Towards Reforming Education in India

KALINGA LECTURE 2020

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22 June 2020

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Nabakrushna Choudhury Centre for Development Studies
ICSSR Institute in Collaboration with Government of Odisha

Citation: R Radhakrishna, Towards Reforming Education in India, Kalinga Lecture 2020, Nabakrushna Choudhury Centre for Development Studies, Bhubaneswar, 22 June 2020.

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Abstract

Education is a key component and a major determinant of human resource development which enables the people to better understand the world in which they live; and that they can experience their potential capabilities. This paper scrutinizes the performance of the entire gamut of the education sector of India. It also makes a comparison of India's performance with that of other BRICS countries. The paper focuses on governance structure, quality and educational inequality besides discussing the issues relating to increasing prominence of privatization at all levels and its consequences on efficiency and equity. Thus, it stresses the importance of "more education" including high level technical knowledge and skill formation. It also points out the impact of Covid-19 on the education sector in India. It identifies the emerging challenges in higher education and suggests reforms for achieving efficiency with equity that required for building a better society.

Key Words: Education sector, governance, quality, inequality, BRICS, covid-19.

1. Introduction

Education is the key component and major determinant of human resource development. It enables social transformation and economic well-being both at the individual and national levels. According to Noble Laureate Amartya Sen, education is both a constituent and instrument of well-being. "Universal primary education" is one of the eight UN Millennium Development Goals (MDGs); and "quality education" is fourth in the seventeen Sustainable Development Goals (SDGs) adopted by the UN in 2015. The SDG for education aims to (i) provide equal access to affordable vocational training, (ii) eliminate gender and wealth disparities, and (iii) achieve universal access to quality higher education.

The progress of a country depends on the quality of its manpower in terms of knowledge, skills, competencies and related attributes. Skill development and knowledge enhancement of the workforce are vital for promoting economic growth. Education has positive externalities as well. Workers using new technology can spread the same to other workers around them.

The relationship between education and economic inequality is interactive and mutually reinforcing–economic inequality impacts access to education, particularly quality education for the rich; contributing thereby widening educational inequality; and which results in widening of income inequality.

Persons from wealthier sections of society have access to better schools and higher educational institutions, while those from the deprived sections settle for lower quality of education. In the process, the system contributes to widening of educational inequality. The outcome of this process is the preponderance of poorly educated persons in low paying jobs and better educated persons in highly paying jobs. It is argued that equal educational opportunities can neutralize the adverse consequences of family circumstances and help in reducing the inequalities (OECD, 2012). According to the Nobel Laureate Stiglitz, the existing educational system is one of the major institutions perpetuating inequality, especially in less developed countries.

Policies focussing on equity in education can promote inter-generational improvement in earnings and reduce income inequalities. For developing countries in general, expanding quality education and reducing inequality in education have been the major challenges.

How is India confronting these challenges? Let me dwell upon this issue further.

2. School Education

Immediately after Independence in 1947, the Department of Education was set up under the Central Ministry to expand educational facilities. Since1960, the focus on access has been gradually moving towards improved quality. Consistent with this vision, the National Policy on Education was formulated in 1968. The 1990s saw several policy initiatives and programmes, following 'The World Declaration in Education for All', adopted in 1990 by the international community including India. Programmes such as *Operation Black Board* for improving primary education and *District Primary Education Programme* were introduced.[1]

In 2000-01, the country launched the major programme, *Sarva Shiksha Abhiyan* (SSA), for improving elementary education and reducing gender and social gaps. Thereafter constitutional amendment was passed by the Parliament in 2002 making education a fundamental right of every child in the age group 6-14. This culminated in the launch of the Right to Education (RTE) Act 2009, which has been in operation since 2010 which provides free and compulsory education to children in the age group 6-14 years.[2]

The most recent Draft Education Policy suggests mainstreaming pre-primary education in the age group of 3-6 by extending the RTE Act 2009 (Government of India, 2019a). This is a very positive measure since a major part of the brain develops before 6 years of age, helping to induce children to continue further education.

