

Evolution of education and development in Cuba

Evolución de la educación y el desarrollo en Cuba

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ABSTRACT

The article analyzes, supported by an exhaustive and updated bibliographic review, the evolution of education and development in Cuba, detailing the training system and its public policies, pointing out the main challenges for its economic progress. He recognizes Cuba's scientific and educational potential, although he points out that it needs to be rapidly transformed into greater economic and social development, for which he bets on a recent update of its economic

model. It shows that Cuba cannot focus its development on primary products, betting on developing its human resources through the accelerated development of science and education, which has been an essential strategy for the social transformations achieved. It states that parallel to the achievements in Cuban education and health, there are negative aspects related to weaknesses in the Science, Technology and Innovation System (SCTI), as a result of adverse economic conditions and various internal inadequacies.

RESUMEN

El artículo analiza, apoyado en una revisión bibliográfica exhaustiva y actualizada, la evolución de la educación y el desarrollo en Cuba, detallando el sistema de formación y sus políticas públicas, señalando los principales retos para su progreso económico. Reconoce el potencial científico y educativo cubano, aunque señala que requiere transformarlo rápidamente en mayor desarrollo económico y social, para lo cual apuesta por una reciente actualización de su modelo económico. Evidencia que Cuba no puede enfocar su desarrollo en productos primarios, apostando por desarrollar sus recursos humanos mediante el desarrollo acelerado de la ciencia y la educación, lo que ha constituido una estrategia esencial para las transformaciones sociales logradas. Manifiesta que paralelamente a los logros en la educación y la salud cubana, se perciben aspectos negativos relacionados con debilidades del Sistema de Ciencia Tecnología e Innovación (SCTI), como resultado de las condiciones económicas adversas y diversas insuficiencias internas.

Keywords / Keywords

Socio-economic factors, educational policy, public policy, education and development

Factores socio-económicos, política educativa, políticas públicas, educación y desarrollo

Introduction

According to (United States Census Bureau, 2019), the Cuban population in 2017 reached 11 147 407 inhabitants, occupying the 80th place universally, but by 2050 a decrease is expected, reaching 9 829 024 inhabitants, closing the top 100 worldwide. For its part, according

to (Naranjo, Figueroa & Cañizares, 2015, p. 223) the aging of the Cuban population represents a demographic problem with 18.3% aged 60 years and over, predicting that by 2025 it will reach 25% of the total population; which is framed in a context in which it is expected that by 2050 the proportion of the world population exceeding 60 years will double. This population aging is a serious demographic, economic and social problem, being fundamentally motivated by the very low levels of mortality and fertility (partly caused by changes in the patterns associated with the increase in female participation in the labor force), as well as by the increase in life expectancy (these positively reflect the level of medical and elder care achieved in the country), together with the negative migratory balance, the latter factor exacerbated by the economic situation in Cuba, which causes young people to emigrate to improve their personal economy.

Cuba's aging population reflects problems, but it is also the result of the social development achieved.

According to (Oficina Nacional de Estadística e Información República de Cuba, 2016) 64% of the population is of working age (7 202.8 thousand inhabitants); the migration rate is -2.2 per 1 000 inhabitants; the gross reproduction rate is 0.83 children per woman; the infant mortality rate per 1 000 live births is 4.3; and life expectancy at birth is 78.45 years. These last two indicators are much better than the average for Latin America, in which the strong existing health system is decisive, whose main strength comes from the availability of highly competent professionals, product of the prevailing prestigious educational system.

In this context, the problem addressed is the following question: How has education and development evolved in Cuba?

In view of this, the proposed objective was to analyze the evolution of education and development in Cuba through an exhaustive bibliographic review.

MATERIALS AND METHODS

An analysis of the evolution of education and development in Cuba was carried out by means of an exhaustive bibliographic review related to this topic.

It was an observational, retrospective, cross-sectional and descriptive study, covering from the first historical references on Cuba to the present.

It consisted of a descriptive research supported by the observational method and documentary review.

A systematic review of the scientific literature was carried out in Google Scholar and Publish or Persh (Version 7.19) using the search equation "evolution of education and development in Cuba" and including articles in both English and Spanish. Likewise, the bibliographic references of the selected articles were analyzed with the purpose of rescuing other studies that could potentially be included in the research.

