 https://doi.org/10.57017/jorit.v1.2(2).05

Research on the Interconnections between Human Capital and the Education System in Romania

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Abstract

The progress of a society depends on and can only be sustained through permanent education, which implies the acquisition of new knowledge, and in this way human capital can be exploited to the maximum. Through education, any individual acquires the ability to develop his potential, and in order to do this, he must undertake a process of education through which he accumulates knowledge and skills, harmoniously develops his personality, as well as shapes his character. Through education and culture, creativity, adaptability, but also other necessary qualities are developed, and as the finality of education, insertion and social integration are of particular importance for any graduate, contributing to his fulfilment from several points of view, material, spiritual, moral.

The article analyses the participation in education of the Romanian population, the evolution of the teaching staff and the general expenses for education in the period 2010-2021.

Keywords: education; human capital; knowledge; skills.

JEL Classification: I24; I25; J24.

Introduction

The role of education in economic growth is all the more obvious as beneficial effects are produced by increasing labour productivity, because education is the foundation of economic and social well-being. By increasing economic efficiency, as well as the value of the work performed, the population obtains higher incomes, thus increasing the standard of living and reducing poverty. It is also education that contributes to the increase of a person's overall productivity and at the same time the intellectual flexibility so necessary for the workforce.

Through education, the competitiveness of a country is ensured, both at the European level and at the world level, as great changes occur in terms of technology or production methods. Also, education is what contributes to the increase of social integration, all the more so since it starts from a young age, thus, the benefits of education are obvious and beyond the economic interest, since through education the individual becomes a complex being, contributing in this way to building a tolerant and inclusive nation, ensuring equal opportunities, while also offering opportunities for intercultural dialogue.

Although the organization of education systems falls to each individual member state, the European Union complements their responsibility with its common vision regarding education, by setting targets and supporting actions. Thus, Romania follows the community model regarding education and training and transposes the objectives set at the EU level into national actions, with the ultimate goal of ensuring a harmonious educational environment and guaranteeing equal access for all those interested.

1. Literature Review

Education is the main driver of technological innovation. People with a solid education are healthier, more active and involved in social life, have higher incomes and certainly have a higher quality of life. Skills shortages limit access to jobs, increase the risk of poverty and hinder a country's prosperity (Dragomir and Tănasie, 2010). Education is seen all over the world as the key to enable individuals and nations to meet rapid economic and social changes (Rustiadi, 2015).

Although it is statistically difficult to define and measure education, being a complex subject, when we talk about human capital, we mean a set of "knowledge, skills, competences and other attributes embodied in individuals who are engaged in creating individual well-being "social and economic", and skills are "the ability to apply and use knowledge to complete tasks and solve problems" (Morgan and Volante, 2016). The formation of human capital, of active individuals - a new generation of people more capable of identifying special solutions to the various problems that appear on the labour market - is the main task that the education system should fulfil in order to ensure economic development (Dovgyi, et al. 2020)

The human resource is the most important resource of any country, and if it is capitalized properly, it contributes to the development of society by creating value in areas such as social, political, economic. The present society is based on knowledge, the changes it goes through require a permanent adaptation, suitable for any context, and as the human resource represents a key resource in economic growth and development, it must constantly qualify and train continuously and qualitatively (Pîrvu and Cojocaru, 2015).

Also, adapting to a new digital-based economy require that knowledge which is difficult to imitate and transfer, to be considered as a valuable intangible asset due these are today the source that allows organizations to obtain better results than competitors, compared to tangible assets, which were the traditional basis for obtaining competitive advantages (Zapata-Cantu, Sanguino, Barroso, Nicola-Gavrilă, 2022).

