

## ISCED Classification Influence on E-Learning Education Systems

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*The ISCED classification used in education is the most important step in designing and constructing forecasts and prevision models. The very basis of the classification is applicable both on the formal education and on the non-formal education. While the education process nowadays is conducted in universities, there are many categories of education providers that choose e-learning platforms. To better understand how their trajectory can be correct, the present article sustains the idea that the ISCED classification points e-learning platforms in the right direction. This direction is meant to compress the education idea to basic competencies, skills and learning outcomes that the graduate can acquire during the education process. Using variables collected on the base of the ISCED classification and statistical distributions, we present the e-learning concept in Romania. The article is divided into two main sections. The first section focuses on e-learning platforms and the percentage of the population that used such platforms for education. The second section presents the inclusion of the ISCED classification in e-learning platforms. Using the ISCED classification, we can conclude that people with higher levels of education have a higher chance of using e-learning instruments.*

**Keywords:** e-learning, ISCED 1997, ISCED 2011, online courses

### Introduction

The International Standard Classification of Education (ISCED) is the line that guides education systems on similar paths. ISCED is not only important to governments around the world, but to students and graduates as well. To fulfill a program of study during a lifetime is the first step. The second step is to take all the results (knowledge, skills, and autonomy and responsibilities) and use it in every country at the same level. This is possible only by using a system of recognition that creates a solid line between every level of education.

In time, education programs have evolved. The knowledge has changed, the tools that were used 3 decades ago are no longer used. Education is evolving and people are on the same path as well. In the age of the internet, learning is accomplished online using tools at our reach. People around the world stopped using libraries for knowledge and started using “Wikipedia”. Tasks are no longer made with pen and paper, but with technological aid, such as computers.

On the other hand, education is still where it was 3 decades ago. Teachers still hold lectures

in front of students. Lessons are learned from books and notes are made by pen and paper. The advantage, however, is the online medium. E-learning platforms combine not only the physical study process in the classroom, but also provide additional resources for the student.

People can still go through every level of education as they did fifty years ago, but they can use e-learning platforms to become better in a chosen sector and participate in lifelong learning. The best education is lifelong education. E-learning has been widely used in universities and higher education institutions as a supplement to the traditional face-to-face classroom learning environment as well as in the continuing education and distance education institutions. [1]

The definition of e-learning is controversial, as it changes over time. In the past 40 years, e-learning has evolved in the sectors of education, business and training. It was used to support teaching and learning with computers. [1]

**The ISCED classification**

The ISCED classification was designed by UNESCO and implemented in the 1970 - 1975 timeline and achieved the first form in 1997 (Table 1). The main goal was to create a statistical preview on study programs

following primary education, secondary education, and higher education. After the Bologna process in tertiary education, ISCED has received a new form and in 2011 a new implementation was released (Table 1).

**Table 1: Correspondence ISCED 1997-ISCED 2011**

ISCED 1997		ISCED 2011	
Level	Name	Level	Name
	-	01	Early childhood education - Early childhood educational development
0	Pre – primary education	02	Early childhood education - Pre-primary education
1	Primary education or first stage of basic education	1	Primary education
2	Lower secondary or second stage of basic education	2	Lower secondary education
3	(Upper) secondary education	3	Upper secondary education
4	Post – secondary non- tertiary education	4	Post – secondary non – tertiary education
5	First stage of tertiary education	5	Short – cycle tertiary education
		6	Bachelor’s or equivalent level
		7	Master’s or equivalent level
6	Second stage of tertiary education	8	Doctoral or equivalent level

Source: UNESCO Institute for Statistics [2]

Another important benefit of ISCED is that (Table 2). the classification implies a fields stratification

**Table 2: ISCED 2013 – F (Fields of education)**

Level	Name
00	Generic programs and qualifications
01	Education
02	Arts and humanities
03	Social sciences, journalism and information
04	Business, administration and law
05	Natural sciences, mathematics and statistics
06	Information and Communication Technologies
07	Engineering, manufacturing and construction
08	Agriculture, forestry, fisheries and veterinary
09	Health and welfare
10	Services

Source: UNESCO Institute for Statistics [3]

Collecting data on diversified categories of variables regarding education policymaking

can be structured with a strong base. Countries structure their education system based on ISCED and the results are processed using a single classification for a more comprehensive conclusion.

