

Impact of Education on Economic Development

Lakshman Chandra Pal

Bidhan Chandra College, 31, G T Road (East), Rishra, Hooghly, PIN 712218, West Bengal, India
Corresponding Author E-mail: lcpalgeo@gmail.com

ABSTRACT

Education is widely acknowledged as the most important tool for socioeconomic development in a country. It catalyzes boosting productivity and promoting technological advancements. There is a clear positive relationship between education levels and stages of economic growth. As the population's education level improves, it opens up and expands various sectors of the economy, including secondary, tertiary, and quaternary sectors, leading to increased job opportunities and contributing to the overall size of the country's gross domestic product. Qualitative research methods were employed in this study to uncover the impact of education on economic development, with a specific focus on the agriculture, manufacturing, and earnings sectors. The study explored the intricate connections between education and these sectors through document analysis, and observations. The findings highlighted the transformative power of education in driving sustainable and inclusive economic progress. Education also plays a pivotal role in uplifting agricultural and industrial productivity by adopting modern inputs and technology, resulting in higher wages for the workforce. Educated individuals tend to earn more, invest in their family's well-being and healthcare, and enjoy longer lives, thereby fostering societal development. This paper contributes to the existing body of knowledge by comprehensively understanding how education influences economic development, particularly in the agriculture, manufacturing, and earnings sectors. It underscores the importance of education as a driver of sustainable and inclusive growth, emphasizing the need for continued investment in education to ensure long-term socioeconomic progress.

Keywords: Level of education, Productivity, Work force, Wage rate, Development, Human capital

ABSTRAK

Pendidikan secara luas diakui sebagai alat yang paling penting untuk pembangunan sosial ekonomi di suatu negara. Ini mengkatalisasi peningkatan produktivitas dan mempromosikan kemajuan teknologi. Ada hubungan positif yang jelas antara tingkat pendidikan dan tahap pertumbuhan ekonomi. Ketika tingkat pendidikan penduduk meningkat, itu terbuka. Ini memperluas berbagai sektor ekonomi, termasuk sektor sekunder, tersier, dan kuaterner, yang mengarah pada peningkatan kesempatan kerja dan berkontribusi pada produk domestik bruto negara secara keseluruhan. Metode penelitian kualitatif digunakan dalam penelitian ini untuk menyelidiki dampak pendidikan terhadap pembangunan ekonomi, dengan fokus khusus pada sektor pertanian, manufaktur, dan pendapatan. Studi ini mengeksplorasi hubungan rumit antara pendidikan dan sektor-sektor ini melalui wawancara mendalam, analisis dokumen, dan observasi. Temuan menyoroti kekuatan transformatif pendidikan dalam mendorong kemajuan ekonomi yang berkelanjutan dan inklusif. Pendidikan juga memainkan peran penting dalam meningkatkan produktivitas pertanian dan industri dengan mengadopsi input dan teknologi modern, yang menghasilkan upah tenaga kerja yang lebih tinggi. Individu yang berpendidikan cenderung mendapatkan lebih banyak, berinvestasi dalam kesejahteraan dan perawatan kesehatan keluarga mereka, dan menikmati hidup lebih lama, sehingga mendorong perkembangan masyarakat. Makalah ini berkontribusi pada kumpulan pengetahuan yang ada dengan memahami secara komprehensif bagaimana pendidikan memengaruhi pembangunan ekonomi, khususnya di sektor pertanian, manufaktur, dan pendapatan. Ini menggarisbawahi pentingnya pendidikan sebagai pendorong pertumbuhan yang berkelanjutan dan inklusif, menekankan perlunya investasi berkelanjutan dalam pendidikan untuk memastikan kemajuan sosial ekonomi jangka panjang.

Kata kunci: Tingkat Pendidikan, Produktifitas, Tenaga kerja, Upah rata-rata, Perkembangan, Modal manusia

BACKGROUND

"Education is the most powerful weapon you can use to change the world" -Nelson Mandela.