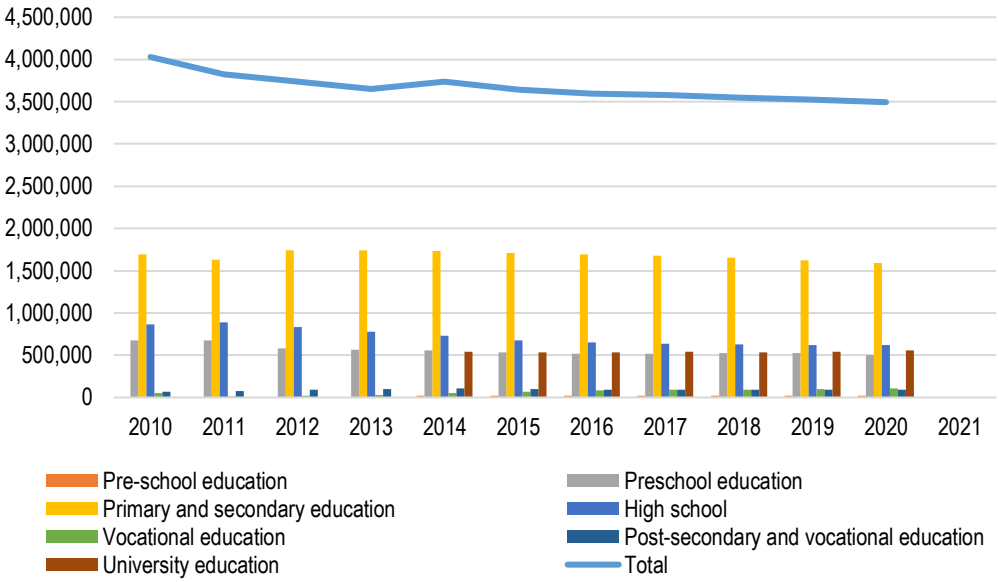
The COVID-19 pandemic is having a major impact on education and training systems in Europe. In this context, it is all the more important education and training of human capital (COM 2010) 2020 final, COM/2020/625 final).

The positive aspects of human capital directly affect the development of society, the existence of conditions created for people (Ismoilovich, 2022).

2. Statistical Research on Romanian Education, Teaching Staff and Education Expenses

The school population, in the NIS sense, refers to the total number of children, pupils and students included in formal education (training and education), in all forms of education and all ages. In the period 2010-2020, the school population had an evolution with a downward trend and small oscillations (Figure 1), registering 4,029,226 people in 2010 and 3,494,604 people in 2020 (a share of 18.2% of the total population), with a preponderance of male population between 2010 and 2018. The number of the school population is also influenced by factors such as negative natural growth or international migration.

Figure 1. School population, by education level, Romania, 2010-2021 (persons)

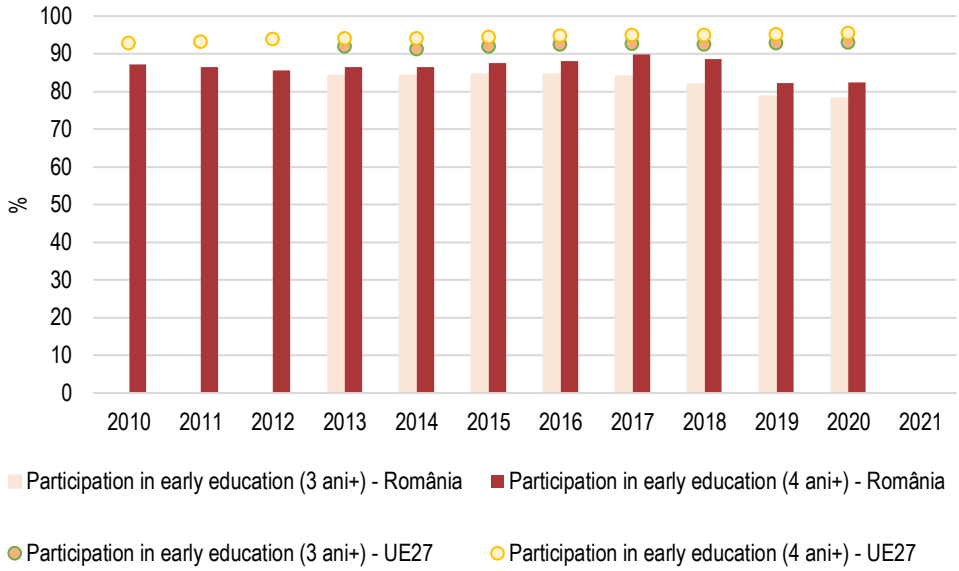


Note: Missing data for pre-school and university education (2010-2013); missing data for all levels (2021)
Source: Tempo-online [SCL103A]

The levels of education had different evolutions during the analysed period, a constant trend of growth until 2019 was recorded by pre-school education, as well as professional education (once it was reintroduced). In 2020, most levels recorded decreases; the only exceptions were in high school (+2,350 people compared to the previous year), professional (+8,946 people) and university (+17,191 people).

