

The Quality of Education for Economic and Social Development in Cuba

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Abstract

The article focuses on the link that exists between the quality of the education system in Cuba and the extent to which it determines the country's economic and social development. It identifies the Cuban educational model by looking at its historical underpinnings and key milestones through quality indicators such as literacy levels, school enrollment, and students' academic performance in international evaluations. The paper analyses how human capital development has led to the emergence of Cuban biotechnology and medicine as the main drivers of the economy resulting in the achievement of a high human development index. Based on the current situation of Cuba, the article aims to depict education as the key to sustainable and inclusive development even in instances of external economic constraints.

Keywords: Cuban education, educational quality, economic development, social development, human capital, human development, literacy

1. Introduction

Education is the foundation of a country's development and has the power to lead to rapid growth in the human, economic and social sectors. The education system of Cuba is a very rare example in the whole America, Latin and Caribbean, because of its surprising results in the universalization of access and illiteracy reduction. Revolution led to profound transformations in the educational sector at the time it became not only a citizen's right but also a State's prime duty with citizens being morally and socially responsible, equipped with a critical mindset and generosity as a virtue (Yanes Watson et al., 2020). This spirit was translated into the development of an education system that is free and open to everyone from pre-school to university, hence Cuba's educational performance levels being on par with those of the most developed countries.

The Constitution of the Republic of Cuba, Article 27, goes further by explicitly delineating education as one of the essential elements for sustainable economic and social development and subsequently, education is guaranteed as a right for all citizens under the responsibility of the state (Yanes Watson et al., 2020). The whole concept of education as a means to social transformation and development has been the Cuban State's stance for years and thus, Cuba through its efforts in educational equity has been able to withstand even the slightest economic downturns. Supported by Pérez Ones and Núñez Jover (2009) who elaborated on how higher education served as the basis for Cuba's socio-economic development in their paper, this paper seeks to illustrate the quality and the effect of Cuban education on the Island's development firstly, it dives into the history of education in Cuba to then later dissect the present day challenges the sector faces in the fast changing world of technology and global labor market demands.

2. Cuban Educational Model: Basic Principles and Historical Accomplishments

2.1 Beginning and the Literacy Campaign

Fundamental to the Cuban education system are the principles of universality, equality, and quality, completely humanistic in nature and with a stress on education for the comprehensive development of the individual. The 1961 literacy campaign is the most famous success of this educational model, which involved the entire Cuban society in the goal of eradicating illiteracy within a year and thus, helping about 700, 000 to become literate (Pérez Ones & Núñez Jover, 2009). The first-rate schools throughout the country were made available to everyone even in their darkest and remotest corners following the base of the school network was laid. Furthermore, the University Reform of 1962 highlighted the role of scientific research along with advanced training, especially in natural sciences and engineering, and the theoretical and practical aspects of the students' development were considered two sides of a single coin (Pérez Ones & Núñez Jover, 2009).

2.2 Higher Education Contribution to National Transformation

Cuban higher education just like the entire society underwent a number of transformations: economic, political, ideological and cultural during the revolutionary decade of the 1960s when the revolution changed the social fabric of the country. Universities in Cuba played a fundamental role in the science system of the nation going on the one hand to become the driver of the socially transformative university and on the other hand the main scientific and academic institution (Pérez Ones & Núñez Jover, 2009). The very origin of the direct link academia-training and the country's socio-economic needs was that almost every program for training and research developed by Cuban universities during the 1960s and thereafter has been aimed at the economic and social development of the country.

2.3 Literacy and Structural Coherence

UNESCO and IIEP point out that the literacy level of Cuba has been more or less at 100 percent for a long time, which is truly remarkable for a Latin American country (UNESCO/SITEAL, 2023). As shown in Figure 1, Cuba occupies the first position out of all the countries in Latin America in terms of literacy with a rate of 99.8% while the world average stands at only 86.3%. The educational system of Cuba stands out because of its single layered structure and the harmonious integration of the different educational levels that offer students a steady and uninterrupted chain of learning between the start of their basic education and the time they graduate from university. This well-thought-out system has been the reason behind the smooth implementation of teaching and pedagogical principles and human values at every educational stage, thus nurturing the development of citizens with an all-round outlook and a strong dedication to the collective good.