Education is 'the stock of skills, competencies, and other productivity-enhancing characteristics' of human beings (World Economic Forum, 2016). It helps man understand and accept the complex scientific changes in the world. Education *amplifies* the convenience of the workforce to modern and scientific ideas and increases their efficiency and ability to absorb new technology. It is thought to be the most important tool in the *production process* in a rapidly changing technological and economic environment. It *augments* productivity by improving worker's skills, enhancing their ability to obtain, understand, and utilize new input, and improving overall managerial ability. A well-educated man can supervise all economic activities better than the illiterate one. It enables men to explore and adopt *new technologies*, which will help them realize the true potential of economic activities. Because of the difference in levels of intelligence, management capacity, and education, there is a difference in the productive capacity of the workers. For the same reason, differences and inequality in the wage rates between individuals also exist.

The two most important education components- *literacy* and *numeracy*, greatly affect the developmental process. Literacy allows them to read and comprehend the instructions on production inputs. In contrast, numeracy tolerates the computation of the right quantity of inputs to be shared to get the desired output. Education gives man the power of analysis. It increases the efficiency of individual workers and helps the economy by speeding up the production process (World Economic Forum, 2016). Education is crucial to individual and societal prosperity (Woessmann, 2016). With the development of the population's education level, different other sectors of the economy, like secondary, tertiary, quaternary, and so on, are gradually opened up and enlarged. This *unlocks* the way for development.

Human capital formation in education and health status plays a significant role in a country's economic development. Expenditure on education should be seen as an investment that would give returns in the form of higher productivity and greater earnings for the educated. Generally, increases in earnings are coupled with extra years of education, with the rate of return varying with the level of education. It has been observed that every dollar spent on education may generate as much as \$10 to \$15 in economic growth (UNESCO, 2012). An additional year of education may increase a person's earnings by 10% and average GDP by 0.37% annually (Valente et al., 2016). The Ministry of Education of South Korea thinks that country's remarkable and fast economic growth is due to the investment in human resources through education.

The *health condition* and *survival rates*, *fertility level*, *governance quality*, etc., are linked with a courtier's level of education (IIASA, 2008). Education is the most important personal determinant of health and life expectancy. More educated people generally invest more in their own health and their children's health. It has been found that educated people live longer. They have a low fertility rate. They are happier, and their lives are more interesting and informative. All these give them sound health, which is active, energetic, and productive. Józef Dziechciarz (2015) thinks that graduates not only have more employability and receive higher earnings but also gain higher social status, greater efficiency in consumption, better health, greater access to technological change, and a broad set of cultural benefits, including better opportunities for leisure. It has a great role in the prosperity of future generations, with widespread repercussions for poverty, social exclusion, and the sustainability of social security systems (Woessmann, 2016). It helps to lift the poor out of poverty.

The important point to note is that *years of schooling* for children can change society and the quality of education, which is directly related to the nation's development. There is much variation regarding the access, equity, and quality of education in different countries. Generally, low- and middle-income countries lag behind industrialized and developed countries regarding the quality of their education. These variations are responsible for people's earnings and development level disparity. Still, more than 100 million children are lagging behind in enrollment, especially in countries in the low- to-middle-income group. The high rate of dropouts adds a new dimension to this problem. In this context, the paper analyzes the impact of education on the economic development of any society.

This research seeks to answer *two basic questions*: what will education's role be in the economic development of a society? And what are the key hurdles and troubles with access, equity, and quality of education? To have the answers to these questions, the study aims to unpack two key aspects of the study. *First*, it assesses the potential effects of education in agriculture, manufacturing, and earnings. *Second*, the paper looks at the dimensions of problems of access, equity, and quality of education faced by different third-world countries and makes policy recommendations.

The present work has been carried out by collecting *secondary data* from published literature, case studies, and reports from different organizations and official websites. Data related to weekly earnings and the unemployment rate by educational attainment have been collected from the US Bureau of Labor Statistics website. Qualitative research methods have been applied to prepare the study.