In Figure 2, is summarized the data related to children's early education participation, both for children aged 3 years and up to the age of starting compulsory education, and for children of 4 years and up to the age of starting compulsory education for the period 2010-2021 (within existing statistical data), as a share of the population in the corresponding age group. Thus, it is noted that the values are below the community average for both indicators, therefore also below the established target.

Figure 2. Participation in early childhood education, Romania, 2010-2021, % of population in corresponding age group



Note: Missing data for early education participation of children aged 3 to compulsory education (years 2010, 2011, 2012) and missing data for both early education age groups (year 2021).
Source: Eurostat [EDUC_UOE_ENRA21] and Eurostat [EDUC_UOE_ENRA10]

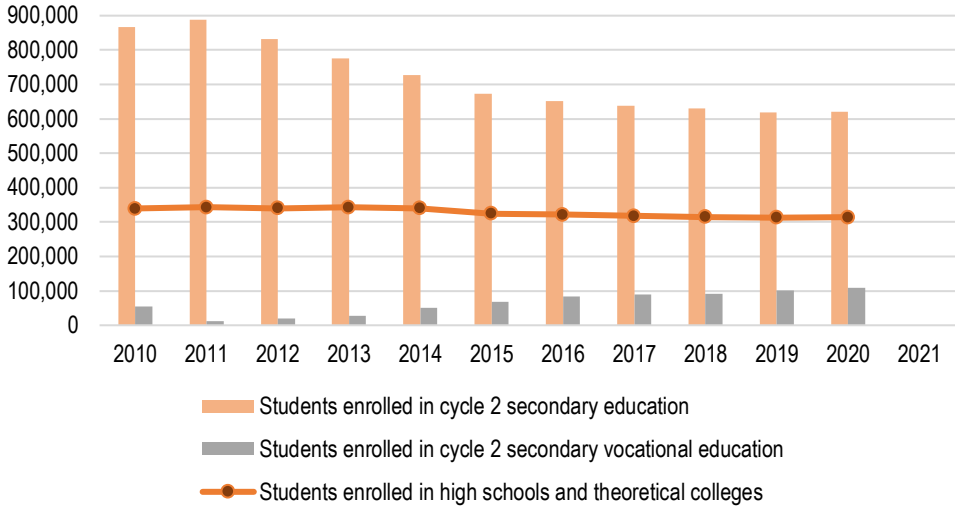
The participation in early education of children aged 4 and up to the age of starting compulsory education had an oscillating evolution during the analysed period, with a minimum recorded in 2019, of 82.3% and a maximum recorded in 2017, of 89 .9%. In 2020, the share was 82.4%, with 82.6% participation of the male population and 82.2% participation of the female population, well below the target of at least 95%. Participation in early education for children aged 3 to compulsory primary school enrolment is expected to reach at least 96% by 2030. The most recent data (year 2020) show a total participation of 78.2 % (below the level recorded in 2013, when the first statistical data are provided), with a slightly higher share of the female population (78.3%) compared to the male (78.1%). Based on this data, we can see that the participation rates in early education have decreased in Romania, which means that the start regarding education and social inclusion will be affected.

The 2018 OECD Program for International Student Assessment (PISA) highlighted the poor performance of 15-year-olds in reading, maths and science, well above the target of 15%. According to the data obtained by the OECD, Romania had a score of 428 in reading (below the average of 431 registered at the level of the EEAC countries and below the average of 487 registered at the OECD level), of 431 in mathematics (below the average of 437 registered at the level of the EEAC countries and below the OECD average of 489) and 426 in sciences (below the EEAC average of 434 and the OECD average of 489). In addition, there is a dispersion of results by gender and socio-economic backgrounds. The percentage of 15-year-olds with a low level of knowledge in mathematics was 46.6%, in reading 40.8% and in science 43.9%; values almost double compared to the community average. In mathematics, the results are better among the male population, while in reading and science the female population wins.

The need for a digital infrastructure and the facilitation of digital education have been highlighted during the pandemic. Many pupils and students, especially from rural areas or disadvantaged categories, could not attend classes or had a partial participation. The studies carried out by the European Commission and the Ministry of Education and Research highlighted the low level of digital skills of students in Romania, thus, only 57% of students (16-19 years old) have basic or above basic digital skills compared to the community average of 82%.