### Methodology

The ISCED classification was created based on a statistical point of view. Countries are required to collect data on various categories of information and distribute it using the ISCED levels. This comes as a great advantage proved even in our current research. Using variables collected on the base of the ISCED classification we evaluate the e-learning concept in Romania. Moreover, we use different points of view and arguments on e-learning at an international level.

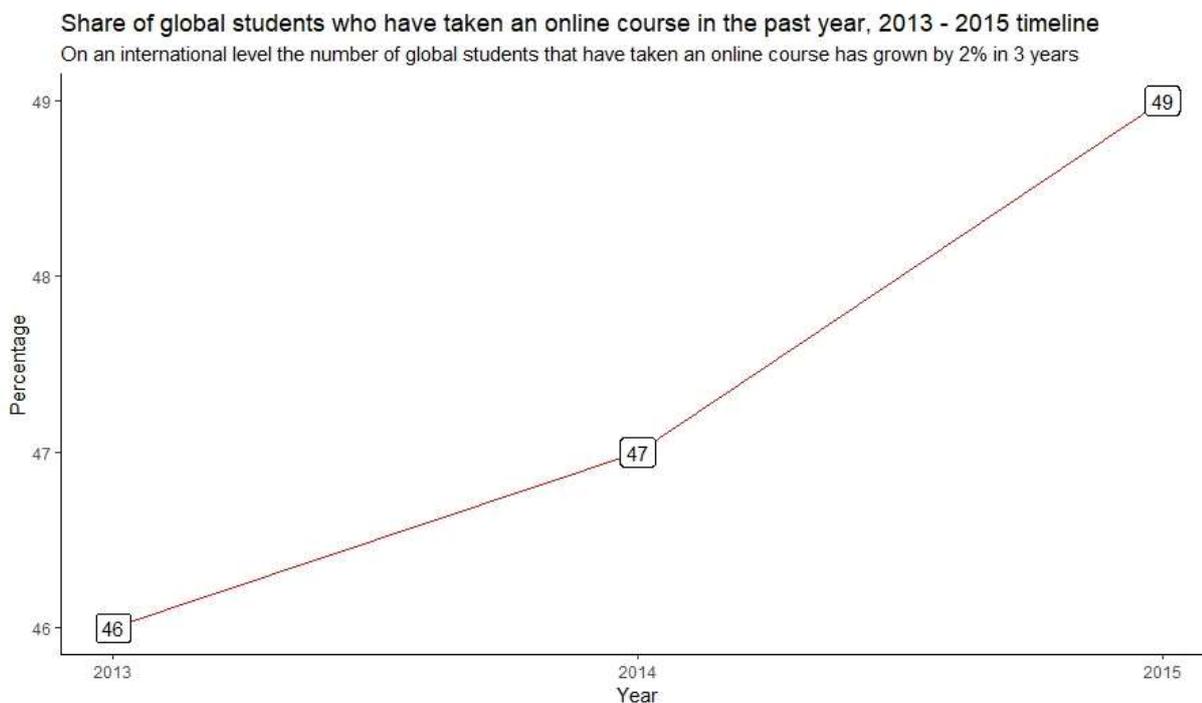
Using the ISCED classification on fields and levels we use statistical distributions to present trends in e-learning. The main variables used are individuals using the internet for online courses and educational information, individuals using the internet to find information on online courses, the global

share of students who have taken an online course, participation rate in online courses based on the ISCED classification, and information search on education based on the ISCED classification.

### E-learning education

The beginning of the 21st century was relative to online courses. Research showed that web-based conferencing systems and the support for audio and video on the web complete the online course picture of an integrated environment for delivering content and participant interaction through one login sequence. [4].

Nowadays, on a global level, the total share of students who have taken an online course in the 2013 - 2015 approaches 50%. In 2013, approximately 46% of the students enrolled took online courses. In 2014, the percentage grew with 1% and in 2015 it reached 49%. Considering the positive trend, the global share of students that take online courses will grow (Fig 1).