Impact of education on development

Education is a key determinant of *economic well-being*. It increases the human capital inherent in the labour force of a country (Teixeira & Queirós, 2016). In the earlier *neo-classical models*, the economists believed that physical capital was the most important determining factor for any country's economic growth and development. So they recommended the formation of physical capital to accelerate economic growth, especially in developing countries (Habib et al., 2019). In the 1960s, it was proven that, along with all other factors, education plays the most significant role in economic development in the form of *human capital* (Kuzminov et al., 2019). Without considerable investment in human capital, no country can achieve economic development. Human resources, or human beings, are the active agents who explore natural resources, accumulate capital, and build social, economic, and political organizations to advance economic development. A study covering 29 developing countries in a survey of growth in 1984 has shown that the contribution of education to economic growth ranges from less than 1% (in Mexico) to 23% (in Ghana) (Appiah, 2017). Solow in Schiliro (2017) estimated that, in the USA, between 1909 and 1949, 57.5% of the growth in output per person-hour could be attributed to the improvement of the quality of the labour force, mainly as a consequence of education. Denson (1962) estimated that, from 1929–1982, education and technological progress contributed 42 per cent to growth in the USA's national product.

The focal item of development, the *quality* of policymaking, and investment decisions depend largely on the level of education and experience of the policymakers and managers. So no country will be able to develop until and unless it develops the skills and knowledge of its people and utilizes them effectively in the national economy. Before the nineteenth century, no effort was made to develop human capital. So very few or no investments were allotted for the expenditures on schooling, on-the-job training, and other similar forms of training. A radical change was noticed in this idea during the twentieth century with the application of knowledge and skill to develop new goods and more efficient production methods. With time, education, skills, and knowledge acquisition have become crucial

determinants of a person's and a nation's productivity. The study made by the World Bank in a sample of 60 developing countries shows that, during 1965–87, the economic growth rates were especially high in such countries where there was a combination of a high level of education and macro-economic stability and openness (Yıldırım & Gökalp, 2016). But it must be remembered that education alone cannot transform or develop the economy; rather, it acts as a catalyst along with the quantity and quality of domestic and foreign investment, together with the overall policy environment, in the development process.

Education and agricultural activities

There is a *significant and direct relationship* between the education of the farmers and the management of agricultural activities and thus its productivity (Senger et al., 2017). Education is thought to be an important tool in modern agricultural production in a rapidly changing technological and economic environment (Mochizuki & Bryan, 2015). It *augments* the productivity of crops by improving farmers' skills, enhancing the farmer's ability to obtain, understand, and utilize new inputs, and improving overall managerial ability (Mwaura, 2014). Education helps the farmers understand the *innovation information* generated from research and development and to accept the complex scientific changes in this sector. It enables farmers to explore and adopt new technologies, which will help them realize the true potential of agriculture (Pivoto et al., 2018). Education is expected to *accelerate* agricultural productivity by enhancing the productive capabilities of producers by exposing them to a more systematic and dynamic production system and by enhancing their ability to choose the optimal levels of inputs and outputs (Antle et al., 2017). Fabregas et al (2019) observed that agricultural messages could enhance farmers' productivity when they could access them. Educated farmers are capable of using the available information more competently, and they also have better access to the required information. Also, they can use a given amount of resources more efficiently (Salvioni et al., 2020). According to Nelson and Phelps (1966), educated farmers are more likely to adopt new technologies or products early since they have better access to related information and a better ability to distinguish between promising and doubtful innovations.

There is a *strong correlation* between elementary school education and farm efficiency (Paltasingh & Goyari, 2018). Different *meta-* and *micro-*studies have revealed that rural education increases the average productivity of field crops (Panda, 2015). A survey conducted by the *World Bank* in 1992 to measure the relationship between farmers' education and their agricultural efficiency in low-income countries clearly shows that farmers with basic education were 8.7% more productive than farmers without education (Aldosari et al., 2019). In Nepal, completing at least seven years of schooling increased productivity in wheat by over 25% and rice by 13% (Magar et al., 2022). Research-induced technical change has resulted in 20% growth in agricultural production since 1965 in China (Mensah et al., 2017).

