study our aim was to determine which LMS Transylvanian Universities use. For this, we conducted in-depth interviews with students not only to find out which LMS are used, but more specifically what are the main functionalities used and appreciated by the students. We also analyzed schools' institutional websites. We searched for information about how the learning content is distributed to the students. One conclusion of our study is that only a few of the faculties have already applied an LMS before the COVID-19 pandemic. The systems were used mainly for pushing out information and for administrative tasks.*

## **INTRODUCTION**

Since today's students are members of Gen Z, we thought that it would be good to examine the nature of this generation because it is important to take into account their needs. These students were born between 1995 and 2009 and they are also called digital natives. Maybe the most important trait of the Gen Z members is that they confidently move and communicate in virtual space and they are always available on social media platforms. They require innovation in education, continuous feedback and also have the need for the use of digital devices and software (LMS) in the classroom (Prensky, 2001).

Based on the above, we can say that it is important to use digital devices and learning software in the education of digital natives in order to keep their attention.

## **LEARNING MANAGEMENT SYSTEM- AN OVERVIEW**

### **LMS**

The first question that arose was that what is an LMS? It is an acronym derived from Learning Management System. Learning Management System is a software application for the administration, documentation, tracking, reporting, automation, and delivery of educational courses, training programs, or learning and development programs (Ifenthaler, 2012). According to Coates, James and Baldwin (2005), LMS are scalable systems which can be used to support an entire university's teaching and learning programmes. Tapscott and Williams (2010) emphasises the importance of collaborative learning.

LMS typically provide the following tools (Coates et al., 2005):

- asynchronous and synchronous communication (announcement areas, e-mail, chat, list servers, instant messaging and discussion forums);
- content development and delivery (learning resources, development of learning object repositories and links to internet resources);
- formative and summative assessment (submission, multiple choice testing, collaborative work and feedback); and
- class and user management (registering, enrolling, displaying timetables, managing student activities and electronic office hours).

More than 200 different commercial and open source LMS products are currently available (Ifenthaler, 2012). The best-known Learning Management Systems are Moodle, Canvas, Schoology and Google Classroom.

### **LMS vs. eLearning Software**

While there is some overlap between LMS platforms and eLearning software, there are a few key differences between the two. ELearning content software offers the user access to a curated digital library that can include videos, e-books, and online courses/lessons. The primary function of eLearning software is to provide the user with a large content library for self-guided learning or integration with an LMS platform. LMS platforms, on the other hand, may not offer content libraries at all. Instead, they focus more on managing the learning process and storing and tracking individual/ aggregate progress.

### **LMS and Virtual Learning Environments**

The term "virtual learning environment" (VLE) or virtual classroom, is often used synonymously with Learning Management System (LMS). These two terms essentially refer to the same products, but emphasize different aspects of the software. Virtual classrooms typically have a larger focus on the collaborative aspect of learning. Products that are marketed as a VLE may have stronger discussion, forum, or student collaboration features. On the other hand, LMS has traditionally referred to products with strong performance tracking and analysis capabilities. Many LMS vendors have strengthened the virtual classroom aspects of their platforms as virtual-only learning has become either more financially attractive or socially necessary.

### **LMS statistics in 2020/2021 on a global level**

First of all, it is important to mention, that as of April 2020, 98% of educational institutions moved the majority of their classes to online courses. As a result, there has been an increased demand for these learning management systems.

As shown in Figure 1, the most popular Learning Management System was the Google Classroom. This application commands 39% of the LMS market in 2021 when compared to other leading LMS software. Also, Moodle is the most popular open-source LMS in the higher education market and Canvas is the most popular paid option ([www.trustradius.com](http://www.trustradius.com)). Another interesting fact related to the LMS usage at international level is that 77% of higher education faculty agree or strongly agree that the LMS is critical to their teaching. 73% believe the LMS is a critical tool to enhance student learning. 68.3% of higher education students used the LMS for all of their courses. 89% of higher education faculty already used some of the features of the LMS before the COVID-19 pandemic, mainly for administrative tasks such as posting a syllabus, pushing out information or course materials, pushing out and collecting assignments, and tracking grades. 39% of users consider functionality as the most

significant priority when selecting a new LMS. The other considerations focused on reliability (20%), training support (17%) as well as price (12%).

### **Moodle and Canvas**

Moodle is a free and open-source Learning Management System, mainly used by higher education institutions. The application was written in PHP programming language. Moodle is used for blended learning as well as for distance education and e-learning projects (Damnjanovic, Jednak, & Mijatović, 2013). This open-source application was developed on pedagogical principles used in schools, universities, workplaces and other sectors (Cole, 2005).

In contrast, Canvas is a paid Learning Management System. This application originally was named Instructure. Canvas was developed for schools, higher education and businesses as well. The most important and preferred attribute of this application is that it is very user-friendly and it supports custom integration. Canvas has three different user interfaces: Canvas Teacher, Canvas Student and Canvas Parent.

