# ICI Learning: Platform Dedicated to Online Learning

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**Abstract:** Over time, technology has developed exponentially, with a major impact in most areas of business around the world. Lately, the evolution of technology has brought an extremely significant contribution to learning and education methods. Online education has gained great popularity among educational institutions and specialization courses. In this paper, we present ICI Learning, a platform dedicated to online learning. We will define traditional and online learning, highlighting the advantages and disadvantages of each learning method. The technologies used in the implementation of the platform and the online learning methods available within it will be discussed. Also, the capabilities offered to each type of existing user will be analyzed in order to extract the benefits of using an online platform.

**Keywords:** education, traditional learning, online learning, platform, technology, ICI Learning, e-learning

## INTRODUCTION

Over the years, it has been proven that education is the basis of the evolution of society. Skills such as reading, writing, communication and other abilities are acquired through education starting at an early age. All large companies and institutions invest significant amounts of money in projects whose main purpose is to educate and specialize employees, increasing the level of education of the population, but also the level of education of company members, which improves the company's image and productivity.

Education is structured on various levels, and the methods by which you can accumulate knowledge have evolved and diversified from era to era. The methods of education and learning are different depending on the skills and knowledge resulting from the learning process. In today's society, everyone is connected through the internet and digital devices. Thus, learning methods have been adapted to modern times and have undergone major changes, simplifying learning activities and even improving the ways of accumulating knowledge. These changes have led to easy access to learning materials, specialization books and new methods of information.

In recent years, the field of education has become extremely popular in society, beginning to be seen as a major opportunity for the development of business ideas. Online education has emerged as a result of technological expansion and the desire of people to learn at their own pace, according to their availability. Despite the popularity of online education among companies and institutions, it is not yet addressed as a universal method of

## TRADITIONAL LEARNING VS. ONLINE LEARNING

With the debut of online learning, a new topic of debate has been opened regarding the choice of the best learning method, online or traditional. Although establishing the process that involves the exact shaping of what it means to move from traditional learning to online learning has encountered some obstacles, a definition of concepts and a differentiation between the two learning methods have been created.

**Traditional learning** is defined as a learning method in which teachers interact directly with students. This method involves the regular presence of students at the courses, the observance of a course program and the interaction in the classroom, face to face, between teachers and students. The traditional learning method helps the teacher to accurately assess the students strengths and weaknesses, thus being able to guide them. Also, the student can share his opinion directly and ask questions on the subject while the teacher presents information, being much easier to explain the answers. The source of information is a traditional one, from the notes taken in the course and books that can be accessed at the library of the respective educational institution [Pinlearn, 2019].

**Online learning** involves attending courses in a virtual environment. Student participation may be mandatory, but due to internet connectivity from anywhere, it is not necessary for required of them to physically be in a certain place to take part in the course. Video conferencing platforms are used to present information, which allows a direct interaction between the student and the teacher. Also, the study program can be a flexible one, being established by the teacher together with the students, in order to make possible the participation in the course of as many people as possible. Online forums,

learning. Most instructors prefer to approach the combined method which involves the use of traditional learning methods for presenting information and the use of online learning methods as a support for the applied part of the learning process.

The whole online learning process is done through e-learning platforms, created especially for accessing information from anywhere you want. Distance learning had existed long before the advent of the Internet. In 1840, Isaac Pitman taught students by mail. He received papers solved by his students, and he sent them back other exercises to be solved [Gogos, 2013]. After 1980, when the advent of the first MAC made it possible to own an individual computer at home, the definition of e-learning and distance learning concepts expanded. Thus, with the rise of the Internet, the term `e-learning` was reduced to online learning, through learning platforms.

emails, online seminars or chat discussions are used to send the student's opinions and questions to the teacher. There are also well-known internet search engines such as Google, Bing, etc. offering free information resources *[Pinlearn, 2019]*.