At the same time, we physically consulted all the materials on paper that deal with this subject, archived at the "José Martí" National Library, located in Havana, Cuba.

RESULTS

Political system and economic development

When the Cuban political system was established in 1959, it radically broke with the pre-revolutionary political system, which, in turn, broke with the political traditions that organized and governed the 1895 war of independence. Cuba has gone through a slave society colonized by Spain, as well as various governments that emerged after the so-called Spanish-Cuban-American War, marked by great social inequalities and a deformed economy dependent on U.S. interests (ECURED, 2017).

The socioeconomic situation before 1959 was very complex:

"Cuba presented the characteristic situation of a neocolonial, backward and dependent economy. There were large sugar and cattle large estates, with 75% of the land in the hands of 8% of the owners. Unemployment sometimes affected more than 25% of the labor force, with more than 600,000 unemployed in the period between harvests (idle time). Only 12% of the labor force was female. Forty-seven percent of the housing was in a deplorable or bad state, and only 33% was masonry. The richest 20% of the population received 58% of the income, while the poorest 20% received 2%. Despite having the highest per capita of private automobiles in Latin America, 45% of

children between 6 and 14 years of age did not attend school; and 23.6% of the population over 10 years of age was illiterate. The population over 15 years of age had an average educational level of less than 3 grades. Paradoxically, there were more than 10,000 unemployed teachers. The state health service was totally insufficient and of low quality. The capital of the country, with 22% of the population, had 65% of the doctors and 62% of the hospital beds." (Government of the Republic of Cuba Government Site, 2017).

The change of government that took place in Cuba in 1959 initiated various economic, social and political transformations oriented towards a greater centralization of economic activity and progressive state ownership of the means of production. In the first years of this stage, the Agrarian Reform Law that expropriated the large estates (May 1959) and the nationalization of large foreign industrial enterprises (1960) stand out.

The economic situation in Cuba improved systematically during the period 1959-1989, but after that date a crisis began as a result of a mixture of internal and external causes. The former include the exhaustion of the growth model and the limitations of the economic management system (between 1986 and 1989 the accumulated increase in GDP was nil); while external factors include the considerable deterioration of the international economic context, particularly with regard to Cuban access to international financial markets, and the disappearance of the former Soviet Union and other countries of the socialist camp, nations with which Cuba had a very high economic dependence.

In subsequent years, the nature of the economic crisis worsened due to the reinforcement of the commercial, economic and financial blockade by the United States, which forced the Cuban government to manage the crisis to ensure survival. According to (Triana & Torres, 2014) it was necessary to:

A heterodox program that combined fiscal cuts, wage anchoring, import adjustment, dollarization of the economy, fixed official exchange rate and implicit devaluation of the Cuban peso in the domestic market, as well as an overvaluation of the official exchange rate, loss of the purchasing power of wages, together with the opening to foreign capital, allowed the country to survive, but generated distortions that still hinder growth efforts.

Gradually, the economic situation has been improving in recent years, supported by economic reforms fundamentally framed in a new economic and social development model, as well as in the potential of its human capital, which is a direct result of an active educational policy, considered among the best in the world. An example of the latter is that, considering the average years of schooling, Cuba showed in 2010 around 10.57 years, the highest value for any country in Latin America and the Caribbean and one of the highest in the developing world (Barro & Wha Lee, 2013).

The Cuban experience of economic development, after 1959, has been based on a strong link between the economy and the benefit of society, evidently incorporating social improvement into its economic policy, despite the fact that its economic results have not been very satisfactory.

Cuba is currently facing the updating of its economic model. The medium-term projection showed that the macroeconomic imbalances and the perceived structural and efficiency problems could not be overcome with the existing economic model, which was excessively centralized, and therefore needed to be updated. The new guidelines outline structural changes, such as: greater autonomy to state-owned enterprises and local governments; expansion of non-state forms of ownership and the tax system; continuation of reforms in agriculture; and opening of markets for consumer goods, among others (CUBADEBATE, 2017).

Industry and employment

According to (Ministry of Labor and Social Security of Cuba, 2017), in the decade of the 80s of the last century there was an increase in employment in Cuba as a result of the extensive investment process developed in the country, which facilitated the creation of 1.2 million new jobs, 70% of them in the productive sphere. Subsequently, with the disappearance of the socialist camp and the tensions with the United States government, the Cuban economy received a heavy blow, to the extent that between 1989 and 1993 the GDP decreased by approximately 35%, which resulted in an internal financial imbalance, a decrease in efficiency and an increase in unemployment.