In a study in Bangladesh, Asadullah and Rahman (2009) surprisingly show that *basic education*, especially primary and secondary schooling, is relatively more important for agricultural productivity than higher education. Srisopaporn et al (2015) added that farmers in Thailand with four or more years of schooling were three times more likely to adopt fertilizer and other modern inputs than less educated farmers. On the other hand, *illiterate farmers* or farmers with little schooling prefer to wait to adopt new technology until its profitability has been established, i.e., until other farmers have successfully adopted the innovation (Weir & Knight, 2004). The dissemination of useful and practical information relating to agriculture, including improved seeds, fertilizers, implements, pesticides, and improved cultural practices, etc., needed education, especially *extension education* of the farmers (Antwi-Agyei & Stringer,

2021). An educated farmer can supervise all the farming activities better than an illiterate farmer. Education lets farmers become better managers by enhancing their decision-making skills (Asadullah and Rahman 2009). He knows to realize the *harmful effects* of *agrochemicals* used in farming. He also knows how to wipe out problems and increase productivity with a blend of organic and green farming. He helps attach the uneducated farmers with new farming knowledge and create a scientific temper in our rural farming communities.

Education and industrial productivity

Although manufacturing activities are run mechanically, workers still play a *vital role* in production. In the plants, a wide range of activities convert the raw materials into finished products, for which the labour force has the key responsibility. So, the quality and quantity of industrial production depend solely on the quality and capability of the workforce. Good-quality primary and secondary education balanced by relevant vocational training like ITI, engineering, or engineering diploma can prepare a skilled workforce for this sector. Education is seen as a means of uplifting a country's economy and development by creating skills that enhance productivity.

There are three ways in which education affects a country's productivity (World Economic Forum, 2016). *Firstly*, it increases the skills and knowledge of the workers to carry out on-hand tasks more quickly. *Secondly*, it facilitates the transfer of knowledge about new information, products, and technologies created by others (Panda, 2015). *Finally*, it enhances a country's capacity to create new knowledge, products, and technologies by increasing the workforce's creativity.

Table 1. Labour productivity and educational qualification in some developing countries

Country	Level of output/man in manufacturing (US\$ 1965 price)	Average no of years of primary and secondary education/labour
Argentina	3157	6.9
Brazil	2630	3.9
Chili	4233	6.9
Colombia	1588	3.8
Egypt	1593	3.2
Ghana	295	3.3
Greece	2893	7.4
India	437	3.2
Isreal	3911	8.5
Malaya	4496	5.1
Mexico	2380	4.9
Pakistan	590	2.5
Peru	1430	4.9
Spain	3984	5.9
Taiwan	2589	5.7
Turkey	1208	5.7
Venezuela	6254	5.4
Yugoslavia	4148	6.0

Source- Bautista Romeo M

Globalization accelerates the diffusion of technology and the pace of innovation. This is coupled with new opportunities for occupations in the secondary sector. As a result, the workforce in this sector must be capable of adapting to changing technological scenarios. Educated and qualified workers only can espouse themselves with such changing situations and technological diffusion (Hodge & Smith, 2019). *Training* and different types of *orientation programs* may help the workers adopt new technology.

So robust training policies and systems must be arranged for them by the authorities. This *enhances* the skill of the workers. As they know more about a particular job's function, they will understand more about a particular industry. This, in turn, will make them more valuable to the employer. As educated, workers can more efficiently carry out tasks with their critical thinking, a country's economy becomes more productive as the proportion of educated workers increases. Sometimes the availability of skilled labour in a particular geographical region may develop a cluster of similar industries in that area (e.g., Silicon Valley, USA). This helps greatly with the development of that region.

Strong correlation also exists between education and productivity. It has been found that the higher the workforce's education level, the higher the quality and quantity of the product because the more educated workers are more likely to innovate and thus affect everyone's productivity (Porter & Kramer, 2018). The table 1 above shows a clear view of the relation between the level of education and the labour productivity of some selected countries. It is found that the longer the average schooling period, the higher the output level in the manufacturing sector.