When trying to extract the advantages and disadvantages of each method in order to determine which one is suitable for the needs of each student, it is very important to detail certain general aspects of learning regardless of the method. One of the essential components when you want to participate in a course is time. Being a student, you have to think about how much time you are willing to spend to learn and get involved in the course activities. It is important how flexible the learning program should be and to what extent the time is allocated for fulfilling the ongoing involvement obligations *[Erstad, 2017]*.

**FLEXIBILITY**

| Online learning | Traditional learning |
|---|---|
| **The online courses are modeled according to on the program of each student and allow the connection at a convenient time. Also, the fact that the connection can be made from anywhere is an advantage for the student, because it saves the time allocated to travel to the educational institution.** | In traditional learning the time schedule is structured and rigid. Due to the fact that physical classes are associated with a course over a period of time, it is very difficult to deviate from the program established by the educational institution. |

Another important aspect in choosing the learning method is the level of discipline and self-motivation. Of course, both methods require some discipline and motivation to be successful, but there are significant differences that can influence the way learning is structured and its quality.

**DISCIPLINE AND SELF-MOTIVATION**

| Online learning | Traditional learning |
|---|---|
| **In online learning, in order to stay up to date with all the courses and tasks associated with it, you must remain motivated to be able to learn. The comfort of home can distract you from learning as efficiently as possible and from accumulating information. Most students develop strategies such as reserving a certain number of learning hours per week or creating a conducive work environment.** | When it comes to discipline and motivation, traditional learning has an advantage through compulsory participation at courses and direct interaction with the teacher. A routine is formed that the student will have to follow, fulfilling the necessary tasks for learning. Also, competitiveness among learners can be an additional reason to stay focused on the purpose of the course. |

A final aspect is the level of social interaction. It is important to analyze whether the interaction with other colleagues and teachers is a motivating factor in the learning process or if the student's prosperity is much higher in an independent study environment.

**DISCIPLINE AND SELF-MOTIVATION**

| Online learning | Traditional learning |
|---|---|
| **Usually the frequency of interaction depends very much on the instructor and the student. If their character is sociable, they will probably choose the method of learning through video conferencing platforms to have a direct interaction. Otherwise, socialization is achieved through discussions on the forum or on chat, e-mails, etc. But these methods do not create a close student-instructor relationship.** | When it comes to discipline and motivation, traditional learning has an advantage through compulsory participation at courses and direct interaction with the teacher. A routine is formed that the student will have to follow, fulfilling the necessary tasks for learning. Also, competitiveness among learners can be an additional reason to stay focused on the purpose of the course. |

Each learning method has its advantages and disadvantages. Ideally, there should be an option that includes the advantages of both methods. An extremely popular approach to achieving this goal is called "blended learning". The concept is based on the implementation of traditional learning, as well as online learning. The application of this concept depends very much on the use case and the subject of the course. For example, if a medical course is organized, the materials and all the necessary information can be presented online, and the practical part can be carried out at the educational institution, in a fixed program. The implementation of this concept allows a flexible program, interaction with colleagues and the teacher and access to a multitude of information resources *[Erstad, 2017]*.

## ADVANTAGES OF ONLINE LEARNING

Online learning has become so popular among educational institutions and companies because it has major advantages over traditional learning. Over the years, it has been observed that this method is much more used due to two essential reasons: the flexibility of the program and the costs involved in learning. In the following we will highlight the reasons why online learning is very effective *[Dexway, 2020]*.

**Students learn more through online learning methods** – online courses give students full control over learning, allowing everyone to learn at their own pace. Given the technological evolution, multimedia materials have become much more used and preferred by many. They can be accessed much more easily, portable from one device to another and do not take up physical space. Also, the availability of online courses is a major advantage because video recordings and associated materials can be viewed at any time, not just at a certain point in time.

**Attention is much more easily maintained in online courses** – maintaining the student's attention is a major goal for a teacher. This involves a major effort to ensure that the course is as interactive and interesting as possible

for students. It turned out that students lose their interest much faster in courses that use traditional methods than in online courses. This is due to the fact that students have to focus their attention for a period of time only on a lecture that sometimes they do not even understand, being necessary to provide further information on the subject. It is extremely important for the student to organize himself taking into account his rhythm in order to be able to learn as efficiently as possible and to accumulate as much information as possible.