Total unemployment in Cuba in 2016 was 2.9% (World Bank, 2017).

In 2011, there were 5010.2 thousand workers in Cuba (37% women), of whom 208.7 thousand were cooperative workers and 928.5

thousand were private workers, of whom 391.5 thousand were self-employed. The economic activity rate (active population/working age population) was 76.1%, broken down into 90% for men and 60.5% for women. 41.56% were employed. 41.56% were employed in communal, social and personal services and 19.69% in agriculture, hunting, forestry and fishing, as the economic activities that used the most workers (Oficina Nacional de Estadísticas e Información República de Cuba, 2012).

Among those employed, 37.29% were workers, 29.70% were technicians, 22.68% were service workers, 5.37% were administrative workers, and 4.97% were managers. In addition, 51.75% had a high school level of education, 22.97% had secondary education, 19.09% had higher education and 6.20% had primary or higher education (Oficina Nacional de Estadísticas e Información República de Cuba, 2012). There has been a considerable increase in the number of self-employed workers, reaching 595,559 at the end of April 2019, 32% of them young people and 35% of them women. In addition, 14% worked in the state sector and 10% were retirees, according to (Cubadebate Newsroom, 2019).

Public policies, strategies and infrastructures for training and resource development

The training and constant improvement of human resources is becoming increasingly important in Cuba's development strategy, representing one of the basic axes of the social transformations achieved and one of the pillars to enhance the competitiveness of its economy and enable an effective reinsertion in world markets.

The antecedents of the progress of Cuban education during the Spanish colonial period can be found in the royal laws of the 16th century, which focused on the teaching of the Spanish language and Christian doctrine to the surviving Indians in Cuba and to the slaves from Africa, a task that was delegated, basically, to the priests and doctrineros.

From the beginning of the 18th century, the development of basic education began, with the spread of schools for children, which gave birth to a primitive educational system. The foundation of the University of Havana on January 5, 1728 by Dominican friars belonging to the Order of Preachers stands out in this stage, being the oldest university in Cuba and one of the first in America (EcuRed, 2017).

According to (Alvarez, 1997), "In the 19th century, several plans were carried out with a view to improving education, but these were also aimed at the ruling class, interested in preventing literacy among the great mass of slaves and poor peasants; during this period, the country received a Royal Order that established the First School Law of Cuba". This one, oriented the foundation of the schools of first education that were needed and the free education for poor children. At the end of this century, education in Cuba was affected by the effects of the war of independence against the Spanish government, characterized by the lack of school buildings, teachers and educational resources. In this regard, (Guerra, 1998) points out that "At the end of the war for independence, more than 60% of the population was illiterate, a rather conservative figure if one takes into account that the verification was made by the simple questions of the enumerators".

For his part, (Pichardo, 1986) points out that,

The period of the American occupation in Cuba, which began in 1898, favored advances in the educational system, and in the second semester of 1890 the number of primary schools reached more than 3,300 -10 times more than those available the previous year-. The number of schoolchildren attending classes exceeded 135,000; texts were increased, which were translations of American books; new subjects were introduced in the curricula and a large number of teachers were trained.

According to (González & Reyes, 2010, p. 15), after the establishment of the Republic of Cuba (1902), the influence of the education system of the United States of America was maintained, and in 1909, the First School Law was approved, which essentially regulated primary education. In this context, public schools were scarce and the quality suffered from the limited resources allocated to education, the situation being much more precarious in rural areas. This source indicates that the educational horizon in the period from 1933 to 1958 remained unchanged, defined by periods of parking and clear regression, essentially in primary education, with a decline in school attendance and progress to higher grades. Moreover, school desertion was invariable, especially in the higher grades, and was accentuated in the rural areas, where children, from a very early age, had to devote themselves to hard agricultural work.

For his part, (Pérez de la Riva, 1975) mentions that in 1953 a census was carried out which revealed the official abandonment of rural

education, with 41.7% of illiterates, adding that the rural and technological education plans until 1958 were "simple remedies to the chronic insufficiency of public instruction", evidenced by the scarcity of classrooms and rural teachers.