**Fig 1.** Share of global students who have taken an online course (2013 – 2015) – Data source: Statista [14]

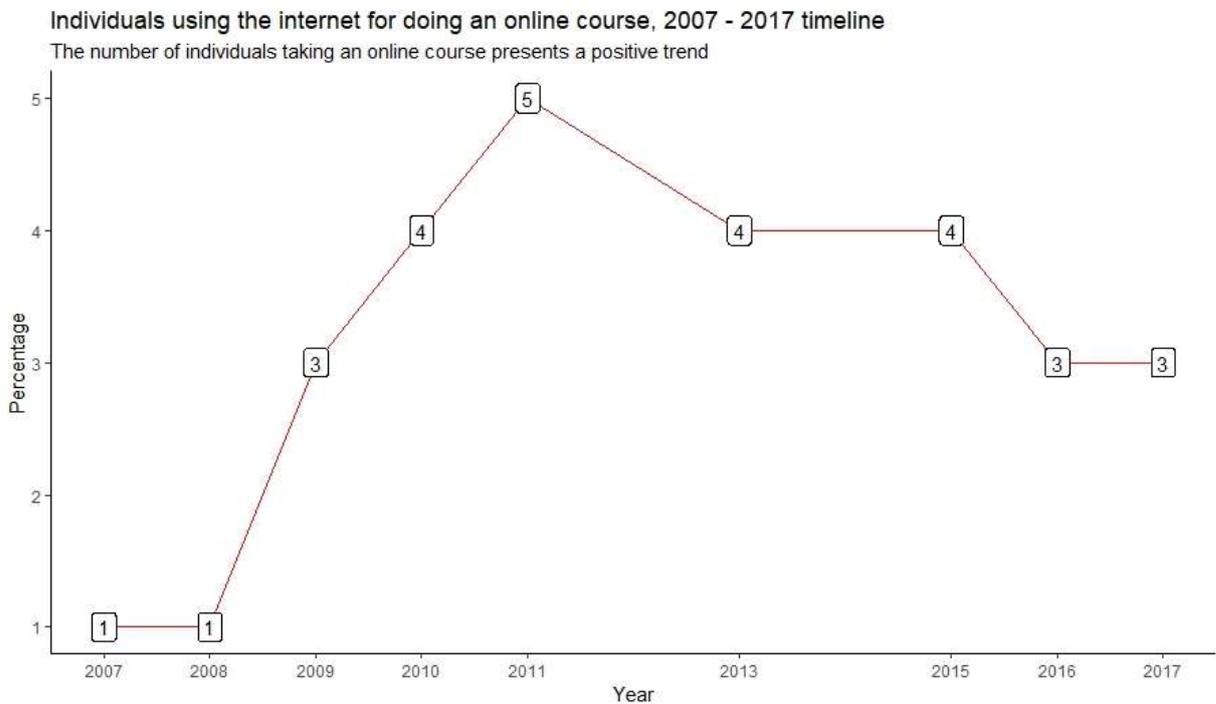
Research proves there are two main reasons [5] for studying student engagement in online

courses. First of all, online courses have proved to be very effective as a supplement to

traditional education and have grown abundantly in the last 15 years. The growth of online courses continues to rise as proven in Fig 1. In 2005, 3.2 million universities higher education students were taking at least one online course, from 2.3 million in 2004. Second of all, one of the primary components of effective online teaching is student engagement. Considering the numbers in 2015, we can go on the right path and affirm that online courses have a certain positive attraction to students. Predicting student enrollment has been researched in the latest years [6]. Finding concluded that giving two cohorts of a student population, the first cohort is 33% less likely than others to drop out on a given week of an online course. Predicting cohorts of classes can benefit both the university from a financial point of view and the students from a qualitative point of view. The educational system can benefit overall only by passing a strong and positive

approach to classifying students and focusing on weak points.

Online courses cannot survive without the internet. In Romania, the number of individuals that were using the internet for doing an online course as a percentage from the total population presents a fluctuating trend in the 2007 - 2017 timeline (Fig 2). In the 2007- 2008 period, only 1% of the population used the internet for online courses. The 2009 - 2011 timeline provides a positive trend and after that, the percentage starts to drop. 4% in 2013, dropping to 3% in 2017. The important aspect coming from this evolution is that all the population is using the internet from online courses. The problem also with this evolution is that it does not provide a specific classification to the population. The ISCED classification can provide levels of education to each population group and by doing so can contribute to policy-making for better quality.