**Online learning involves less time invested** – participation in physical courses, in addition to the time allocated to the course, requires time to wait for tutors and colleagues and travel the route to the educational institution. Saving time for a student who can be hired full time is a great benefit. In general, e-learning options allow students to share time as is more convenient for them. They are not obliged to allocate long periods of time, sometimes it is enough to learn for half an hour during the lunch break.

**Frequent assessment reduces distraction and increases student involvement** – student involvement may increase due to evaluation seen as an ongoing process. The alternation of multimedia materials with periodic tests allows the frequent evaluation of knowledge and skills. In this way students are monitored more often, being an advantage for them because in this way the ability of teachers to achieve when assistance is needed increases and their interventions are much more relevant in the learning process.

**The costs are low** – The costs required for online learning are low compared to traditional learning. Expenses in online learning are reduced to course fees, while in traditional learning the costs involve paying fees, transportation, library subscription, etc. The costs exist in both approaches but it is important to analyze the long-term investment.

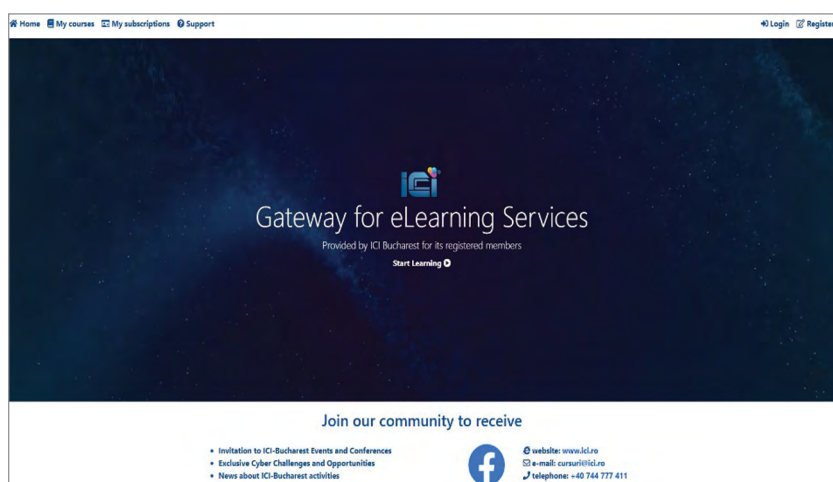## ICI LEARNING PLATFORM – OVERVIEW

Over time, multiple e-learning platforms have been developed in order to simplify the learning

process. Platforms such as Moodle, Google classroom, Edmodo and others have become indispensable tools when it comes to online learning. An e-learning platform must respect certain aspects in order for online learning to be fully realized with its help.

ICI Learning is a learning platform (e-learning) developed by the National Institute for Research and Development in Informatics – ICI Bucharest. The main purpose of the platform is to offer users the possibility of online learning, individually or coordinated by a lecturer, of specialized courses and trainings. The platform is a solid support in online learning, through which a wide range of specialized materials are accessible, which can contain theoretical and practical information. It is also available to conduct courses on a video and audio conferencing platform, thus allowing their support in real time by readers. The integration of a video and audio conferencing platform facilitates the student-reader interaction.

Access to the ICI Learning platform is achieved by creating a user account and validating it by email. Subsequently, the user registration for the course will be done with a unique key, provided by ICI Bucharest. The access rights of the users will be established by the administrators of the platform, depending on the role associated to each one. The platform offers readers the opportunity to upload training materials, set up online meetings to support the course in real time and post announcements of interest to students. Students are offered many features such as downloading course materials, participating in online meetings and maintaining ongoing contact with the course lecturer through the integrated video conferencing platform. The platform can be accessed through a browser, at www.learning.ici.ro



## TECHNOLOGIES

The implementation of the ICI Learning platform consisted in the use of new and innovative technologies, which led to the simplification of the development process and the structuring of the necessary information and data.