From 1959, with the revolutionary triumph, the government and the people aligned in creating a social project in which one of the first steps was the eradication of illiteracy in Cuba. In 1961 the National Literacy Campaign was developed, constituting a process of social justice towards those who had not had the opportunity to learn to read and write, thus raising the general culture of the workers on whose performance the technical-economic development depended.

Cuba was proclaimed an Illiteracy Free Territory on December 22, 1961, so that date is nationally recognized as Educator's Day, in recognition of the educational work achieved after 1959 (INFOMED, 2014). This was a real transformation in the Cuban educational system, which later underwent a second great transformation in 1972, when 20,000 teachers were needed for the new basic secondary schools and pre-university institutes that were being built throughout the country, mainly in rural areas, and in response to this problem, a detachment of teachers was created to ensure that no student was left without access to secondary education (EcuRed, 2011).

Subsequently, the transformations aimed at attenuating the acquired shortages and imperfections continue, trying to consolidate the training and improvement of the staff and to develop an educational sector with more integrality, aligned with the demands of its economic and social development.

Approximately since the beginning of the 1990s, with the emergence of numerous specialty, master's and doctoral programs related to pedagogy and educational sciences, the training of researchers in these fields has also increased.

Regarding its structure, it can be summarized that Cuban education is organized through the National Education System, in which subsystems are organically articulated and in which both primary and basic secondary education are compulsory.

Table 1 shows the structure of the Cuban educational system and the school-age population.

Table 1. *Structure of the national education system and official school-age population*

| Indicator | Preschool | Primary | Lower secondary school | Secondary school | Superior |
|-----------------------|-----------|------------|------------------------|------------------|-------------|
| Age groups | 3-5 years | 6-11 years | 12-14 years | 15-17 years | 18-22 years |
| School-age population | 364 000 | 778 000 | 833 000 | | 736 000 |

Source: (UNESCO, 2017).

118 Primary, secondary and pre-university education in Cuba

Prior to primary and secondary education, the first stage is focused on pre-primary education, aimed at children between 1 and 5 years of age, enabling them to acquire the skills and knowledge that serve as a preamble to primary education. Like the other stages of education in Cuba, it is totally free of charge.

Primary education takes place from 5 to 12 years of age (preschool through sixth grade), with a predominance of basic subjects. In the 2015-2016 academic year, the teaching staff in front of the classroom at this educational level amounted to 84 949 teachers and initial enrollment reached 806 857 students (Oficina Nacional de Estadística e Información República de Cuba, 2016).

Regarding access and participation in primary education, the percentage of children over the age of the grade in Cuba is equal to 0.4%, one of the lowest worldwide, whose average is 4 (the average for Latin America and the Caribbean is 6). The gross enrollment rate at this level of education is 98%, the net enrollment rate is 93% and the gross admission rate is 98%, very high figures compared to the rest of the countries in the region and one of the best worldwide (National Office of Statistics and Information of the Republic of Cuba, 2017).

It should be highlighted that the pupil-teacher ratio at the primary level in Cuba during 2015 is only 9, according to (World Bank, 2017).

Secondary education (first cycle according to UNESCO classification) runs from seventh to ninth grade. In the 2015-2016 academic year, the teaching staff in front of the classroom at this educational level

amounted to 82 556 teachers and the initial enrollment reached 746 500 students (Oficina Nacional de Estadística e Información República de Cuba, 2016).

The seventh grade is the beginning of the new education, studying subjects that serve as a basis for pre-university studies (second cycle according to UNESCO's classification) or for professional technical studies. The latter is a possible destination, which prepares skilled workers, with a basic professional middle level equivalent to ninth grade, and middle technicians, with a higher professional middle level equivalent to twelfth grade.

Regarding access and participation in secondary education, 99% of children in Cuba make an effective transition from primary to lower secondary education, which is higher than the majority of countries in Latin America and the Caribbean and the regional average of 97%.

The percentage of students above the age corresponding to their first year of secondary school is 0.8% and in the case of females it does not exceed 0.5%, figures well below the rest of the countries of Latin America and the Caribbean whose average is 16% overall and 14% in females. The gross enrollment rate in secondary education in Cuba is 100% and the net enrollment rate is 98%, but in the case of women it is 100%, indicators well above the average for the region and the world (Oficina Nacional de Estadística e Información República de Cuba, 2016).

