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POSTGRADUATE PROGRAMS IN ROMANIA

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Abstract: Lifelong learning in Romania and Europe has encountered fluctuations in the last few years. For the first time adult learning is one of the main priorities for the European Union. The COVID-19 pandemic came as a downturn for education all over the world and the need for specialized workers is at maximum. The specialization in once's field or in different fields gave lifelong learning a boost in Romania and in Europe. Postgraduate programs are niche programs that bachelor graduates can attend. They are specialized programs for obtaining new skills and qualifications. They are short term or long term programs and may have a fee or may be free of charge. They don't have the constraints of classical education.

Key words: lifelong learning, postgraduate programs, adult learning.

1. INTRODUCTION

Romania's current stage of adult education may be characterized as one that is under a continuing development, with a series of opportunities but, at the same time with many problems. To perform a quality education are needed good, qualified educators. According to the book "The art of being an adult educator", an adult cannot educate another adult. An adult can only help another adult, can give them guidance, but the learning is done by the grown-up learner. Counseling is very important in lifelong learning and especially in postgraduate education [1].

Adults with a higher level of education are more willing to continue learning than adults with a lower level of education. Richard Anderson and Gordon Darkenwald developed this theory in 1979. They also found a close link between age and participation in education, namely, as people get older, the lower the predisposition to learning is. Similar studies have been undertaken more recently by the European Union which have had comparable results [2, 3].

We've introduced the types of postgraduate programs in Romania, the number of the programs as well as the number of adults that have registered and graduated in the past few years a postgraduate program. The focus was

made especially for the postgraduate programs in technical fields.

What we wanted to establish is that this type of continuing education, namely postgraduate programs is very little developed in Romania. There are few statistical data related to postgraduate programs, data taken from the National Register of Postgraduate Programs as well as from the Report on the state of higher education in Romania 2021-2022. The European Union has very well-established objectives for the member states for adult learning, but they are not broken down for program types, like postgraduate programs, so Romania does not have clear objectives set for this kind of programs either [4-6].

2. TYPES OF POSTGRADUATE PROGRAMS IN ROMANIA

Higher education institutions that provide accredited undergraduate and master's degree programs in a scientific subject are qualified to organize postgraduate programs in the same field of study. Only the subjects of university studies that are already recognized and certified by the Romanian Ministry of Education are eligible for postgraduate programs. Postgraduate programs are, according to the Romanian Education Law no. 1/2011 [7]:

- Advanced postdoctoral research programs;
- Postgraduate training and continuing professional development programs;
- Postgraduate improvement programs.

Postgraduate training and continuous professional development programs represent the educational offer for updating and developing new occupational and professional skills. To improve, complete, or acquire information, attitudes, skills, talents, or professional skills of a person who already holds a university degree, postgraduate training programs are on the educational offer for professional training that produces new learning outcomes. The classification of current permanent postgraduate education programs is according to the Framework methodology of August 12, 2019. Among them there are [8]:

- Postgraduate initiation programs – these are short programs and represent the educational offer for the acquisition of knowledge and skills according to the needs of Classification of Activities in the Romanian National Economy and activities and new occupations and professions from COR (Classification of Occupations in Romania);
- Postgraduate programs for professional development of adults;
- Postgraduate specialization programs which are based on specialized, theoretical, and applied disciplines;
- Postgraduate qualification and requalification programs represent the educational offer for professional training that leads to the acquisition of all learning outcomes that allow a person to carry out activities specific to one or more occupations.

Another type of postgraduate program is the conversion program. This type of program is designed for pre-academic teachers. A conversion program may only be organized by higher education institutions. The purpose of this type of program is that the pre-university teachers acquire new skills for new specializations and/or to hold new teaching positions, other than those held based on their initial training. Only teachers included in the pre-university education system with a bachelor's degree or equivalent may enroll in a professional conversion program. This specific

type of program may be organized with funding from European funds, on a fee or with funding from other sources.

The curriculum for a professional conversion program is developed by the department or faculty based on their own procedures. The internal circuit for the completion of the curriculum ends with the approval by the University Senate and with information sent to the Ministry of Education.