Education and Earnings

The link between education and earnings was established in theory and practice during the latter half of the 20th century. There is a firmly held belief that education is an important determinant of individual earnings and labour force status. Schooling imparts skills to workers that enhance productivity in different sectors. This, in turn, increases the earnings of the workers. Educated workers enjoy higher wages, greater employment stability, and greater upward mobility in income compared to less-educated workers. It has been found that the income of a salaried person is directly proportional to the level of education. Generally, jobs that require high levels of education and skill get higher wages than jobs that require few skills and little education. People who have a higher education level have a higher income level. It is said that "*the more you learn, the more you earn*". A worker with a graduate degree earns more in salary than those with a high school diploma. They also contribute more to taxes and play a vital role in making the nation. With time, the earnings gap between college graduates and those with less education widens.

The table 2 below indicates how weekly earnings and unemployment rates vary by educational attainment for workers ages 25 and older at a broad level in the USA. This also shows the relationship (inversely proportional) between the education level and the unemployment rate.

Table 2. Median weekly earnings (US\$) and unemployment rate by educational attainment, 2017

Level of education	Median usual weekly earnings	Unemployment rate (%)
Doctoral degree	1743	1.5
Professional degree	1836	1.5
Masters degree	1401	2.2
Bachelors degree	1173	2.5
Associate degree	836	3.4
Some College, no degree	774	4.0
High School diploma	712	4.6
Less than a High School degree	520	6.5
Total	907	3.6

Source-US Beauru of Labour statistics, Current popular survey

Note: Data are for persons aged 25 and over. Earnings are for full-time wage and salary workers.

It is found that the median weekly earnings in 2017 for those with the highest levels of educational attainment—doctoral and professional degrees—were more than triple those with the lowest level, less than a high school diploma. The table also shows that in 2017, workers with a professional or doctoral degree had the lowest unemployment rate (1.5 per cent) of all groups, about one-fifth the unemployment rate (8.0 per cent) of workers with less than a high school diploma. See figure 1.

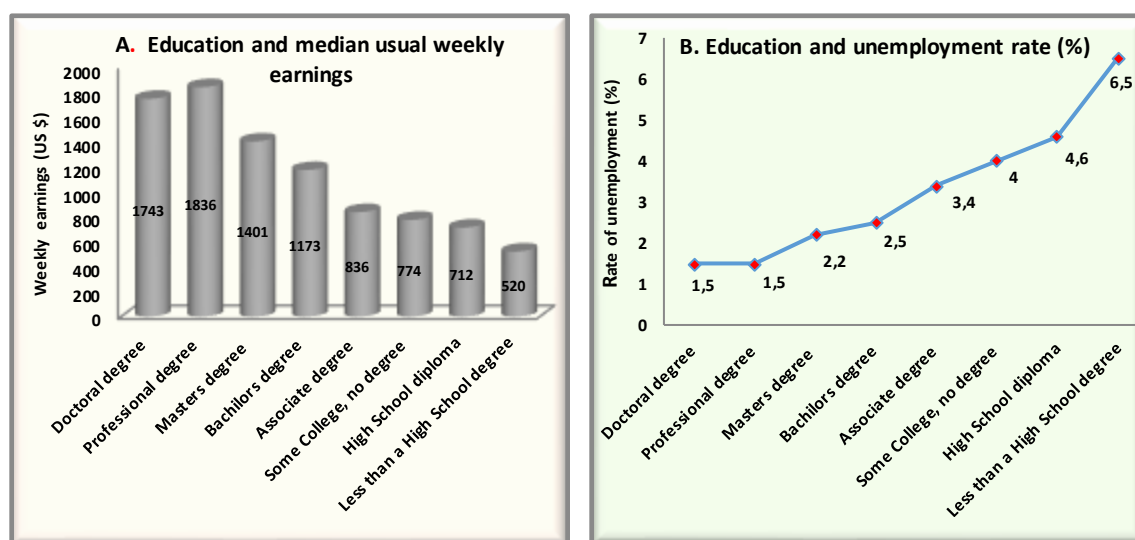


Fig 1. : Relation between (A) education and earnings (B) Education and unemployment (%) rate