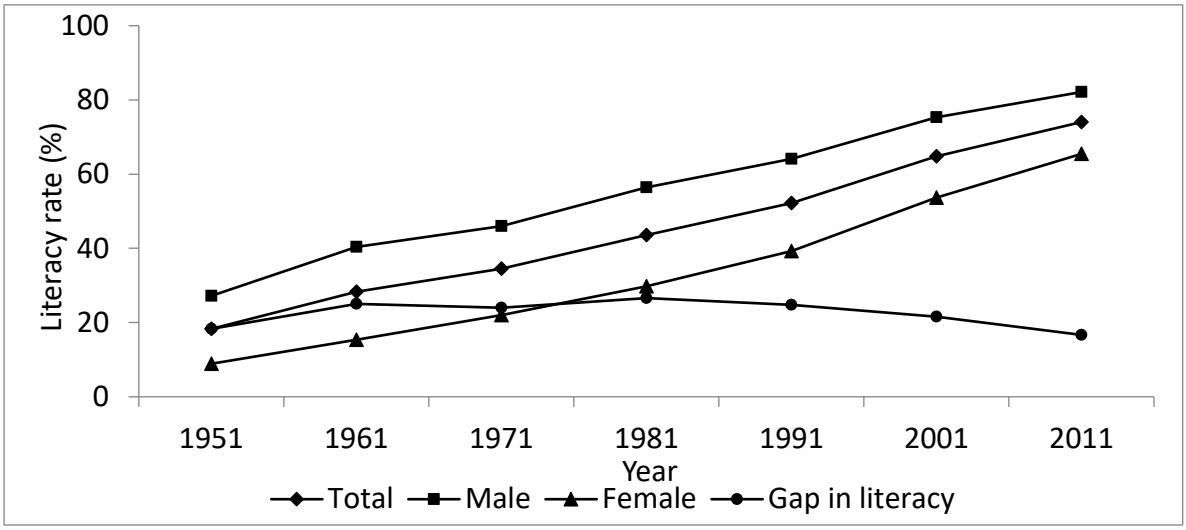
Literacy

The literacy rate in India improved from 52 per cent in 1991 to 74 per cent in 2011 **and** the gap between male and female literacy rates is on the decline since 1981 (Figure 1). However, it is worth noting that India lags behind the other BRICS countries in terms of literacy rates. The adult literacy rate in India was lower by about 30 percentage points than that of China, Brazil and South Africa (Table 1). Further, India also lags in mean years of schooling (Table 1). Thus, challenge is to bridge the gap.

[1] For a lucid presentation of the developments during the 1990s and 2000s, see Rao and Sedwal (2017).
[2] The expenditure on implementing the RTE Act 2009 was in the beginning shared in the ratio of 75:25 between the Central and State Governments and gradually changed to 50:50.

Much depends on how India can improve the performance of economically weaker states such as Bihar, Jharkhand, Uttar Pradesh and Madhya Pradesh where literacy rates are the lowest. It is worth observing that north eastern states, other than Assam, could achieve high levels of literacy though their per capita GSDP is low. This could be attributed to the initiatives of voluntary and religious organisations.

Figure 1: Literacy Rate in Ind ia and Gender Gap in Literacy (%)



Source: Census of India

Elementary Education

In India, there has been a substantial quantitative expansion of school education in both the public and private sectors. One key accomplishment is a school in every village. The number of primary schools increased from 5.6 million in 1990-91 to 8.5 million in 2014-15, whereas upper primary schools increased from 1.5 million to 4.3 million (Government of India, 2016a).