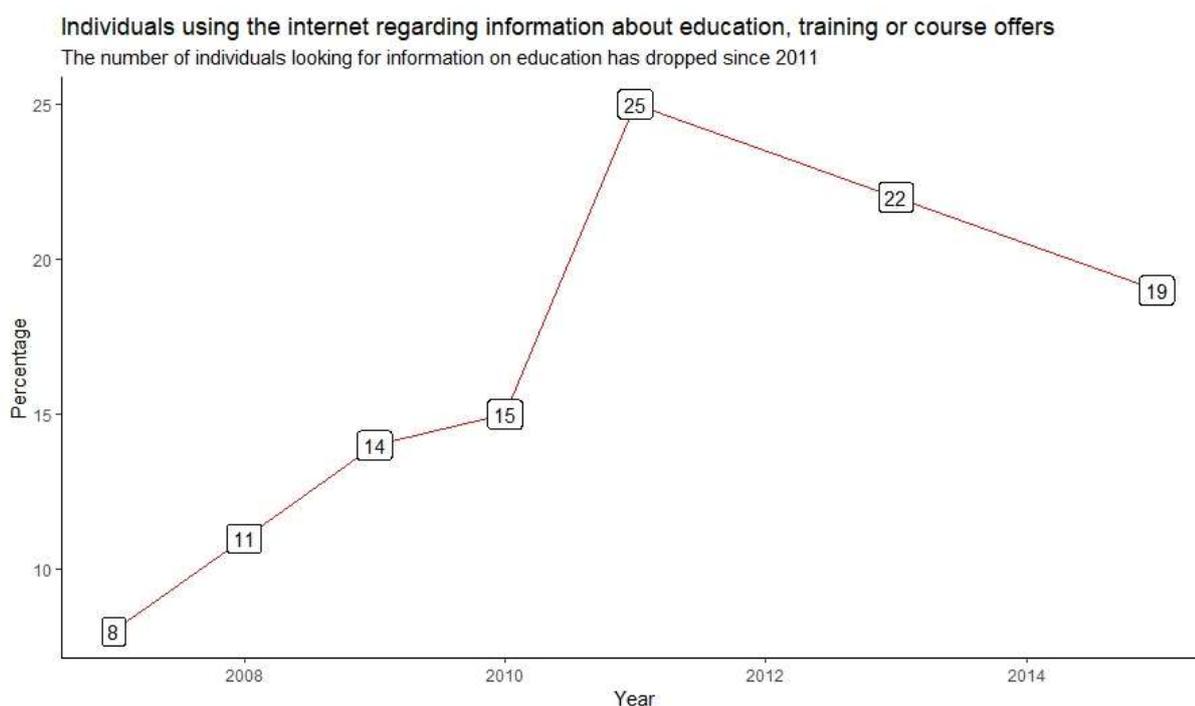
**Fig 2.** Individuals using the internet for doing an online course (2007-2017) – Data source: Eurostat [15]

On the other side, online courses distribution and marketing can be an important factor in quality. The number of individuals that have been using the internet to look for information

about education, training and online course offers has grown in the last 10 years. If in 2008, only 8% of the individuals searched information on such subjects, in 2017 more

than 19% of the individuals do (Fig 3). The peak point in this activity was 2011, right after the release of ISCED 2011 after the implementation of the Bologna Process. Classifying the education levels can prove effective to better understand trends in populations. 19% of the population uses the internet for information on education. Implementing ISCED in e-learning, both formal and informal learning can improve

their quality based on the population it represents. Recent studies found out that online courses are not reaching high numbers of less-educated individuals in developing countries. Despite optimistic and aspirational declarations of many online courses providers, these courses are not making education "borderless, gender-blind, race-blind, class-blind, and bank account-blind"[7].



**Fig 3.** Individuals using the internet regarding information about online courses – Data source: Eurostat [15]

There are individual and societal benefits to providing university-level education free of some of the traditional barriers to participation in elite education, such as cost and academic background. Online courses may favor those who are already educationally privileged. The students from Coursera are already educated to at least undergraduate degree ISCED level, with 42.8% holding a bachelor's degree, and a further 36.7% and 5.4% holding master's and doctoral degrees [8].

#### **Including ISCED in e – learning**

Using the ISCED classification a research was developed regarding e-learning in the Health Field of Education and Training of the International Standard Classification of

Education. 29% of the students enrolled in e-learning showed significantly higher knowledge gains, 40% of the studies showed significantly greater skill acquisition, 67% of the studies showed no difference in attitude and 14% of the studies showed higher satisfaction with online e-learning than traditional learning. The participants in the included studies were from the fields of medicine, dentistry, pharmacy or medical allied studies enrolled at universities based on the ISCED classification.