The main framework used is Microsoft ASP. NET Core. ASP.NET Core is an open-source and cross-platform framework for building modern cloud-based Internet-connected applications, such as web applications, IoT applications, and mobile backends *[Roth, 2017]*. It aims to develop the Model - View - Controller paradigm applications. In a common application implemented in ASP.NET Core you will find:
• Date (Model)
• Interface for viewing and editing data (View)
• Operations that can be performed on data (Controller)

The model represents the data and does nothing else. It does not depend on the controller or the view. The view displays model data and sends user actions (for example, button clicks) to the controller. The controller provides model data for viewing and interprets user actions, such as button clicks. The controller depends on the visualization and model.

The database was implemented using Microsoft SQL Server. This is a relational database management system (RDBMS) produced by the American company Microsoft Corp. The query

language is SQL and the procedural extension is T-SQL *[Wikipedia, 2020]*.

HTML markup language was used for the design of the platform, dedicated to viewing documents, files, etc. on a website. All elements that display the application data are implemented in HTML and stylized using the Bootstrap 4 library.

The application authentication system is generated using the ASP.NET Core framework, and the course registration key generation system is implemented by the platform developers, ensuring their uniqueness and security.

## FUNCTIONALITIES

The ICI Learning platform points out addresses all the needs of a student but also of a teacher. The implementation of the platform treats every functionality used for online learning, considering the perspective of each user.

In terms of general functionality, a user has access to general data about the platform such as contact details and presentation page. The platform has an authentication system through which you can create an account and access the courses associated with it. Also, you can execute all the commands specific to an account, such as resetting the password, adding additional information, resetting the email, adding two-factor authentication, etc.

ICI Learning platform offers the student all the necessary functions for learning. After the student has created an account, he will receive the enrollment key for the courses he must attend. A student can only view the courses associated with his account. Within the course page he will be able to access all the media content provided by the teacher. At the same time, the student has the permission to participate in all the courses organized by the teachers through a videoconferencing platform integrated in the learning platform. Students can give feedback on the courses they have attended and can share their opinion on the topics covered. From the teacher's perspective, the ICI Learning platform meets all the desired

requirements. After the account has been created, the teacher is allowed access to specific features. A teacher can create the course curriculum in an organized and structured manner. It can upload materials and videos for students. You can also organize online meetings through the integrated video conferencing platform.

The platform offered by ICI is very suitable for professional development within companies, being easy to customize for the needs of each institution. Also, course registration is based on a secure authentication system that allows activity monitoring.

## FUTURE DEVELOPMENTS

Currently, the platform contains all the basic functionalities for online learning to offer benefits to the learner and to be efficient in terms of information accumulation and time organization. An important functionality that will be implemented within the platform will be the creation of a digital library. This will represent a space with additional materials to those offered in the courses, which aim to help the student with resources that can be used to write articles or doctoral theses, to deepen knowledge, etc.

## CONCLUSION

Education has become extremely important over the years, being the basis of innovation and evolution. Learning methods have been diversified due to the society that with the evolution of mankind has become more and more eager for information. If in the past power was represented by the army or money, in our time power means information.

Nowadays, education has become much more accessible and its importance is no longer capitalized only in educational institutions, but also in large companies. Their leaders invest a lot of money and a lot of time for the professional development of their employees. Online learning is a simple and accessible method to be able to learn alone or with the help of a teacher. It is a learning method that does not

involve many costs, allows a flexible learning program and offers the opportunity for each student to learn at their own pace. ICI Learning offers all the advantages of online learning and even more. It has been implemented to meet all the requirements of online learning and to be easily customized for the needs of each user. Until now, an online course organized by ICI Bucharest has already successfully taken place over a period of eight weeks. Currently, everyone's favorite method is online learning through e-learning platforms. For those who want to learn quickly and efficiently, the ICI Learning platform is the ideal environment for development and information.

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