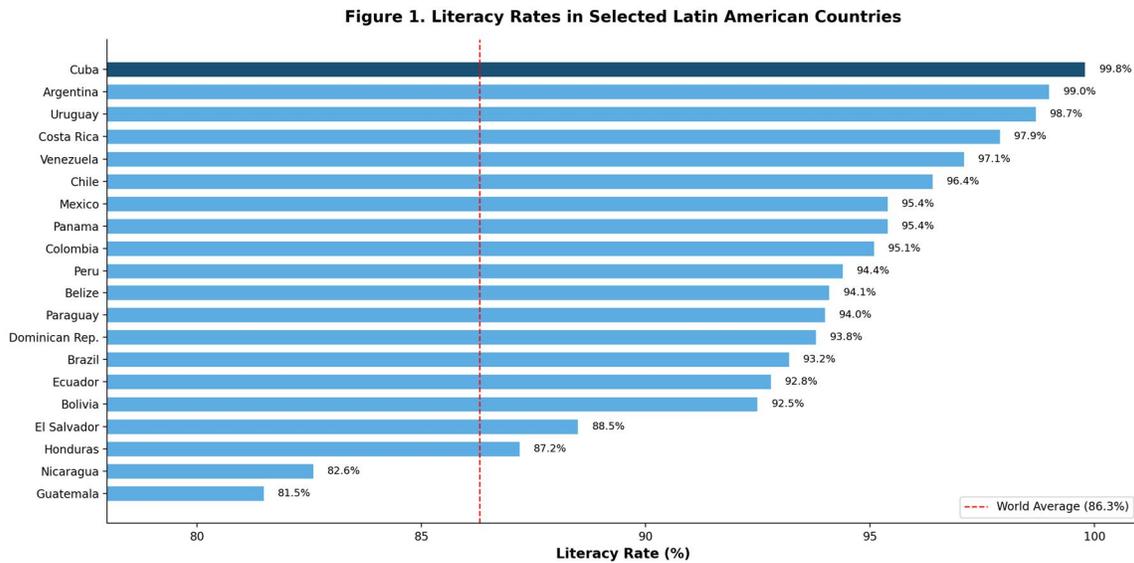


Figure 1. Literacy rates in selected Latin American countries. The chart uses distinct shades and a dashed line to ensure readability in black and white. (Source: CIA World Factbook, via LatinoStories.com)

3. Educational Quality Indicators and Their Measurable Impact

Cuba education quality is outstanding judging from a comprehensive list of criteria which have been internationally accepted and verified by multilateral organizations amongst others. Literacy level is one of the most striking among the other indicators; another one being enrollment and school leaving rates at the basic and secondary levels of education where these are close to 100, primary education ending rate is, in fact, 99.3% (UNESCO/SITEAL, 2023). Partly through yearly student performance test results, which serve as the basis for the UN Agencies' reports on education, and partly through direct observations of the UN Agencies' officials, the Regional Comparative and Explanatory Study (ERCE) of UNESCO has emphasized time and time again that Cuban students achieve the best results in reading, mathematics and science when compared to students in other countries in the Latin America and Caribbean region (Ríos, 2024). Ríos (2024) further states that Cuba obtains first place in cognitive tests and also the behavior of the students is outstanding, that is to say, the three factors combined prove that Cuban educational quality performance is really good.

These achievements owe a lot to a good number of reasons such as the fact that Cuban teachers are highly qualified and the student-teacher ratio is very low which means teachers can give their students individual account of their work and also provide appropriate guidance. Pérez Ones and Núñez Jover (2009) take these factors to be the main ingredients that help achieve such a level of quality in education. The Cuban educational system has set clear goals for the development of pedagogical skills of educators through continuous education and training, which is to say that teacher quality is recognized as the main factor influencing the quality of student outcomes at school. Besides that, the country has put in place a thorough education assessment system that facilitates the tracking of educational quality indicators over time and therefore aiding in the adjustment of teaching policies and methodologies.

Unesco/Siteal (2023) also agree with this line of thought and report that according to National Plan for Economic and Social Development through 2030, culture and human capital constitutes the greatest strength to the country and will, therefore, be the focal point of the plan, viz. education quality improvement along with technical and professional education. The plan setting a direction includes indexing educational-teaching process quality, enhancing teachers' skills, rearranging the school network, and expanding the range of early childhood development centers. These goals signify an understanding at the deepest level that attaining quality in education necessitates not only efforts but also adequate physical facilities and sufficient human resources.