Corresponding to ISCED level 3, according to the INS, in Romania in 2020 a number of 620,625 students were enrolled in secondary education cycle 2 and 109,721 students in secondary vocational education cycle 2. The evolutions of the two categories are opposite in the period 2011-2019 (Figure 3); thus, while students in high school education decreased from 888,768 students to 618,275 students, those in vocational education increased from 12,382 students to 100,775 students (an increase that continued in 2020, with +8,946 students).

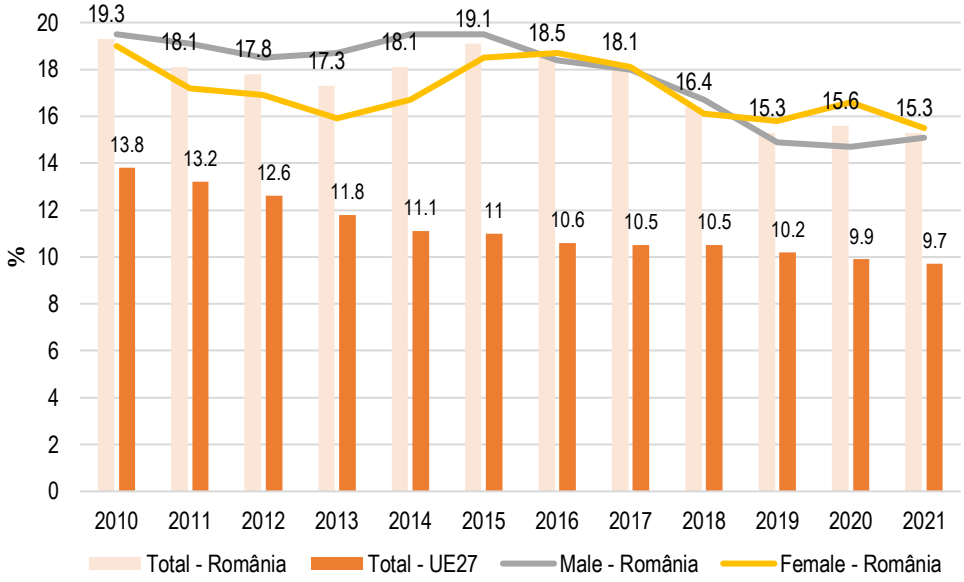
Figure 3. Students enrolled in secondary education, cycle 2 (high school and vocational), Romania, 2010-2021, persons



Note: No data for 2021
Source: Tempo-online [SCL103G]

Early leaving of the educational/training system by young people (18-24 years), with at most ISCED level 2 is a problem for Romania. Our country has one of the highest rates in the Union. Although the evolution of this indicator had a generally downward trend, the values are still far above the proposed target. In 2010, the share was 19.3% (compared to the community average of 13.8%) and decreased in 2021 to 15.3% (compared to the community average of 9.7%), according to the data presented in Figure 4.

Figure 4. Share of the population leaving education and training early (18-24 years), total and by gender, Romania, 2010-2021 (%)

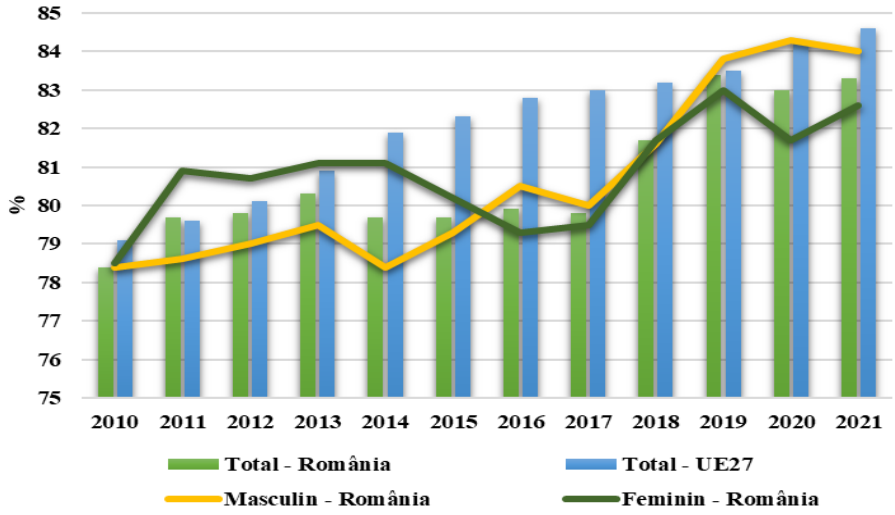


Source: Eurostat [EDAT_LFSE_14]

By gender, the gap is small in 2021, of only 0.4%, with a lower share of early school leaving among the male population (15.1%).