The near universal enrolment of children of school-going age has been achieved and the rural-urban difference and gender gap have been narrowing.[3] SSA 2001 and RTE Act in 2009 have resulted in phenomenal improvements in educational performance. Schemes such as 'mid-day meal' and targeting eight years of compulsory education helped enrolments and reduced drop-out rates. The Gross Enrolment Ratio (GER) in primary education increased from 83.8 in 1990-91 to about 100 in 2014-15 and GER in upper primary increased from 66.7 to 91.2 during the

[3] Though gender gap has narrowed down in quantitative terms, it may still exist in terms of quality.

same period. For a nation of a billion plus population, these have been significant accomplishments. However, field studies concerning primary education have revealed discrimination on caste, community and gender lines despite raising the RTE Act and rising GER.

Yet, one must not lose sight of the fact that even the lower income groups prefer education in private schools, and some struggle to earn the extra income to provide private education for their children. One must hope that a day will come when the government schools and the quality of education will reach such a level that private schools would have little or no demand!

Secondary School Education

Several studies emphasize the importance of secondary education in the developing countries for the following reasons: i) demand for secondary education has been growing fast due to significant expansion of primary education, which has since become universal; ii) economic growth requires highly skilled manpower, which is more in the domain of secondary rather than primary education; and iii) it serves as a vital foundation to promote communication, analytical capabilities, and critical thinking. In this context, it is worth noting that the early expansion of secondary education and public investment in secondary education benefited East Asia (Birdsall, Campos, Kim, Corden, & MacDonald, 1993). The increase in public spending in most of the Latin America, as well as Korea, Malaysia and to a lesser extent in Thailand appears to have generated a 'quantity effect' (a more egalitarian distribution of human capital) and a 'price effect' (a drop in the ratio of skilled to unskilled wages) which helped in equalising the wage distribution (Cornia, 2014).

Though India launched the *Rashtriya Madhyamik Shiksha Abhiyan* (RMSA) in March 2009 as a centrally sponsored scheme for improving access and quality of secondary education, the country is at a huge disadvantage in comparison to all other BRICS countries where secondary enrolment rates are far above those predicted for countries at their levels of per-capita GDP. Brazilian and Russian secondary school net enrolment rates are 27 percentage points higher than that of India. India is more than 30 years behind China in terms of the proportion of population which completed secondary and post-secondary schooling (Table 1).

Though vocationalisation of education was enunciated in the National Policy of Education (1986), and the Central Government has been giving grants to states to implement the programme, vocational training has not been included in the higher secondary curriculum. The rate of vocational training barely increased between 2004-05 and 2011-12. This reflects low skills of the Indian manpower.

Needless to say, skills in demand must form an integral part of the general education curriculum. The funds available under Corporate Social Responsibility (CSR) can be utilized for skill development.

Quality of Education

Lack of quality education at primary and secondary levels, especially in government schools, is the basic malady that persists. The Annual Survey of Education Report (ASER, 2018) shows that only 42.2 per cent of children in standard V in government schools in rural areas can read only standard II level text and about 22.7 per cent can do only simple divisions whereas the corresponding figures in private rural schools are 65.1 and 40.0 per cent, respectively.

Infrastructure is grossly inadequate in the government schools in rural areas. According to the Report of the Committee for Evolution of the New Education Policy (2016), teacher absenteeism, which was estimated at over 25 per cent every day, has been one of the main reasons for the poor quality of student learning outcomes (Government of India, 2016b).

It has been estimated that in Andhra Pradesh, about 85 percent of the scheduled caste children study in government secondary schools. The Centre for Economic and Social Studies (CESS) case study on ninth grade children in 15 schools with varying management systems across three districts of Andhra Pradesh shows that the average test scores in mathematics and English in residential schools managed by Social Welfare Departments, which are meant exclusively for the scheduled caste children, are the lowest (Vepa & Raghupati, 2018). It is unfortunate that the existing affirmative action for the poor and disadvantaged has been perpetuating the inequality of opportunity.

Privatisation and Unequal Opportunity

The percentage of students in government primary schools declined from 73 in 2007 to 62 in 2014-15; in upper-primary from 70 to 66; and in secondary from 61 to 56. On the other hand, at the primary level, the percentage of children in private unaided schools increased from 13 to 30; in upper primary from 9 to 23 and in secondary from 8 to 25 over the same period. Clearly, there is increasing privatisation of school education.