### **Schoology and Google Classroom**

Schoology's motto is "Understand & Support Every Student", so it was developed mainly for schools and higher education institutions. This software is a mix of paid and free applications: it has a free plan for individual teachers and a paid Enterprise plan for schools. It can be accessed through the website as well as through iOS and Android.

Google Classroom is a free software developed by Google. It was created for schools and it is easy to handle even for primary school children. The main scopes of the software are file sharing between teachers and students and also creating/submitting/evaluating exercises and assignments.

### **Zoom and Microsoft Teams**

The above-mentioned applications are not completely an LMS, but they are often used by higher education institutions, mainly for distance education. Zoom is a cloud-based software that provides video call and online chat services. It is a paid application and it has a free and limited version as well.

Microsoft Teams was initially developed as a business communication platform and it is rather used by higher education institutions than elementary schools. This software is mainly used for meetings and online chat but it also allows teachers to distribute, provide feedback, and grade student assignments.

## **LITERATURE REVIEW**

We have found many articles and research on the applications used by Romanian higher education institutions.

There are a variety of studies, focusing on the acceptance of e-learning by students and discussing the opportunities of using e-learning in pedagogical processes (Benta, Bologa, Dzitac, & Dzitac, 2015; Dorobăț, Corbea, & Muntean, 2019).

A large number of articles and researches present the structure of Moodle and also the functionalities implemented in the application, where the authors state that this platform improves teaching and the learning process (Paragina, Paragina, Jipa, Savu, Dumitrescu, 2011; Damnjanovic et al., 2013).

Some papers are focusing on the impact of the COVID-19 pandemic on the use of e-learning applications on Romanian higher education institutions (Edelhauser & Lupu-Dima, 2020; Molea & Năstasă 2020; Turnbull, Chugh, & Luck, 2021).

## **METHODOLOGY**

According to the Official Gazette of Romania (<https://monitoruloficial.ro/>), there are 47 civil state higher education institutions in Romania, of which 16 are Transylvanian universities. Also, there are 38 accredited private higher education institutions in Romania, of which 13 are located in Transylvania.

Actually, Transylvanian universities located in Kolozsvár / Cluj-Napoca, Temesvár / Timișoara and Brassó / Brașov are among the best worldwide, the latest report out of CWUR (Center for World University Rankings, [cwur.org](http://cwur.org)) reveals, see Figure 2.

In Kolozsvár / Cluj-Napoca we can find several known universities, for instance: Babeș-Bolyai University, "Iuliu Hațieganu" University of Medicine and Pharmacy, Technical University of Cluj-Napoca and many others. In Arad the "Aurel Vlaicu" University and "Vasile Goldiș" University. In Marosvásárhely / Târgu-Mureș is located the "George Emil Palade" University of Medicine, Pharmacy, Science and Technology of Târgu-Mureș. In Nagyvárad / Oradea the "Partium" Christian University and in Brassó / Brașov the Transylvanian University.

The research period was January of 2021 – September of 2021. During our research, we have visited the official website of the universities and we have tried to search for certain keywords (for example: online, online teaching, application) in order to obtain information on which platforms the online education is taking place, but unfortunately without success. It seems that the software and applications used during the online classes are not

communicated on the higher education institutions' official websites. As our second attempt, we have asked a few questions to students from the most popular universities of Transylvania. During our research, we wanted to know the type of education, the LMS applications used for teaching and examination and whether LMS applications were used in the classroom before the pandemic. We collected all the information obtained in the table below (Table 1).

It can be observed that in most of the examined universities the education takes place online or in a hybrid system, so one or more Learning Management Systems are definitely used by these universities and faculties. In the case of the LMS applications used for teaching, we can see that the most popular software is Microsoft Teams, but several faculties use Zoom as well. From this table we can also conclude universities use the same applications for the examination as for teaching. So overall we can see that Microsoft Teams is the most preferred learning management system of the Transylvanian higher education institutions. But why MS Teams and what are the main functionalities of this application?

First of all, the video call is a very important functionality. For instance, by using Moodle we are able to create assignments or grade them, but we cannot create online meetings. The online chat is a general option, that is implemented in almost all Learning Management Systems. This is important because of the teacher-student communication. Another functionality that makes MS Teams the most preferred application is the assignment creation and submission. By using Zoom, indeed we can schedule online video calls, but the assignment functionality is not implemented there. Probably because of this, many universities that use Zoom, use another application as well for assignments and file sharing (e.g. Moodle or Canvas). Also, the file-sharing feature is essential for teachers to share course materials with students. By creating groups, it is possible to assign group works even in the online classroom. If we can create and submit assignments, of course, we can also grade them and provide feedback if needed.