Similar to the European trend, the share of people in the 20-24 age group who have completed at least high school education (levels 3-8 ISCED) also increased in Romania, from 78.4% (year 2010) to 83.3% (year 2021), but with an opposite evolution of participation by gender, with a higher participation of the male population (84.0%) compared to the female population (82.6%). However, at the level of 2021, the total share of those who graduated at least from high school is still below the community average (84.6%).

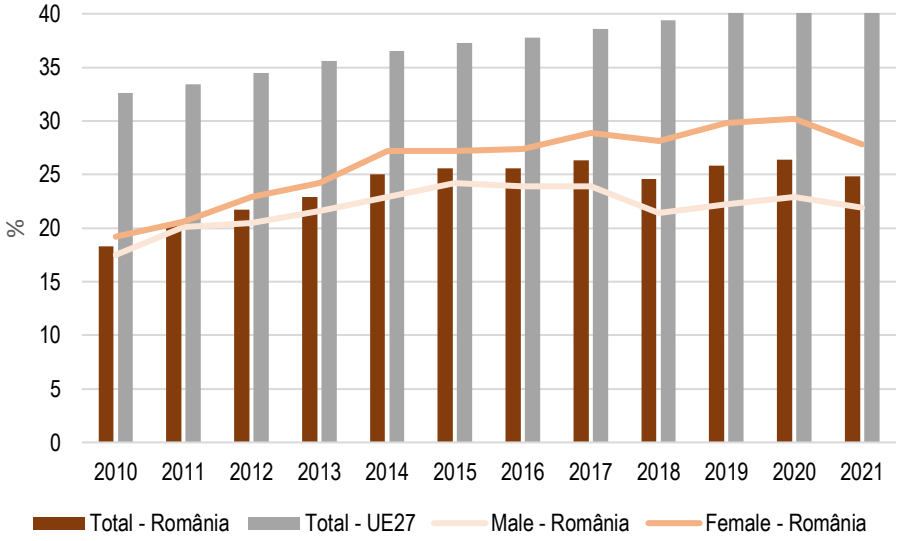
Figure 5. Share of people in the 20-24 age group with at least secondary education (levels 3-8 ISCED 2011), Romania, 2010-2021 (%)



Source: Eurostat [EDAT_LFSE_03]

In contrast, the percentage of the population with tertiary education (ISCED levels 5-8) fluctuated more and placed Romania in the last places at the EU level. For the 30-34 age group, the share recorded a level of 18.3% in the year 2010 and a maximum level of 26.4% in the year 2020. The most recent year meant a decrease of 1.6%.

Figure 6. Population by level of education (30-34 years old), levels 5-8 ISCED 2011, Romania, 2010-2021, (%)



Source: Eurostat [EDAT_LFSE_03]

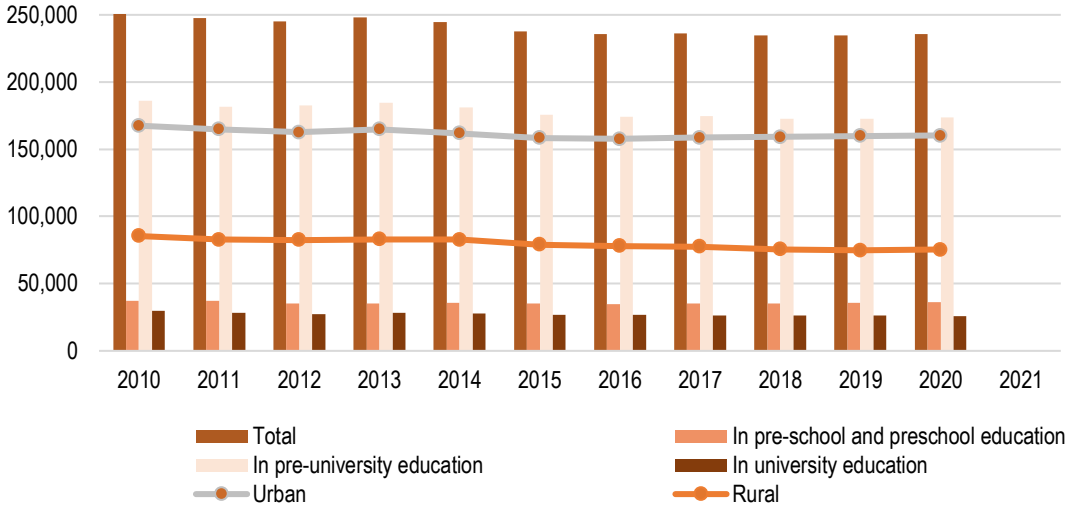
The female population is predominant within this indicator for the entire analysed period; this increased from 19.2% (year 2010) to 30.2% (year 2020), compared to the male population, which increased its share from 17.5% (year 2010) to 24, 2% (year 2015) and subsequently decreased to 21.9% (year 2021).