Private schools are more likely to exist in villages where teachers' absenteeism in public schools is high (Kramer et.al, 2005). A PROBE report attributes the increasing popularity of private schools to the breakdown of government schools as compared to parents' ability to pay. It is not that the pay of teachers is lower in government schools. Also, job security is higher in government schools.

The 71st Round of NSSO Survey found that about four-fifths of rural students and one-third of urban students at the primary level were attending government institutions in 2014. As per the survey, per person per annum expenditure incurred by a household at the primary level during a session in private unaided institutions was several times higher than the expenditure in government institutions. Thus, private educational institutions are not accessible to the children of the lower income and marginalized groups. This contributes to *inequality in opportunity* when they enter the job market as adults. As a result, they are excluded from assessing in the gains of the growth process. Moreover, it marginalizes the role of education as a public good.

3. Higher Education

In India, there has been a significant expansion of higher education over the past 60 years: the number of universities and deemed universities increased from 30 to 810, and colleges from 750 to 40,000.

Total enrolment in higher education has been estimated to be 33 million. The GER has shown significant improvement, i.e., from 19 per cent in 2010-11 to 26.3 per cent in 2018-19. Yet, it is lower compared to some of the BRICS countries (Table 1) and Western Countries (US: 89, Canada: 88). The target is to raise GER to 30 per cent by now and keep the upward march.

At the All India level, the gender gap has narrowed down over time (Figure 2). In 2017-18, while gender gap in the gross enrolment rate was marginal at the national level, it was worse

in Andhra Pradesh, Bihar, Gujarat, Maharashtra, and Odisha; the gap was reversed in Goa, Haryana, Himachal Pradesh, Pondicherry and Punjab (Table 3). It is worth noting that in the Southern States of Goa, Kerala and Pondicherry, higher education seems to be more advantageous for females as the gross enrolment ratio in higher education for them is far higher. These States also have better pupil-teacher ratio (Table 4).

Despite the expansion, the GER in higher education in India is very low, at half of the world average. Both India and China had a GER of 6 per cent until 1999; whereas China achieved 39 per cent by 2014, India was lagging behind at 24 per cent (Table 1).

Figure 2: Gross Enrolment Ratio of Higher Education in India (18-23 yrs.)

Source: Government of India, Ministry of Human Resource Development (2019b)

Privatization in Higher Education

There has been a rapid increase in the privatisation of higher education in India. State universities are passing through a period of stunted growth and uncertain future. The void created by them is being filled by the private deemed to be universities, and more recently, by private universities. Initially, the Ministry of Human Resource Development (MHRD) on the recommendations by the University Grants Commission (UGC) accorded deemed to be university status to leading institutions like the Tata Institute of Fundamental Research, Mumbai, and Gokhale Institute of Politics and Economics, Pune, among others.

Consequently, in the year 2000, with the UGC liberalizing the guidelines for granting deemed university status, many private institutions got deemed to be university status. As the MHRD stopped granting permission to any new institutions since 2009, private universities were launched under the State Private University Act. As per the Central and State Acts, private universities and deemed to be universities should not be profit-making institutions. They have to be registered as societies or trusts under relevant Acts.

About 45 per cent of the universities/deemed to be universities (384 out of 845) are privately managed. Further, 78 per cent of colleges are privately managed, while 64 per cent are private unaided colleges. Private players account for more than 60 per cent of the total institutions and of total enrolment.

Rajasthan followed by Gujarat, Madhya Pradesh and Uttar Pradesh have the largest number of private universities that outnumber the public universities (Table 2). It is a puzzle that the number of private and public universities is the largest in economically weaker states of Rajasthan, Uttar Pradesh and Madhya Pradesh (Table 2). Yet their GER and pupil-teacher ratios are worse. It is worth examining how privatization is impacting higher education in these states.