The length of a professional conversion program is at least 3 semesters corresponding to the accumulation of a minimum number of 90 transferable study credits if, through the conversion program, skills are obtained to teach a discipline in the fundamental field related to the field of specialization registered for the bachelor's degree. Professional conversion programs that acquire the teaching skills of a discipline in a fundamental field other than the fundamental field related to the field of specialization entered on the bachelor's degree have a minimum length of 4 semesters, corresponding to the acquisition of 120 transferable credits. [9]

3. POSTGRADUATE PROGRAMS IN ROMANIA

3.1 Postgraduate programs enrolled in NRPP

According to the Framework Methodology of August 12, 2019, higher education institutions in Romania are required to communicate to the National Authority for Qualifications the information necessary for the registration of postgraduate programs in the National Register of Postgraduate Programs (NRPP) [8]. Early in March 2023 in NRPP were registered 459 postgraduate programs, as follows in Table 1.

Most postgraduate programs, namely 71.68% (329 programs) are training and continuous professional development programs, followed by postgraduate improvement programs with 13.94% (64 programs) and postgraduate programs of permanent education – development 10.68% (49), specialization 2.17% (10 programs), qualification and requalification 0.87% (4 programs) and initiation 0.65% (3 programs) (Figure 1).

Table 1
The number of postgraduate programs registered in NRPP.

No.	Postgraduate program type	No. of programs
1.	Training and continuing professional development programs	329
2.	Improvement programs	64
3.	Permanent education - Development	49
4.	Permanent education - Specialization	10
5.	Permanent education - Qualification and requalification	4
6.	Permanent education - Initiation	3
Total		459

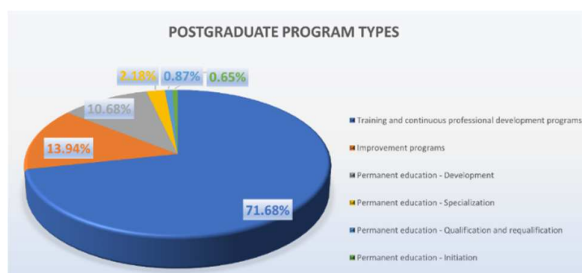


Fig. 1 Types of postgraduate programs registered in NRPP.

3.2 Postgraduate program organizers

According to NRPP in March 2023, 48 out of the 97 Universities in Romania conducted postgraduate programs, as can be noted in Table 2 [4]. We represented graphically in Figure 2 the first ten occupied positions considering the number of programs run. The Technical University of Cluj-Napoca (UTCluj) ranks 4th nationally considering the number of postgraduate programs registered, with 31 programs.

Table 2
Postgraduate program organizers

No.	The name of the Higher Education Institution	No. of programs
1.	Academia de Studii Economice din București	66
2.	Universitatea Dunărea de Jos din Galați	42
3.	Universitatea Tehnică Gheorghe Asachi din Iași	40
4.	Universitatea Tehnică din Cluj-Napoca	31
5.	Universitatea Națională de Apărare Carol I din București	28
6.	Școala Națională de Studii Politice și Administrative din București	21

No.	The name of the Higher Education Institution	No. of programs
7.	Universitatea Politehnică din București	21
8.	Universitatea de Vest din Timișoara	19
9.	Universitatea Babeș-Bolyai din Cluj-Napoca	16
10.	Universitatea din București	13
11.	Universitatea din Petroșani	12
12.	Universitatea din Oradea	12
13.	Universitatea Lucian Blaga din Sibiu	11
14.	Universitatea Politehnică Timișoara	9
15.	Universitatea Aurel Vlaicu din Arad	9
16.	Universitatea din Craiova	9
17.	Academia Forțelor Terestre Nicolae Bălcescu din Sibiu	8
18.	Academia de Poliție Alexandru Ioan Cuza din București	8
19.	Universitatea de Medicină, Farmacie, Științe și Tehnologie George Emil Palade din Târgu Mureș	7
20.	Academia Națională de Informații Mihai Viteazul din București	7
21.	Academia Navală Mircea cel Bătrân din Constanța	5
22.	Universitatea Ștefan cel Mare din Suceava	5
23.	Universitatea Titu Maiorescu din București	5
24.	Universitatea Agora din Municipiul Oradea	4
25.	Academia Forțelor Aeriene Henri Coandă din Brașov	4
26.	Universitatea Danubius din Galați	4
27.	Universitatea Națională de Educație Fizică și Sport din București	3
28.	Universitatea de Științele Vieții "Ion Ionescu de la Brad" din Iași	3
29.	Universitatea George Bacovia din Bacău	3
30.	Academia Națională de Muzică Gheorghe Dima din Cluj-Napoca	3
31.	Universitatea din Pitești	3
32.	Universitatea de Vest Vasile Goldiș din Arad	3
33.	Universitatea Petre Andrei din Iași	3
34.	Universitatea Națională de Muzică din București	2
35.	Universitatea de Științe Agronomice și Medicină Veterinară din București	2
36.	Universitatea Vasile Alecsandri din Bacău	2