The share of the 25-34 age group fluctuated, from 20.7% (year 2010) to 23.3% (year 2021), with a maximum of 25.6% (year 2017). And in this case, the preponderance of the female population stands out; in 2021, the difference was 5.6%, in its favour. As can be seen in figure 6, the levels recorded in Romania were much lower than the community averages, but also far from the targets set at the European level.

Regarding learning mobility, as a target both for those with higher education and for initial professional education/training, according to data provided by Eurostat, in 2018, the share of graduates who benefited from degree mobility (higher education) was 6.0% (above the community average of 4.3%) and the share of graduates who benefited from credit mobility (higher education) was 1.7% (below the community average of 9.1%).

The teaching staff includes, according to the definition, all the people employed in the education system, who teach within the educational and training process. Both full-time and part-time employees are considered. In total, the teaching staff in Romania decreased from 252,953 (year 2010) to 235,563 (year 2020).

Figure 7. Teaching staff, by education levels and residence environments, Romania, 2010-2021 (persons)



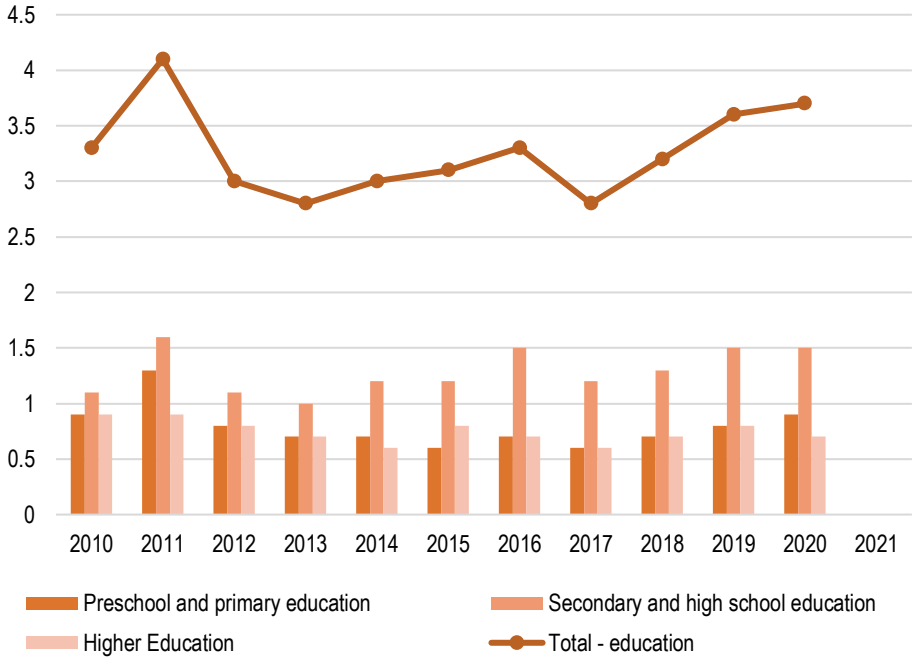
Note: Partial data 2010-2013 (missing data for preschool education); No dates for 2021
Source: Tempo-online [SCL104F]

Analysing the entire period, it can be observed that only in pre-school education did the teaching staff increase, in all other levels its decreases were recorded (Figure 7). At the level of 2020, most of the teaching staff was employed in pre-university education (173,499 persons), followed by employment in preschool education (35,143 persons) and in university education (25,991 persons). Although we mentioned that the teaching staff in preschool education has increased, it is still modest, numbering only 930 people.