Quality of Higher Education

The quality of higher education leaves much to be desired. For instance, at The National Association of Software and Service Companies (NASSCOM) Survey (2011) reported that only 25 per cent of the graduates working in the IT sector have the required skills. Moreover, there is a significant imbalance between supply and demand in the higher education sector. Of the total intake capacity of 1.6 million seats in 3,365 engineering colleges in India, half remained vacant in 2016. Many IT companies were compelled to recruit diploma holders and general stream graduates and give them rigorous training incurring, thereby, huge costs. There is also an associated problem of lack of quality teachers as the market has been driving out some of the best talents from academic pursuits to IT industry and other greener pastures abroad. This has accentuated the problem for the next generation.

The quality of education imparted, and research produced in Indian universities are far below the standards in developed countries and in some developing countries like China as well. None

of the Indian universities including Indian Institute of Science and IITs, figured among the top 100 universities list of the Times Higher Education World University Rankings 2018; two universities of China could find a place among the top 25 universities. It is reported that in 2010, India's share in the world's scientific output was 3.5 per cent while that of China was 11.7 per cent.[4]

India is often referred to as the big place next to USA, for computer sciences. But the figures on research are abysmally low. Only 2.4 per cent of global research in computer sciences in 2010 was from India while the share was high in three emerging economies - China (15%), South Korea (6.3%) and Taiwan (5.7%).

In this connection, Susskind (2020, p.153) in his new book, *A World Without Work: Technology, Automation and How We Should Respond*, has opined that for the threat of technological unemployment, which bothers commentators and economists, politicians and policymakers, the most common response about the future of work is "more education". A few private institutions are undertaking significant educational innovations and experiments. However, this does not mean that all private institutions are necessarily good. Several are highly commercial and exploitative, even though they are labelled as "not for profit" institutions.[5] Moreover, the private sector in higher education has not promoted research.

Internationalization of courses is taking place in private universities. There has been considerable expansion of high level professional and technical courses to meet the needs of industry for engineering and other graduates. Primarily students belonging to advanced socio-economic groups are found in these courses. The issue of equal access to all social groups remains unaddressed.

[4] In a weekly column in The Hindu, January 20, 2019, Anklesaria Swaminathan Aiyer mentions that China has decent colleges in almost all provinces; and in 2008, it launched a Thousand Talent Scheme to attract top-quality overseas Chinese academics by providing with World Class facilities and salaries.

[5] The former Prime Minister, Dr. Manmohan Singh, in his inaugural address delivered on the occasion of 17th Annual Conference of Indian Association of Social Science Institutions (IASSI) in 2017 observed, "The new private providers which have come up are mostly 'for profit' institutions (and are not like previous non-profit, charitable private institutions). The profit motive may affect quality because of cost cutting imperatives. At the same time, it must, be admitted that some of the private providers have maintained high quality, but this is not the case with most of them.

The Indian Government at various points expressed the intention of spending 6 per cent of the GNP (Centre + States) on the education sector. However, the Centre and state's share on spending has gone up to just a little more than 4 per cent of the GDP in the recent years. Public spending on Research and Development (R&D) in India was 0.82 per cent of the GDP while that of China was 2.02 per cent.

4. Emerging Challenges in Higher Education

The demand for higher education is likely to increase considerably due to the rise in the population in the age group of 17-23 years. Moreover, the perception among the economically weaker communities that higher education is the pathway to upward mobility, may also contribute to the growing demand. Overall, demand may not be a constraint for the expansion of higher education.