Higher education in Cuba

Because Cuba lacks natural resources, mainly energy resources, it is limited in meeting its domestic demands for products such as oil, so it has bet to face its great needs in a world as competitive as today's, by the intensive development of Education, Science, and its Intellectual Capital, which according to (Vega, 2016, p. 45), "... is the result of the synergy of all the knowledge gathered by an organization, the accumulated skills and experiences of its members, their motivations and commitments linked to processes, innovations, impact on the market, and influence on society".

According to (Castro, 2004)

Higher education began in Cuba on January 5, 1728, when the Order of the Dominican Fathers founded the Royal and Pontifical University

of San Geronimo de La Habana, the true Alma Mater of all the higher education centers that exist today in the country.

Regarding access and participation in higher education in Cuba, the gross enrollment rate for this level of education is 41%, but in the case of women it is over 50%, an aspect that shows that there is no gender disparity at this level (Oficina Nacional de Estadística e Información República de Cuba, 2016).

Postgraduate academic training takes the form of master's degrees, specialties and doctorates, making it a higher level of scientific activity, which may be carried out in parallel with work or in periods released from it, without affecting salary or paid vacations.

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The percentage of adults (over 25 years of age) who have attained at least primary education in Cuba is equivalent to 91%, lower secondary 81%, upper secondary 57% and short-cycle higher education 15%, indicators clearly above the world average (Oficina Nacional de Estadística e Información República de Cuba, 2016).

The improvement of higher education in the country and its integration are the main directions of work, it consists of 52 institutions (34 universities, 5 higher institutes, 8 military education centers, 2 independent faculties and 3 schools) and has graduated 1 410 984 professionals. The number of graduates from 1959 to 2015, in undergraduate is 1 410 984, in masters and specialties 154 977 and in doctoral degrees 13 810. There are 101 university careers, in which the updates of their curricula constitute a periodic process, which occurs on average every five to six years (CINDA, 2016).

Table 2 shows the structure of the teaching staff, according to the scientific degrees of Doctor of Science (PhD), Master of Science (MSc.), as well as Bachelor of Science (BSc.) or Engineer (Eng.).

Table 2. *Structure of teachers, according to scientific degrees*

| Course Academics | Full-time teaching staff | | |
|---------------------|--------------------------|----------|--------------|
| | PhD (%) | MSc. (%) | Lic. or Eng. |
| 2010-2011 | 9.8 | 25.2 | 65.1 |
| 2011-2012 | 6.7 | 29.4 | 63.9 |

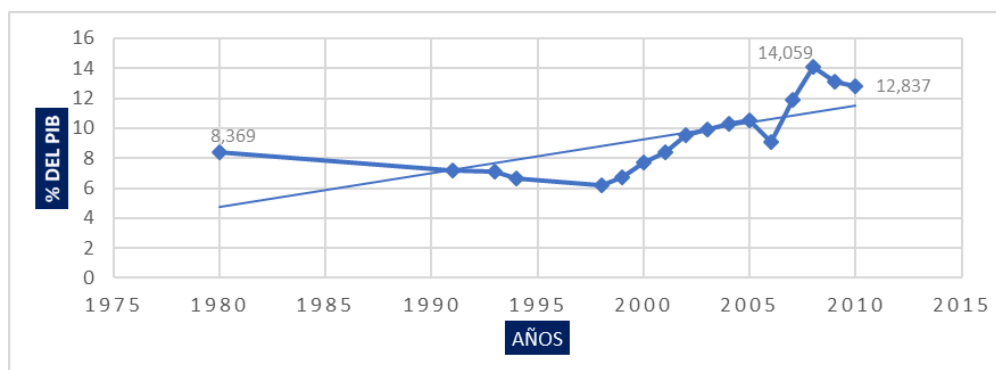
| | | | |
|-----------|------|------|------|
| 2012-2013 | 10.2 | 45.8 | 44.0 |
| 2013-2014 | 9.2 | 42.0 | 48.8 |
| 2014-2015 | 9.9 | 44.0 | 46.1 |

Source: (CINDA, 2016)

Spending on education

According to (González & Reyes, 2010, p. 23), regardless of the economic crisis, education has always had the support of the national budget, as shown by the fact that spending on education, as a percentage of GDP, rose from 8.5% to 12.8% between 1990 and 2007. It should be added that the part of the Gross National Product (GNP), reserved for education, behaved around 8.7%, which is 0.9% higher than the value mandated by UNESCO. Public spending on education as a percentage of GDP in recent years is shown in Figure 1.