4. Higher Education, Human Capital, and the University's "Third Mission"

4.1 Economic Impact of Higher Education

Higher education in Cuba has thrived over the years thus turning into a heavy hitter through human resource to the biotechnological and pharmaceutical-medical sectors for which the nation is increasingly being recognized in the global market that carries high added value products and services. At present, the biotech-driven pharmaceutical-medical industry of Cuba is generating more than 300 million dollars a year through exports accounting for the country's most booming sector (Pérez Ones & Núñez Jover, 2009). It is an extraordinary feat especially when considering the difficult economic times along with the embargo Cuba has been under for decades.

4.2 The Third Mission in Practice

This has been a major endeavor and the Cuban university has been in the forefront and the key player throughout the process. University has radically changed and expanded the traditional roles of teaching and research, to include engagement in economic and social development, which can be understood as the university's "Third Mission." In fact, Pérez Ones and Núñez Jover (2009) define the Third Mission as "the university's interaction with the rest of society," which means that the university is more than just an academic research institution. Scientific research at Cuban universities has been reoriented to an unprecedented degree in the late 1980s and the 1990s to become directly and intensively involved in the country's economic and social development.

One of the greatest instances portraying this metamorphosis is the story of Havana University's Laboratory of Synthetic Antigens (LAGS). It was initially set up in 1983 by the Faculty of Chemistry, Carbohydrates Group (Pérez Ones & Núñez Jover, 2009). What began as a laboratory focused on the production of synthetic antigens against bacterial mycobacteria has evolved into a highly specialized research unit producing a range of advanced biomedical products including Quimi-Hib, the world's first synthetic vaccine for human use. The successful synergy of university research, supportive public policies and society's needs has led to innovations with worldwide impact (Pérez Ones & Núñez Jover, 2009).

4.3 Research Transfer and Remaining Challenges

The Cuban universities had received great support from the government in the way of both funds and political backing, thus allowing university science to go through “full cycle” from basic research all the way to the application of its results ON the products and services (Pérez Ones & Núñez Jover, 2009). The team of scientists became the core of the potential development through available resources and some even became closely linked to the productive sectors. The new scientific practice at Cuban universities was made complete by the creation of Research Results Transfer Offices (OTRI) in the mid-1990s. The orientation of these offices was to develop firm-oriented consultancy services, the management of technology commercialisation and export of products, and technologies with a high added value (Pérez Ones & Núñez Jover, 2009).

Development is never simple and in order to unfold the economic challenges faced by Cuba, one must mention the embargo imposed by the United States of America. This embargo prevents Cuba from accessing international credit, advanced technologies, and markets, which hampers the country's economic growth potential (Pérez Ones & Núñez Jover, 2009). Also, the modernization of the production infrastructure and the better articulation between the education system and the productive sector remain key factors to improve the country's competitiveness and innovation capacity in the global market.

5. Education, Social and Human Development: The Integral Formation of the Citizen

The biggest mark left by the Cuban educational model can be seen when one looks at social and human development in general. Education was one of the main pillars of equity hence, it was used as a means to bring down the widening gap between the different social layers while at the same time facilitating the movement of individuals and families from one class to another. Through universal access to quality education, society has experienced a tremendous metamorphosis, i.e., transformation has led to the rise of a highly cultured people who enjoy a strong civic consciousness, solidarity not only at the national level but also at the global one among them. Further evidence can be found in the research work of Yanes Watson et al. (2020) who support not only the first point but also, in fact, they see education as the main pillar of social development in Cuba. The authors recognize education as "the most potent weapon of man in achieving local development" and point out that personal and collective improvement are great aspirations derived from it.

The United Nations Development Programme (UNDP)'s Human Development Report highlights the role education and health have played in Cuba's strong showing on the Human Development Index (HDI) (PNUD, 2020). From 1990 to 2019, the HDI value for Cuba increased from 0.680 to 0.783, indicating an increase of 15.1%, and therefore the country is now classified as having high human development, among other countries in the region (PNUD, 2020). As demonstrated in Figure 2, in recent years the HDI of Cuba has always been higher than the average

seen for the Latin American and Caribbean region, both of which suffered a decline, however, during the 2020–2021 period, due to the global pandemic. This is all the more commendable when the economic hardships and external challenges faced by Cuba in recent years are taken into consideration.