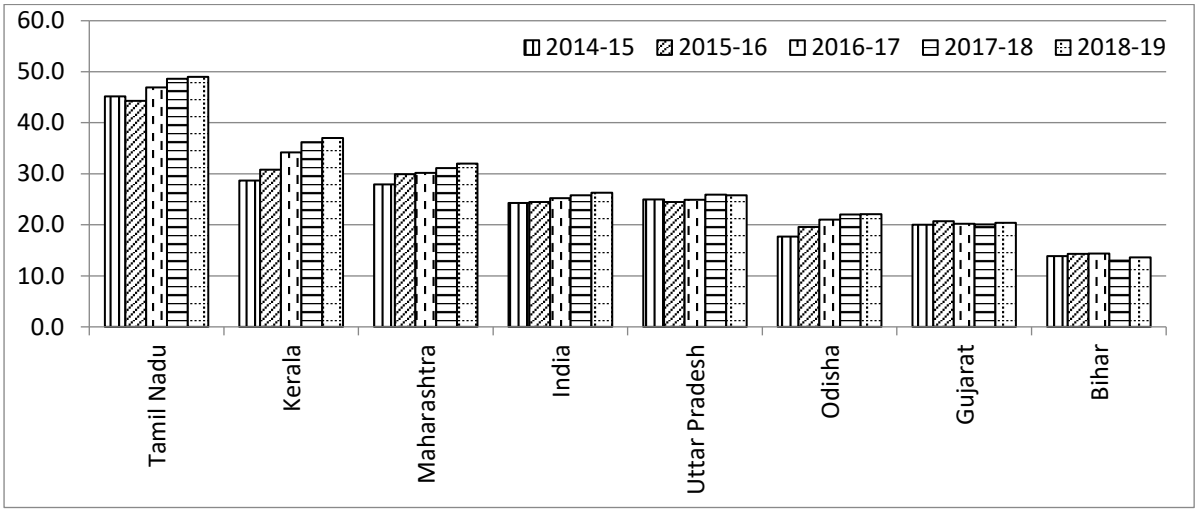
However, the supply side constraints are severe, though higher education policy aims to improve the enrolment rate and eliminate social and gender gaps. The supply constraints are associated with poor college densities and shortage of qualified faculty. Colleges and universities, particularly in state managed institutions, are ill-equipped in infrastructure. There has also been a spurt in the number of colleges and universities without proper planning. Moreover, the governance of State Universities leaves much to be desired. *This sad state of affairs is reflected in the very low ranking of Indian universities in world university rankings.*

The equity issue is also a challenge. This is reflected in the inequalities between income and social groups, rural and urban areas and across states. In 2014, the GER of the top decile was about seven times of that of the bottom decile (Thorat & Khan, 2017). In 2017-18, it was 25.8 for all social groups whereas it was lower at 21.8 for SCs and 15.9 for STs. What are more glaring are the inter-state variations in GER. In 2017-18, the GER was lower in economically weaker states at 13.0 in Bihar, 18.0 in Jharkhand and 18.4 in Chhattisgarh as compared to those in better performing states with 48.6 in Tamil Nadu, 45.4 in Puducherry and 37.9 in Himachal Pradesh (Table 3 and Figure 3).

There is significant variation in the pupil-teacher ratio in universities and colleges in regular mode; in 2017-18, it was higher in Bihar (70), Jharkhand (72) and Uttar Pradesh (72) as compared to Puducherry (12), Kerala (16) and Tamil Nadu (18). Even in states with a lower

pupil-teacher ratio, it was higher than the desirable norm of 10 (Table 4). It remains a challenge to reduce the pupil-teacher ratio from the high figure of 30 and to reduce the inter-state variations.

Figure 3: Gross Enrolment Ratio in Higher Education in Major States and All India



Source: Government of India, Ministry of Human Resource Development (2019b)

5. Coping with Covid-19 and Other Shocks

The outbreak of novel corona virus disease (Covid-19), and its rapid transmission worldwide, has caused serious implications for educational institutions due to lockdown. Educational institutions remain closed to avoid the risk of contracting the virus. The situation is more complex for students who are in the process of completing their final year examination. This situation would not only impact the learning process of the students but also lead to a cut in household expenditure on education owing to sharp reduction in income, due to loss of employment to the parents. Students of primary and secondary schools are not only missing opportunities for learning, but also have lost access to free meals under mid-day meal programme during this time (though some states made some alternate arrangements delivering at home); and thus, they are subjected to economic and social stress.