No.	The name of the Higher Education Institution	No. of programs
37.	Universitatea Athenaeum din București	2
38.	Universitatea Transilvania din Brașov	2
39.	Academia Tehnică Militară Ferdinand I din București	2
40.	Universitatea Dimitrie Cantemir din Târgu Mureș	2
41.	Universitatea de Medicină și Farmacie Carol Davila din București	1
42.	Academia Română	1
43.	Universitatea 1 Decembrie 1918 din Alba Iulia	1
44.	Universitatea Tehnică de Construcții din București	1
45.	Universitatea Valahia din Târgoviște	1
46.	Universitatea de Medicină și Farmacie Iuliu Hațieganu din Cluj-Napoca	1
47.	Universitatea Națională de Artă Teatrală și Cinematografică I. L. Caragiale din București	1
48.	Universitatea Emanuel din Oradea	1
Total		459

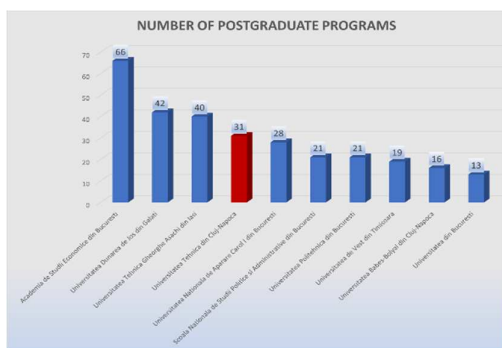


Fig. 2 The number of postgraduate programs.

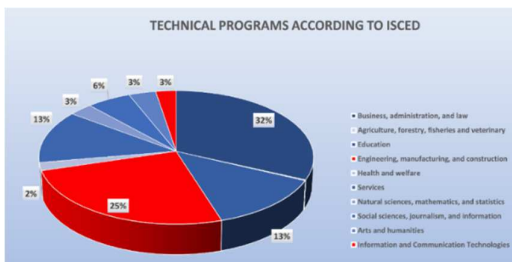


Fig. 3 Technical field programs registered in the NRPP.

3.3. The number of postgraduate programs by the ISCED domain

ISCED (International Standard Classification of Education) is an international classification made by the United Nations for the structure of

education programs by levels and fields. This classification first came out in 1970 and was reviewed along the way [10]. According to ISCED, there are 10 levels with categories and sub-categories. The 10 wide areas are: Education; Arts and humanities; Social sciences, journalism, and information; Business, administration, and law; Natural sciences, mathematics, and statistics; Information and Communication Technologies; Engineering, manufacturing, and construction; Agriculture, forestry, fisheries and veterinary; Health and welfare; Services.

Table 3 presents the number of programs registered in the NRPP according to the ISCED domain. It is obvious that most of the programs are in the field 04 – Business, administration, and law (146 programs) and the field 07 – Engineering, manufacturing, and construction (116 programs)

3.4 Postgraduate programs in technical fields

Of the 10 fields of ISCED, two of them are technical fields, as follows: 06 - Information and Communication Technologies; 07 - Engineering, manufacturing, and construction.

Within these two technical areas, 128 programs are registered in the NRPP, which represents approximately 28% of the total programs (Figure 3). In Table 4, we have listed all the 23 universities that organize programs in the technical field in Romania.

Table 3

The number of programs enrolled in NRPP according to ISCED.

No.	ISCED fields of education	No. of programs
1.	04 Business, administration, and law	146
2.	07 Engineering, manufacturing, and construction	116
3.	01 Education	60
4.	10 Services	59
5.	03 Social sciences, journalism, and information	26
6.	02 Arts and humanities	16
7.	05 Natural sciences, mathematics, and statistics	14
8.	06 Information and Communication Technologies	12
9.	09 Health and welfare	9
10.	08 Agriculture, forestry, fisheries and veterinary	1

No.	ISCED fields of education	No. of programs
Total		459

Table 4

The number of postgraduate programs from technical fields registered in NRPP.