Public spending on education has increased in recent years, but is still below the Union average. Between 2010 and 2020, spending increased by 0.4%, from 3.3% to 3.7%.

A maximum level was recorded in 2021, of 4.1% of GDP (Figure 8). Expressed in terms of value, public expenditures increased from 17,585.4 million lei (year 2010) to 39,001.4 million lei (year 2020). In 2020, a share of 0.9% of GDP was allocated to preschool and primary education, 1.5% to secondary and high school education and 0.7% to higher education.

Figure 8. General public expenditure on education (COFOG functions), Romania, 2010-2021, (% of GDP)



Note: (:) Missing data
Source: Eurostat [GOV_10A_EXP]

The data published in the Education and Training Monitor 2021 show us that the expenditure in public and private institutions for each student in euros (SPC) increased in the period 2012-2018 from 1,668 euros to 2,488 euros for education levels 0-2 ISCED, from 1,769 euros to 3,222 euros for education levels 3-4 ISCED and from 4,035 euros to 5,460 euros for education levels 5-8 ISCED. Thus, the modernization of the education system in Romania and the improvement of the quality of education and training services involve the raising of additional amounts, necessary to address all aspects related to education: teaching staff, school population, infrastructure, various endowments. All this is included in the National Recovery and Resilience Plan (PNRR), with the aim of promoting early education, reducing early school leaving, increasing the quality of education, but also improving the educational infrastructure.

Conclusion

Education is a fundamental factor of development. For a country to have sustainable economic growth and development, it is necessary to invest in human capital. Through education, people achieve a better understanding of both themselves and the world in which they live. Among the objectives of the cohesion policy is the improvement of the quality of life, and through the investments that can be made in education thanks to European programs, this objective can be achieved which, once achieved, has beneficial effects at the social level, both for the individual and for society. Through education, people's productivity and creativity are increased, people develop entrepreneurial skills, and this means technological, economic and social progress, while ensuring a better distribution of income.

Based on the analysis, we can see that early education participation rates have decreased in Romania, which means that the start of education and social inclusion will be affected. In 2020, the participation in early education of children aged 4 and up to the age of starting compulsory education in our country had reached the level of 82.4% (with 12.6% below the target), and the participation in early education of children from 3 years and up to compulsory education age was 78.2% (below the target of 96%).

At the same time, the COVID-19 pandemic has highlighted the importance of digital skills both to be able to study and to participate in the whole socio-economic life, and the EU must work towards meeting the indicator on the share of eighth graders with digital skills below the 15% level. Many pupils and students in Romania, especially from rural areas or disadvantaged categories, could not attend classes or had a partial participation. We also noted that only 57% of Romanian students (16-19 years old) have basic/above-basic digital skills. This level is 25% community average.

Early school leaving, a current topic of the Union, places our state in the last places. For young people (18-24 years old), with at most ISCED level 2, a share of 19.3% was noted in 2010 (compared to the community average of 13.8%), which decreased in 2021 to at 15.3% (compared to the Community average of 9.7%).

Changes in current societies have led to an increase in the number of people in higher education in recent years, with more opportunities for employment and a corresponding salary. The share of those with tertiary education fluctuated more and placed Romania on the last places in the EU. For the 30-34 age group, the share recorded a level of 18.3% in 2010 and reached a maximum of 26.4% in 2020; in 2021 it decreased by 1.6 %.

The ones presented show us a mismatch between the skills developed by the educational systems and the current requirements of the labour market. There are large shares of the population with low literacy, digital or numeracy skills. Thus, finding a quality job is difficult, individuals may remain socially unintegrated and, finally, the economic growth of states will have a slower pace. Based on the analysis, it is noted that the modernization of the education system in Romania and the improvement of the quality of education and training services involve the raising of additional amounts, necessary to address all aspects related to education: teaching staff, school population, infrastructure, various facilities.

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Cite this article

Gruescu, R. M. (2022). Research on the Interconnections between Human Capital and the Education System in Romania. *Journal of Research, Innovation and Technologies*, Volume I, 2(2), 155-162. https://doi.org/10.57017/jorit.v1.2(2).05

Article's history:

Received 1st of November, 2022; Revised 27th of November, 2022;
Accepted for publication 5th of December, 2022;
Published 30th of December, 2022.