Based on the ISCED classification in Romania, the participation rate in informal learning including online courses has grown considerably in the 2008 - 2016 timeline. Including all the ISCED levels, in 2016, there

was a participation rate greater than 60%, with more than 35% than in 2008. For the population with less than primary, primary and lower secondary education, the participation was lower with 14% than the medium of all groups. The Upper secondary and post-secondary non-tertiary education

category proved to have the greatest participation rate in an online course with more than 82%. Tertiary education, on the other hand, reaches the same level as the medium of all ISCED levels, around 64% (Fig 4).

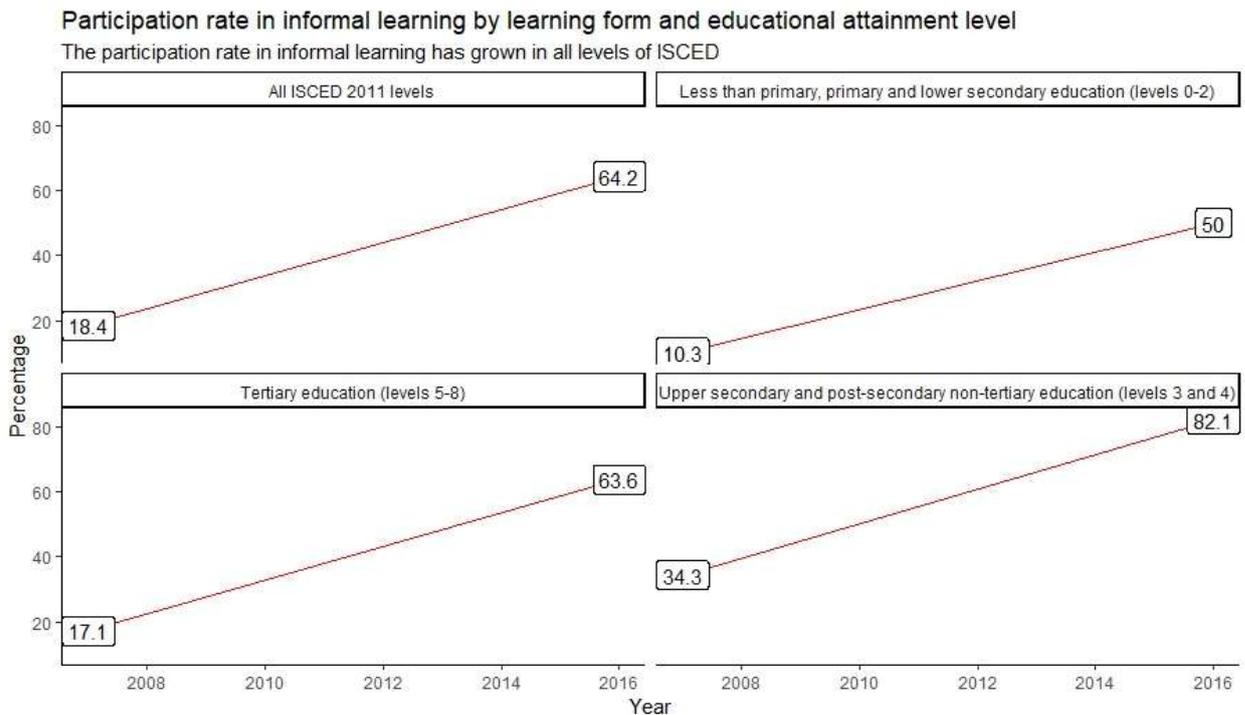


Fig 4. Participation rate in informal learning – Data source: Eurostat [15]

One important aspect of e-learning education is finding information about it [9]. Online forums serve a number of roles. The first is a mechanism for obtaining direct help with an education problem, assessment or understanding of a concept. The second is as another mode of teaching to replace the face-to-face tutorial [10] and finally, the online forum creates a space for exploring the subject matter, forming relationships and collaborating for project work and other assignments [11]. Forum plays a vital role in online courses as they help establish a community through which means learners generate knowledge.