Figure 2. Cuba Human Development Index (HDI) Trend, 2016–2022

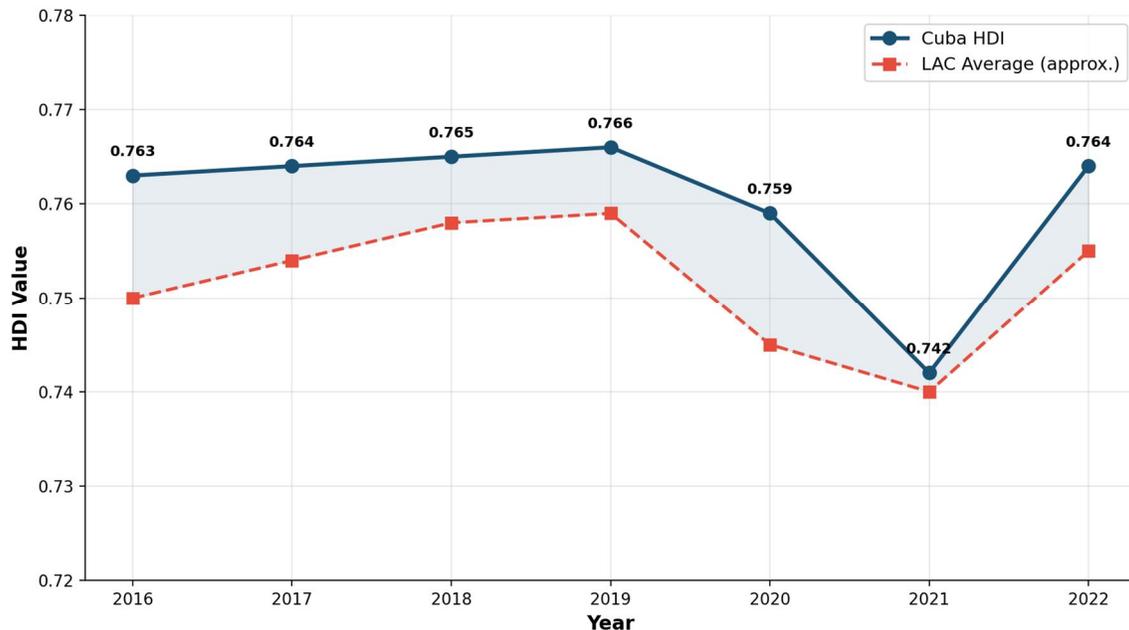


Figure 2. Cuba Human Development Index (HDI) Trend, 2016–2022. The chart uses distinct colors, markers, and line styles to ensure readability in black and white. (Source: UNDP Human Development Reports; countryeconomy.com)

One of the main reasons why the Cuban education system is different from any other is its insistence on the inculcation of values such as social solidarity, internationalism and the sense of social responsibility which can be clearly seen in the fact that Cuban professionals (doctors, teachers and engineers) are most especially found in the remotest parts of the world (Pérez Ones & Núñez Jover, 2009). At the same time as they contribute to the development of partner countries, the Cuban professionals' presence abroad generates revenue at home and improves the reputation of the island in the international arena. Cuban education has excelled in producing skilled professional technicians who not only possess great technical skills, but who also have a deep commitment to social justice and collective well-being.

However, Yanes Watson et al. (2020) have a much larger perspective in mind when they say that education should be regarded as a major force for social change and not as social replication. This has aptly been achieved by the Cuban education system where people from different strata of society have been enabled to acquire higher education and make their contribution to the development of the country. The system makes it possible for people to learn for themselves and become fully aware of the social norms, individual and collective behavior and so be ready for the human labor market and also for the full development of life.

6. Education and Sustainable Local Development

Education in Cuba has played a significant role in the facilitation of Sustainable Local Development, which refers to the concept of a self-sufficient change process that leads to structural transformation oriented towards improving the capabilities within the local community (Yanes Watson et al., 2020). Boisier (2005) cited in Yanes Watson et al. (2020) develops this thought by defining local development as “an endogenous process of structural change, of 'empowerment' of a local society” that blends exogenous and endogenous elements. Besides, education is at the forefront of this power shift as it provides local communities with the intellectual and technical resources to not only identify their problems but also to come up with solutions that best suit their context.