Figure 1. Public spending on education as a percentage of GDP.



Source: own elaboration based on (World Bank, 2017).

In 2010, the figure of 12.84% of spending on education as a % of GDP, placed Cuba in 3rd place worldwide (EXPANSION, 2017). According to (Telesur, 2014), "Cuba is the country that invests the most in education according to its GDP and according to World Bank figures. "...The study, comprising the period 2009 and 2013, places Cuba as the number one worldwide that allocates a large percentage of its GDP in education, whose figure was 13.1 in 2009 and 12.8 in 2010."

A significant expense in Cuban education has been the training of doctors. In 1959 there were only 6,286 doctors, 3,000 of whom left the country; however, today Cuba is the country in the world with the highest number of doctors per inhabitant. To cite an example, in 2012 alone, 11,000 doctors graduated, 5,694 from 59 countries in Latin

America, Africa, Asia and even the United States (CUBADEBATE, 2012).

According to (CUBADEBATE, 2012) Cuba currently has 24 medical schools (in 1959 there was only one) in 13 of its 15 provinces, with more than 43 000 professors in this field. Since 1959, nearly 109,000 doctors have graduated in Cuba, and it should be noted that Cuba has an average of one doctor for every 148 inhabitants (67.2 doctors per 10,000 inhabitants, 78,622 in total) in accordance with the World Health Organization, making it the country with the best provision in this sector.

In addition, Cuba trains foreign students at the Latin American School of Medicine (ELAM) in Havana, inaugurated in 1999, in order to train future doctors from the underdeveloped world. In this regard, it is appropriate to point out what was raised by Frei Betto, when offering a comprehensive conference at the University Congress-2016, held in Havana, Cuba, in which he referred to the humanistic training of professionals, noting that it offers a modality of university extension unparalleled in the world, highlighting the international solidarity of its professionals, particularly its doctors and teachers, who cooperate with the poorest population of more than 100 nations (Betto, 2016).

Public policies in education

Cuba has been an example in the development of public policies in education. An example of this is its compliance with the Education for All (EFA) initiative, a global commitment to provide quality basic education to all children, youth and adults, as committed by 164 governments at the World Education Forum (Dakar, 2000), which defined six goals to be achieved by 2015. As a result of this effort, only one third of the committed countries achieved all the goals, with Cuba being the only nation in the Latin American and Caribbean region (UNESCO, 2017).

In some sectors of the economy, specific educational policies have been developed. One example is the tourism system which, although it already had a group of educational centers for the training of its human resources, in 1994 integrated all its centers into a single system: FORMATUR, which currently has 22 centers, where approximately 16,000 workers in the sector are enrolled annually for training in different specialties.

According to (Triana, 2012) one of the elements that differentiates the development strategy developed by the Cuban nation, with respect to other countries in its geographical area, was the commitment manifested since the revolutionary triumph in the development and progress of its human resources.

Cuba has developed an extensive Science and Technological Innovation System (SCIT), as a result of a policy that, since 1959, identified the development of science as a guarantee of the pretensions of national development.

According to (Cabal & Rodríguez, 2015, p. 4), Cuba has more than 4 000 full-time researchers, 25 000 university professors and tens of thousands of technologists and other specialists linked to Science, Technology and Innovation activities; in addition, it has more than 13 000 PhDs who have been trained in various specialties.

In this regard, it should be noted that since the end of the last century and on the threshold of the 21st century, due to unfavorable economic situations, in addition to other internal shortcomings, problems have increased that currently cause significant weaknesses in the nation's SCTI. Among these, the following stand out: exodus and aging of researchers and doctors; delay in the access and use of ICT (including limitations for Internet access); insufficient scientific productivity expressed in the low generation of articles in high impact journals in relation to the high number of PhDs in science (according to (World Bank, 2017) in 2013 Cuba only had 1 548 articles in scientific and engineering publications); insufficient budget for the development of research at the highest level; among other factors.