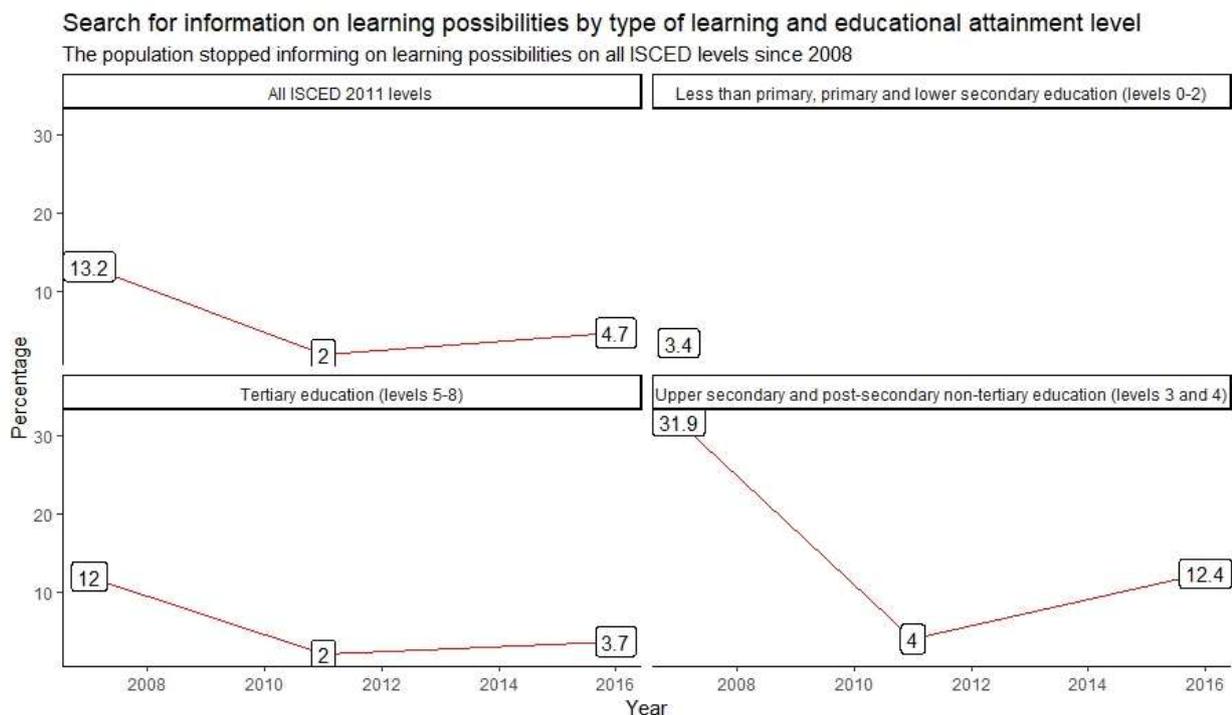
In online education, there are presently a number of technologies and instructional activities used to promote course interactions. Frequently used technologies in online courses include textbooks; multimedia that

combines text, images, and audio either through the Internet or CD Rom; streaming audio and video; and synchronous and asynchronous communication tools, such as discussion boards, instant messaging, and voice chatting, and file-sharing [12]. However, the availability of these technologies does not necessarily mean that they are present in every online course. In addition, [13] point out that the choice of technologies used in online courses is more often decided by economic, technical, or even political motives rather than pedagogical rationales.

In Romania, the population category that has the greatest percentage in searching for information about learning possibilities based on the ISCED classification is the one with upper secondary and post-secondary non-tertiary education levels. More than 30% of

the population proved to search for information on online courses. This comes in contrast with the category of the population

that is found in the tertiary education ISCED level (Fig 5).



**Fig 5.** Search for information on learning possibilities – Data source: Eurostat [15]

## Conclusions

Using the ISCED classification, we have found that 31.9% of the population with upper secondary and post-secondary non - tertiary education is more likely to search for information on learning possibilities. Altogether, taking the medium of all the ISCED levels, 13.2% of the population consider searching information on learning possibilities including online courses.

Informal learning benefits more and more from the same category of population with upper secondary and post-secondary non-tertiary education levels. More than 82% participate in informal learning in Romania. The tertiary education level is on the same level as the ISCED classification medium on all levels. The population with less than primary, primary and lower secondary education is participating only with a 50% distribution.

50% of the global share of students around the round participate in online courses. Considering the ISCED classification we can

affirm that the global student population with ISCED levels of 6, 7, and 8 have a 50% participation rate in online courses.

In Romania, more than 25% of the population has searched for information on online education, courses, and other instruments but only 5% actually participate. In 2017, 19% of the population searched for information on online courses but only 3% has managed to start an online course. Using the ISCED classification we can conclude that the population with tertiary education and upper secondary, post-secondary non-tertiary education have a higher chance of using e-learning instruments.

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