Problems of Access, Equity and Quality of Education

Progress in enrollments and years of schooling in low- and middle-income countries has been *growing* faster. Spending on education is also increasing daily and becoming a greater *priority* worldwide. This has contributed to the *economy's growth* and helped reduce poverty in such countries. From the SDGs, it is clear that there has been major progress in access to education, specifically at the primary school level. School education is almost universal or the rule in some parts of the world, like Eastern Europe and central Asia, Eastern Asia, Latin America, and the Caribbean. Countries in the Middle East and North Africa are also making considerable progress, although sub-Saharan Africa is lagging in enrolments. Till now, there is a considerable number of children beyond the reach of educational institutions in many third-world countries. From the survey of SDGs, about 100 million youth worldwide still lack basic literacy skills, and more than 60 per cent of them are women.

The issue of *equity* in education is a major problem affecting many disadvantaged groups of people, including the poor, linguistic and ethnic minorities, nomads, refugees, and street and working-class children. For example, despite being a lower middle-income country in Indonesia, almost 80% of 15- to 19-year-old students from the poorest households are not in upper secondary school or higher education, compared with less than 20% from the richest households. The same problem arises in the cases of boys and girls in different parts of the world, especially in the Middle East, North Africa, and South Asia. The gender gap is noticeable in the form of years of schooling, level of education, the standard of admission to institutions, and so on.

But not merely the years of schooling of the students improve the health of a country's economy; rather, it is the question of *quality* that has a significant relationship with economic growth (Cubas et al.,

2016). There is strong evidence that the cognitive skills of the population, not the years of schooling, are powerfully related to long-run economic growth (Hanushek et al., 2023). *UNESCO* (2012) also added that acquiring basic literacy and numeracy alone is not enough to get good jobs. So quality is the core item. But great disparity is noticed in the quality of education between nations. It is poor at all levels in the low-middle-income countries. Learners in developing countries always have a mean level of achievement below that of industrialized and developed countries. In many cases, the children are completing primary school without becoming literate. For example, over half of the women and over one-third of the men aged 15 to 29 in Ghana who had completed six years of school could not read a sentence in 2008. A further 28% of the young women and 33% of the young men could only read part of a sentence (UNESCO, 2012).

So there is a difference in the rate of enrollment, the lack of access opportunities, the number of years of schooling, and the level of education. The difference is also found in the *quality* and *standard* of education in different parts of the world and even in different provinces within the same country. All these make differences in the earnings of the people and their role in the development process.

CONCLUSION

Education plays a crucial role in the overall development process, contributing to various socioeconomic outcomes. It serves as a determinant of economic prosperity and social advancement in modern society. Education acts as a catalyst for enhancing the workforce's productivity, with educated individuals possessing the necessary skills and knowledge to manage agricultural and manufacturing activities effectively. They are better equipped to apply the latest technology and inputs, increasing productivity and output. Moreover, educated workers earn higher wages, leading to improved living standards and better access to healthcare and nutrition.

However, it is important to address the disparities in access, equity, and education quality across different regions of the world. In many countries, particularly in the third world, millions of children remain out of school, and the quality of education provided is often inadequate for higher-level education and decision-making roles. It is crucial to ensure that the education system is responsive to the needs of the present time by focusing on improving the quality of education. Educational institutions must collaborate closely with the industry to produce skilled graduates who can meet the demands of society and the economy. This partnership between academia and industry fosters innovation and is a powerful economic growth driver.

Governments should prioritize education funding by mobilizing domestic resources, especially in low- and middle-income countries. Allocating at least 5% of GDP to education across all levels is necessary to ensure sustainable funding and quality and contemporary education delivery to all students. Special attention should be given to marginalized sections of society, including the poor, linguistic and ethnic minorities, nomads, refugees, street and working children, and girls and women. Donors and global development organizations should also increase their support for education, recognizing its critical role in promoting inclusive development and reducing inequalities.

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