Some initiatives are being implemented to minimize the disruption in school education. Online learning techniques are being adopted to complete the curricula; these methods proved incredibly popular. These impressive feats illuminate how solace can always be found even in times of distress. However, only a handful of elite schools, particularly in the private sector,

could be able to adopt online teaching methods. Most of their counterpart private and government schools, on the other hand, are completely shut-down for not having access to e-learning infrastructure. If this situation continues to persist, it may lead to educational inequality.

It is a challenge to track the impact of Covid-19 shock on education. Young Lives, an international longitudinal study of child development in a panel sample of 12,000 children in Ethiopia, India, Peru and Vietnam over 15 years, is conducting a phone survey to provide rapid new research and insights into Covid-19 impacts in these countries. The International Institute for Applied Systems Analysis (IIASA), an independent research institute, has national member organizations in Africa, America, Asia and Europe. It has 22 member countries representing 71% of the world's economy and 63% of the world's population. It is also carrying out inter-country collaborative research on the crisis created by Covid-19. These studies will have policy insights for minimizing risks from Covid-19, if it or any such pandemic occurs again in the future.

A positive contribution of Covid-19 is that it has led educational institutions across the world to adopt online teaching courses, entrance tests, and examinations are conducted online, and assignments through email. In India also, it should form a component of school curriculum. Technology penetration in school education can be utilized as an instrument for the reduction of school dropouts and enhancement of quality education. For a vast country like India, it is a good opportunity to strengthen the internet connectivity across rural India and increase wider access to education. Institutes like, Indian Institute of Science, Tata Institute of Fundamental Research, IITs, IIMs and Indira Gandhi Open University have infrastructure to connect students through internet. For a vast country like India, the existing infrastructure is not adequate. Moreover, a large number of households do not have access to internet facility. As per 2017-18 National Sample Survey, only14.9 of rural households and 42 per cent of urban households have access to internet. To adapt to this system adequate awareness is needed among the users. Capacity building among students is needed. It is essential to note that the transformation of education due to online teaching should not lead to educational inequality. India should develop an adequate and efficient infrastructure for online education like some of the advanced countries. Needless to say, it is not a substitute for a face-to-face contact between students and the teacher in a classroom, particularly in primary/secondary schools. Also, government support is needed for eliminating existing digital divide.

6. Concluding Observations

How do we achieve equality without sacrificing quality? How do we develop and regulate the private sector without curbing its creativity? These are some of the key challenges in reforming the higher education system.

The primary condition for high quality education is an environment conducive to academic pursuits. It can be ensured only by improving governance. Universities should enjoy a greater degree of autonomy. There is a need to minimize regulation. It is unfortunate that due to corruption, favouritism and inefficiency, relatively less competent are at the helm of the universities and research institutions.

Universities should be led by Vice-Chancellors with vision. The change in the procedure of selection of Vice-Chancellors from search committee to selection committee leaves much to be desired. Proper selection of teachers, the promotion of peer culture and a fair system of incentives and deterrents are equally important. Those selected on merit are more likely to contribute to the growth of the institutions in comparison to those who might enter from the back door.

It is high time *that the* country takes a critical look at the recruitment and promotion practices of top-ranking universities and tries to create premier institutions with identical practices. The UGC Regulation 2018, which gives more weightage to research performance and quality publications for faculty recruitment, if implemented in true spirit, will go a long way in improving standards of teaching and education. Generous research funding should be made available to research proposals certified by two eminent persons with at least one from a reputed foreign university which ranks high on the Times Ranking. This acts as a catalyst to provide a fillip to patents and India's share in world research output.

The contribution of the private sector to R&D in India is negligible[6]. What is worse, with the decline in the quality of faculty in many of the state universities, research has received a major setback and research-led-teaching leaves much to be desired. However, there has been an increase in the number of doctorate degrees awarded by the State universities. These degrees

[6] Globally, the private sector supports around 40-45 per cent of scientific research, while in India the entire burden is to be borne by the government.

are of unknown quality. Regulations mandate course work and publication during the pursuit of Ph.D. Much depends on implementation.