No.	The name of the Higher Education Institution	No. of programs
1.	Universitatea Tehnică Gheorghe Asachi din Iași	39
2.	Universitatea Tehnică din Cluj-Napoca	30
3.	Universitatea Politehnică din București	12
4.	Universitatea Politehnică Timișoara	7
5.	Academia Navală Mircea cel Bătrân din Constanța	5
6.	Universitatea Dunărea de Jos din Galați	4
7.	Universitatea Lucian Blaga din Sibiu	4
8.	Universitatea din Oradea	4
9.	Universitatea Babeș-Bolyai din Cluj-Napoca	3
10.	Universitatea Ștefan cel Mare din Suceava	2
11.	Universitatea de Științe Vieții "Ion Ionescu de la Brad" din Iași	2
12.	Universitatea de Științe Agronomice și Medicină Veterinară din București	2
13.	Academia Tehnică Militară Ferdinand I din București	2
14.	Universitatea de Medicină, Farmacie, Științe și Tehnologie George Emil Palade din Târgu Mureș	2
15.	Universitatea de Vest din Timișoara	2
16.	Universitatea Vasile Alecsandri din Bacău	1
17.	Universitatea Aurel Vlaicu din Arad	1
18.	Universitatea Athenaeum din București	1
19.	Universitatea din Craiova	1
20.	Universitatea Valahia din Târgoviște	1
21.	Universitatea din Petroșani	1
22.	Universitatea de Vest Vasile Goldiș din Arad	1
23.	Universitatea Tehnică de Construcții din București	1
Total		128

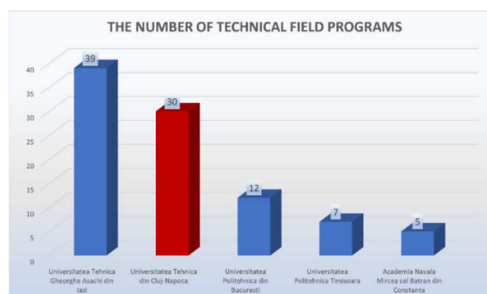


Fig. 4 The number of technical field programs registered in NRPP.

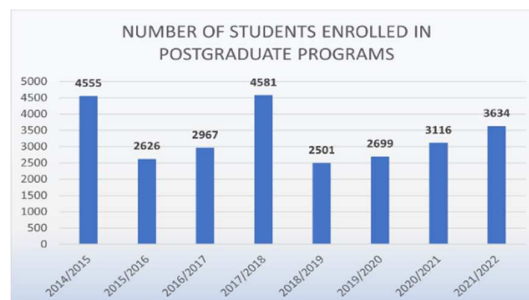


Fig. 5 Evolution of the number of students registered for postgraduate programs (university years 2014/2015 – 2021/2022).

ISCED F-2013 fields	2014 /2015	2015 /2016	2016 /2017	2017 /2018	2018 /2019	2019 /2020	2020 /2021	2021 /2022
Total	4,017	2,530	2,967	4,578	2,501	2,699	3,116	3,634
Education	859	730	794	1,591	1,266	1,744	2,245	2,705
Arts and humanities	200	225	241	209	245	242	216	175
Social sciences, journalism, and information	341	239	192	179	135	57	113	263
Business, administration, and law	160	62	276	458	304	151	112	53
Natural sciences, mathematics, and statistics	287	298	138	185	188	167	164	139
Information and Communication Technologies	141	224	17	148	138	163	155	253
Engineering, manufacturing, and construction	281	177	50	230	144	122	111	36
Agriculture, forestry, fisheries and veterinary				15				
Health and welfare	1,504	114	1,100	1,102				
Services	244	461	159	461	81	53		10

Fig. 6 Students registered for postgraduate programs by the ISCED fields.

Figure 4 shows that UTCluj ranks second in terms of technical programs enrolled in NRPP, after Gheorghe Asachi Technical University of Iași. Number three, long ranged from the first two places is the Polytechnic University of Bucharest with 12 programs.

3.5 Enrolled students in postgraduate studies

According to the Higher Education Status Report for the academic year 2021/2022, 554 thousand people were registered in higher education, of which less than 1% were registered in postgraduate courses. Based on data from this report, in Figure 5 we represented the number of students registered for postgraduate programs

(postdoctoral programs, in-depth and postgraduate academic study programs, postgraduate specialization study programs) from the academic years 2014/2015 until 2021/2022 [5]. Out of the 3634 students 2021/2022, 79.9% attended a state university, and the remaining 20.1% in a private university. The number of students registered for postgraduate programs broken down by ISCED domains is also taken from The Report on the State of Higher Education in Romania 2021-2022 and is illustrated in Figure 6.