However, according to (Cabal & Rodríguez, 2015, p. 4), the deployment of Cuban international aid with its usual allies such as China and Russia, integration with nations and organizations in Latin America and the Caribbean and some transformations of the policy towards Cuba of the United States during the Barack Obama administration, parallel to the Cuban decision to enhance foreign investment, incorporate opportunities for a better future of its SCTI, although with the US government of Donald Trump, a major setback has been perceived in this aspect.

Regarding postgraduate activity, it should be noted that it was almost nil in Cuba before 1959. When the National Commission for Scientific Degrees (CNGC) was instituted in 1977, there were 324 professionals in Cuba with scientific degrees, 65 percent of whom were obtained

abroad. In 1987 the figure rose to 3,428, of which 45.8 percent were obtained in the country's authorized institutions, which in that year had already increased to 20 (Hernández, et al, 2009). In May 2008, there were 9,435 doctors of a certain specialty and 277 doctors of science, for a total of 9,712 scientific degrees in Cuba.

In recent years we have continued to develop programs that have had a favorable impact on education. Among these programs are: creation of two educational television channels; University for All; and Universalization of Higher Education.

According to (Actualitix, 2016), Cuba is among the 10 countries with the highest literacy percentage worldwide (99.75%) and particularly in 2002 it reached 99.80%, the 5th highest historically on a universal scale.

According to the (Agencia Informativa Latinoamericana Prensa Latina, 2017) "Cuba is a reference country in Latin America in terms of education, mainly with a gender focus". This same source adds that Cuba is a paradigm of how the work of schools influences the preparation of adolescents and young people, having the smallest level of teenage pregnancy in the region, an aspect that reflects the result of a comprehensive and conscious educational program.

In recent decades Cuba has stood out for orienting its educational programs to the labor market, mainly due to the close relationship between the Ministry of Higher Education and the Ministry of Labor, since the current policy establishes the commitment to guarantee a job placement for graduates of regular daytime courses, i.e., those with full-time dedication, which are accessed mainly by young people who complete the upper secondary level (baccalaureate).

The design and implementation of this training is supervised by the Ministry of Labor and Social Security through its agencies, to which the universities and their faculties contribute. The duration of the training is two years, although in exceptional cases, it may be completed in one year or extended to three.

Academic work in the field of training and development/human resource development

The task of systematically improving the quality of education is especially oriented towards teacher training. Through the Directorate for the Training of Pedagogical Personnel, attached to the Ministry of

Education, various programs are deployed to ensure the efficiency of the initial and ongoing training of educators, which are organized on two levels: on the one hand, the upper secondary pedagogical schools, in existence since 2011, whose objective is framed in the training of kindergarten teachers, primary and special education teachers.

With respect to academic work in the field of training and development, in relation to the teaching categories in Cuba, it can be pointed out that:

In Cuba there are four teaching categories that are granted to professors according to the time of service and the results of the teaching and scientific work they carry out: Full Professor, Assistant Professor, Assistant and Instructor. In the structure of teaching categories of the full-time faculty, there is a tendency to improve its composition. The percentages of tenured, assistant and assistant professors in 2015 in relation to those of 2010 increased by 7%, 11%, and 22% respectively; together with a significant decrease in the percentage of instructors of 31% (CINDA, 2016).

Conclusions

Cuba cannot base its development on primary products, because it lacks natural resources, especially energy resources, which would allow it to satisfy its internal demand and also its exports, so Science and its productions must one day occupy the first place in its economy, that is why the accelerated development of Education, more and more, represents a clear strategy for which it has been betting.

The systematic training and improvement of human resources has gained a progressive hierarchy in Cuba's development strategy, embodying one of the fundamental issues of the social transformations achieved and one of the supports to strengthen its economy and enable a positive reinsertion in international markets. An example of this is that, despite the economic crisis, the education sector has been supported by the national budget, as evidenced by the considerable percentage of GDP devoted to it.

The Cuban nation has a recognized scientific and educational potential, but it must continue its efforts to transform it more rapidly into economic and social development, for which it must rely on the updating of its economic model, which represents a great opportunity

for the transformation of the Science, Technology and Innovation System.

Postgraduate education in Cuba constitutes a national system with a Postgraduate Regulation, and the Ministry of Higher Education is responsible for conducting national policy in this area, with the support of the National Commission for Scientific Degrees and the Advisory Commission for Postgraduate Education, which guarantee the quality of postgraduate programs.

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