Yanes Watson et al. (2020) further explain that education should not be compartmentalized into various areas because of its holistic nature which includes different developmental areas, viz. economic, social, cultural and environmental. Cuban education has over time embraced the notion of environmental sustainability and recognized that it should prioritize the environment in such a way that the natural resources of planet earth are preserved not only for the present generation but also for the future ones. The Cuban constitution commits the government to protect the environment and the country's natural resources, and it closely links this commitment to sustainable economic and social development (Yanes Watson et al., 2020).

Cuba's education system has prioritized the training of well-rounded professionals who are conscious of the intricacies of local development problems. These professionals possess the ability to integrate knowledge from different disciplines, collaborate with the local community, and come up with ground-breaking solutions that meet the specific needs of the territory. Cuban higher education has thus responded to this reality through the creation of programs that link research, teaching, and university outreach activities and are, therefore, focused on local development.

7. Contemporary Challenges and Future Perspectives

Despite the fact that the Cuban education system has over the years performed exceptionally well in most of the indicators that measure the quality of education, the country right now is facing some serious problems and the scope of these problems is far more than minor ones. The question is how to keep up with the high level of educational outcomes in an economy that is running low on resources and is also confronted with external pressures. The problem that most stands out is the issue of aligning the curricula and training with the constantly evolving world of technology so that the education system can remain relevant at all times.

A further major problem for human capital has been and remains to be the retention of talents in Cuba. The human capital that the country has developed at a great cost through the public investment in education and training is being lost to some extent as the highly skilled professionals are going abroad, mostly for economic reasons and because foreign labor markets offer them better chances of making a living. The so-called brain drain that Cuba has experienced thus far is a great

risk when it comes to maintaining the country's competitiveness, especially in future-oriented sectors like biotechnology and medicine where the products and services are at the high-tech end of the spectrum.

Moreover, going digital and bringing in new technology into the teaching and learning process has its own duality in terms of opportunities and challenges at the same time. The authors speak highly of university-industry relations, but at the same time, they admit that the challenge of technology integration remains for the education system as a whole. Technology brings endless possibility in terms of both broadening access to education and raising the quality of it, however, it is also the fact that substantial investments are needed for the infrastructure to be in place and for the teachers to be effectively trained. The situation is made worse by the existing gap in internet coverage and the availability of electronic devices. Cuba must strive toward a fairer distribution of technology so as not to exacerbate the existing educational gap further.

8. Conclusions

The Cuban education system through the prominence it has gained and the role it has played has lasted over the country's historical track the journey of the latter's economic and social development. Its achievements cannot be denied in terms of access, equity, and quality and these have put Cuba on the map of education as one of the benchmarks worldwide. A big percentage of the progress made in strategic sectors such as biotechnology and the medicine sector goes to the creation of highly skilled human capital, which has also meant that Cuba has been able to enjoy a high human development level and thus, becomes one of the best in social performance in the region.

The university Third Mission in Cuba was mainly aimed at making a direct connection between university research and its teaching with the economic and social development of the country and it is a marvelous example of an innovative model that is capable of yielding tangible results in terms of high value-added products and services. But the model still has to deal with problems such as how to continue to be effective even under the country's difficult economic circumstances; further need for the deepening of the relationship with the imperatives of a world that is in perpetual change; human talent retention; and fair distribution of the new technologies.

The nation's education will keep the leading role of the country's progress only in the case the quality of education is sustained by rendering the requisite resources, pedagogical innovation is pursued, and the mutual relationship between the academic sector and the productive or social needs of the country is deepened. Education has to be universally accessible at all times, free of charge, and of high quality and open to every individual irrespective of their social or economic background. Besides, it is necessary to ensure that the education system is capable of facing the challenges of the 21st century by embracing the new methodologies, technologies, and interdisciplinary approaches that do not only prepare citizens for the labor market but also make them agents of social transformation and thus, contributors to sustainable development.

To sum up, the Cuban experience shows that even where conditions are extremely tough economically, it is still possible to have a quality education model provided that there is strong

political will, continuous investment in human and material resources, and a firm belief that education is the most powerful tool of social change and overall national development. In the rapidly changing and increasingly interdependent world, Cuban education must constantly develop along its three main pillars of equity and quality, and yet, it must also adapt to the realities and challenges of the 21st century thus ensuring a bright, sustainable, and equitable future for all Cubans.

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