There are differences between the number of students registered in the academic years 2014/2015 and 2015/2016 illustrated in Figure 5 and Figure 6. Also, the number of students registered in technical fields according to the Report issued by the Ministry of Education [5] is smaller than the number of students registered in technical fields within the UTCluj, as presented in Figure 7. To conclude, the students were wrongly registered in other ISCED areas compared to those submitted to the Ministry of Education or the Report data is inaccurate.

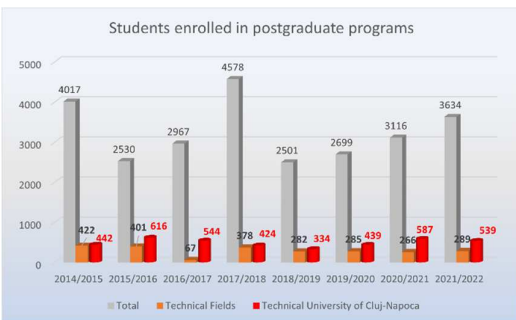


Fig. 7 Students enrolled in postgraduate programs.

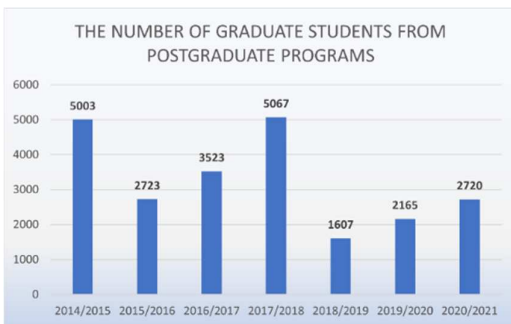


Fig. 8 Graduate students from postgraduate programs in Romania.

ISCED F-2013 fields	2014 /2015	2015 /2016	2016 /2017	2017 /2018	2018 /2019	2019 /2020	2020 /2021
Total	5,003	2,723	3,525	5,067	1,607	2,165	2,720
Education	14.2%	16.4%	35.3%	19.9%	52.3%	68.3%	82.2%
Arts and humanities	2.4%	4.8%	1.9%	2.3%	6.0%	6.1%	3.3%
Social sciences, journalism, and information	3.5%	8.2%	4.6%	2.6%	7.8%	3.6%	3.3%
Business, administration, and law	3.3%	7.1%	9.9%	9.0%	15.1%	5.1%	5.6%
Natural sciences, mathematics, and statistics	3.6%	5.4%	5.8%	1.7%	3.9%	5.1%	1.7%
Information and Communication Technologies	1.8%	0.8%	0.3%	0.9%	1.7%	3.0%	1.3%
Engineering, manufacturing, and construction	3.0%	5.2%	4.4%	3.2%	12.4%	6.5%	2.6%
Agriculture, forestry, fisheries and veterinary	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Health and welfare	56.1%	2.0%	31.2%	60.3%	0.0%	0.0%	0.0%
Services	12.1%	50.1%	6.6%	0.2%	2.4%	0.0%	0.0%

Fig. 9 The share of graduates from postgraduate programs in the academic years 2014/2015 – 2020/2021 by ISCED domains.

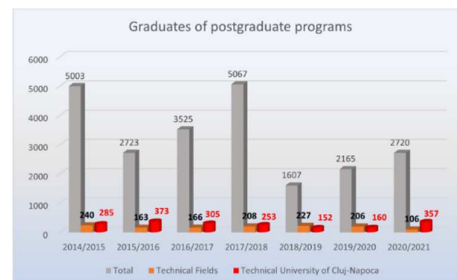


Fig. 10 Graduates of postgraduate programs.

3.6 Postgraduate programs graduates

At the end of the 2020/2021 academic year, a number of 2720 students graduated from postgraduate programs. In Figure 8, we illustrated the evolution of graduates from postgraduate programs in recent years [5]. The evolution of the share of graduates with a degree in postgraduate education, by ISCED F-2013 fields, in the period 2014-2020 is taken from the Report on the State of Higher Education in Romania and is presented in Figure 9 [5].

The technical fields Information and Communication Technologies and Engineering, processing and construction do not have a very high percentage over this entire period. However, the same situation occurs as in the previous case presented for the registered students, which is the number of graduates in technical fields only at UTCluj exceeds the number of graduates who belong to technical fields across the country, as shown in Figure 10. In this case, we can also conclude that the students were incorrectly registered in other ISCED fields than those transmitted to the Ministry of Education or that the report data is flawed.