## CONCLUSIONS

First of all, we can state, that Microsoft Teams is the most preferred and used LMS by Transylvanian higher education institutions, probably because it includes all of the above-mentioned functionalities in one application. Another conclusion could be, that based on the answer of the asked students, the same learning management system is used by universities for both teaching and examination. This decision is not homogenous within a university. Different faculties may use different

learning management systems. A representative example could be Babeş-Bolyai University. For instance, on the Faculty of Economics and Business Administration the Moodle and the Zoom are the used applications. In contrast, on the Faculty of Mathematics and Computer Science the preferred learning management systems are Microsoft Teams and Canvas. The applications used during the online classes are not communicated on the higher education institutions' official websites. As mentioned before, at the global level 89% of higher education institutions already used some of the features of the LMS before the COVID-19 pandemic. This statement cannot be said of the Transylvanian higher education institutions: only a few of the respondents answered that they have used learning management systems. These two faculties are the Faculty of Economics and Business Administration and Faculty of Mathematics and Computer Science. They used Moodle and Canvas mainly for assignment creation and submission, for tracking grades and for pushing out information or course materials. Also, it seems likely that the use of LMS will increase.

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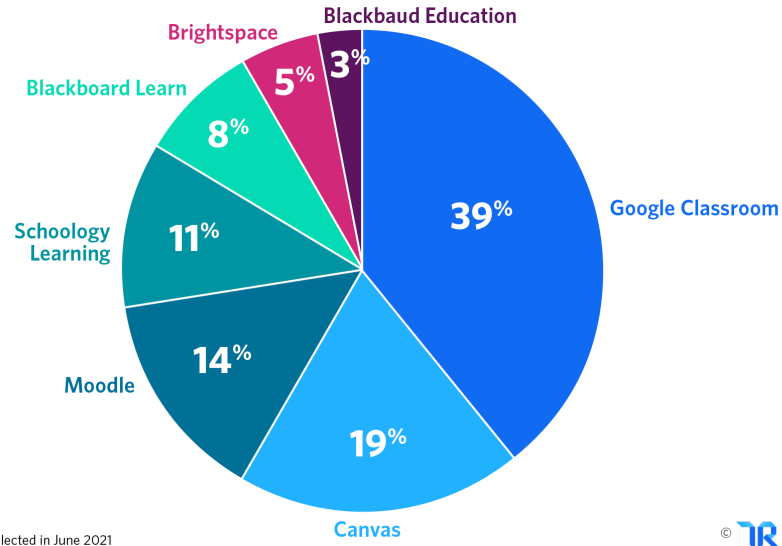
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Table 1.  
**Transylvanian higher education institutions**

University	Faculty	Type of education	LMS used for teaching	LMS used for examination	LMS used before pandemic
Babeş-Bolyai University	Faculty of Economics and Business Administration	online	Zoom, Moodle	Moodle	Moodle
	Faculty of Mathematics and Computer Science	online	MS Teams, Zoom	MS Teams, Zoom, Canvas	Canvas
	Faculty of Psychology and Educational Sciences	hybrid	MS Teams	MS Teams	-
	Faculty of Letters	hybrid	MS Teams, Zoom	MS Teams, Zoom	-
Technical University of Cluj-Napoca	Faculty of Civil Engineering	hybrid	MS Teams, Zoom	MS Teams, Zoom, Moodle	-
	Faculty of Installation Engineering	hybrid	MS Teams	MS Teams, Google Forms	-
	Faculty of Electrical Engineering	hybrid	MS Teams	MS Teams, Google Forms	-
Iuliu Hațieganu University of Medicine and Pharmacy	Faculty of Medicine	face-to-face	MS Teams	face-to-face	-
George Emil Palade University of Medicine, Pharmacy, Science and Technology of Târgu-Mureş	Faculty of Dental Medicine	face-to-face	MS Teams, Blackboard	face-to-face	-
	Faculty of Medicine	face-to-face	MS Teams, Blackboard	face-to-face	-

LIST OF FIGURES

## Market Share of Top LMS Software in 2021



Source: TrustRadius platform data collected in June 2021

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Figure 1

### Market Share of Top LMS Software in 2021

Source: <https://www.trustradius.com/vendor-blog/lms-statistics-trends#one>

World Rank	Institution	Country	National Rank	Quality of Education Rank	Alumni Employment Rank	Quality of Faculty Rank	Research Performance Rank	Score
871	Babeş-Bolyai University	Romania	1	-	-	-	824	71.0
891	Polytechnic University of Bucharest	Romania	2	-	-	-	846	70.9
1010	University of Bucharest	Romania	3	356	-	-	969	70.2
1162	West University of Timișoara	Romania	4	-	-	-	1106	69.3
1217	Carol Davila University of Medicine and Pharmacy	Romania	5	-	-	-	1152	69.0
1452	Alexandru Ioan Cuza University of Iași	Romania	6	-	-	-	1388	67.9
1489	Iuliu Hațieganu University of Medicine and Pharmacy	Romania	7	-	-	-	1422	67.7
1639	Grigore T. Popa University of Medicine and Pharmacy	Romania	8	-	-	-	1564	67.1
1665	Transilvania University of Brașov	Romania	9	-	-	-	1593	67.0
1928	Victor Babeș University of Medicine and Pharmacy, Timișoara	Romania	10	-	-	-	1852	66.0

Figure 2

### Top Universities in Romania in 2021-2022,

Source: CWUR (Center for World University Rankings, [cwur.org](http://cwur.org))