4. POSTGRADUATE PROGRAMS AT TECHNICAL UNIVERSITY OF CLUJ-NAPOCA

Within the UTCluj, 4 types of programs are registered in the NRPP: postgraduate improvement programs; postgraduate qualification and requalification programs; conversion programs for teachers in pre-university education; continuous training programs. *Postgraduate improvement programs* are listed in Table 5, in descending order of ECTS credits. Some of these programs run once, twice, or even three times a year, others have only run once. *Postgraduate qualification and requalification programs* in NRPP (Sciences of nature, 100 ECTS) are carried out in North Baia Mare University Center within UTCluj. A single professional conversion program is carried out for pre-university teachers, Computer science and information technology, 120 ECTS. The *continuous training programs* are Industry electroenergetic auditors; Audit grade 1 project approval; Audit grade 2 project approval; Industry energy managers; Energy managers for cities; Modern Road design methods. These are continuing education programs not registered in NRPP.

Table 5

Postgraduate improvement programs		
No.	The program's name	ECTS
1.	Applied informatics and programming	90
2.	Cisco - Electronics and Telecommunications	28
3.	Assessor of occupational injury and health risks	23
4.	Management of passenger flows in airport structures	21
5.	Management and safety of logistics activities at airports	21
6.	Airport facility management	21
7.	Development in airport management	21
8.	Energy audit for buildings I	21
9.	Interoperability management of airport departments	21
10.	Emergency airport preparedness and management	21
11.	Energy market management	18
12.	Specialist in the diagnosis, evaluation and operation of electric and hybrid vehicles	18
13.	Project management for products and services	18

No.	The program's name	ECTS
14.	Cisco - Network Security	17
15.	Professional energy skills in nZEB	14
16.	Energy efficiency and sustainability for energy managers and professionals (in SMEs)	14
17.	Training program for career guidance, communication, innovation and creativity and competitive development	11
18.	Entrepreneurial training program	11
19.	Software testing	9
20.	Modern methods and techniques in human resources management	9
21.	Creating and exploiting relational databases	9
22.	Advanced programming	9
23.	Information and communication technology	9
24.	Programming user interfaces	9
25.	Computer programming complements	9
26.	Making applications for www	9
27.	Unified communications in the cloud	7
28.	Digital Production Systems - M1	7
29.	Artificial intelligence for robotics	5
30.	Educational technologies and IT&C support tools for university education	5

5. CONCLUSIONS

The COVID-19 pandemic has significantly impacted adult education, creating several new opportunities but also many problems in the process. Adult education providers and especially the universities have quickly adapted to this new reality and offered innovative solutions to help adults continue their learning and personal development despite the challenges.

The postgraduate programs organized by the UTCluj are carried out in a well-regulated framework, there are proceedings that must be followed. However, compared to undergraduate and master's degrees, postgraduate programs are much easier to initiate, approve and run.

Despite these facts, the number of individuals who enroll in postgraduate programs is extremely low, as we have shown above, both at the Romanian and T UTCluj levels.

Adult education in Romania, and especially postgraduate education faces many problems, such as: lack of resources, insufficient

infrastructure, and low level of digital literacy. In addition, there is a growing need for training and the development of digital skills to meet the requirements of the labor market and the rapid evolution of technology.

Since there are few statistics regarding postgraduate programs in Romania, and most of them are inaccurate, we may conclude that there was a lack of interest regarding these programs.

In conclusion, postgraduate education in Romania requires significant investment and infrastructure improvements, as well as a more comprehensive approach to training needs and digital skills. There is also needed a national plan drawn by the Education Ministry of Romania or/and the European Union strictly related to postgraduate programs.

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Programe postuniversitare în România

Învățarea pe tot parcursul vieții în România și Europa a întâmpinat fluctuații în ultimii ani. Pentru prima dată, învățarea în rândul adulților este una dintre principalele priorități ale Uniunii Europene. Pandemia de COVID-19 a venit cu o scădere a educației în întreaga lume și nevoia de lucrători specializați este maximă. Specializarea în domeniul de activitate sau în diferite domenii a dat un impuls învățării pe tot parcursul vieții în România și în Europa. Programele postuniversitare sunt programe de nișă la care absolvenții de licență pot participa. Acestea sunt programe specializate pentru obținerea de noi competențe și calificări, sunt programe pe termen scurt sau pe termen lung și pot avea taxă sau pot fi gratuite. Acest tip de programe nu au constrângerile învățământului clasic.

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