The foundation for quality higher education lies in quality school education. The enactment of the Right to Education Act, 2005 is a progressive measure to improve school education. Needless to say, its efficacy depends on the political will of the Chief Ministers and motivation of the bureaucrats. When these are in deficit, active civil society can emerge as a pressure group. To achieve the goal of 'Education for All', decentralization and convergence of school education has been emphasized with greater participation of Panchayat Raj Institutions and community. Undoubtedly, this is a pathway for achieving quality education for all. However, the implementation falls short. The active role played by Parent-Teacher Associations (PTAs) in the governance of primary and secondary schools in Kerala is worth emulating.

Randomized experiments show that students in small-size classes perform better than those in regular class sizes; and further, those in regular classes with aides perform better than students in regular classes (Krueger & Lindahl, 1999). Their impact tends to be larger for students belonging to disadvantaged social backgrounds. Reducing the class size in the early school years appears to have long-run effects, especially in terms of reducing inequalities in performance and access to higher education (Carneiro & Heckman, 2003).

Randomized experiments conducted in the Government schools of Mumbai and Vadodara using remedial education programmes to a group of lagging children were effective. Remedial programmes utilized the services of young women belonging to the same community, and initially these women received training for two weeks. The remedial classes had a significant impact on the performance of the lagging children (Benerjee, et.al. 2003). Some of these experiments can be replicated at scale.

Finally, one possible way to improve the standards of higher education in a state is to start one university of excellence under state legislation. Such university equipped with good infrastructure (library, labs, equipment and playing field) would offer undergraduate and post-graduate programmes in selected subject(s), recruits highly qualified faculty with good research capabilities. Jadavpur University, which ranked high among Indian universities on *Times Higher Education World University Rankings 2018*, stands testimony to this idea.

Table 1: Social Sector Development Indicators in BRICS

Indicator	Brazil	Russia	India	China	South Africa
Adult Literacy Rate, 15 year+ (%), 2008-18	92.0	99.7	69.3	95.1	94.4
Secondary Education, 25 year+ (%), 2010-18	59.5	95.9	51.6	78.6	76.5
Tertiary, Gross Enrolment Ratio, 2013-18	50.5	81.8	27.5	51.0	20.5
Secondary, Pupil-Teacher Ratio, 2017	17.0	--	28.0	13.0	27.0
Public Expenditure on Education (% of GDP), 2017	6.2	3.8	--	--	6.1
Researchers in Research and Development (R&D) per million people, 2005–17	881	2979	216	1206	473
Expenditure on R&D (% of GDP), 2005–17	1.3	1.1	0.6	2.1	0.8
High-technology Exports as % of Manufactured Exports, 2018	13.0	11.0	9.0	30.9	5.3

Source: *World Development Indicators*, World Bank, 2019; *Human Development Report 2019*, UNDP, 2019.

Table 2: Number of Universities by Type in Major States, and Union Territories of Goa and Pondicherry (2018-19)

Sl. No	State/UTs	Central University	Deemed University-			Institute of National Importance	State University	
			Government	Government Aided	Private		Private	Public
1	Andhra Pradesh	1	1		4	9	3	22
2	Assam	2				3	6	10
3	Bihar	4	1			5	4	17
4	Chhattisgarh	1				4	9	13
5	Goa					2		1
6	Gujarat	1	1	1	1	5	34	28
7	Haryana	1	3		3	3	22	16
8	Himachal Pradesh	1				4	17	4
9	Jammu and Kashmir	2				3		9
10	Jharkhand	1			1	4	9	10
11	Karnataka	1	4		11	4	16	28
12	Kerala	1	2		1	6		13
13	Madhya Pradesh	2	1			8	31	22
14	Maharashtra	1	7	2	12	6	11	22
15	Odisha	1			2	5	4	15
16	Puducherry	1			1	2		
17	Punjab	1	1		1	5	15	9
18	Rajasthan	1			8	5	45	23
19	Tamil Nadu	2		2	26	7		21
20	Telangana	3			2	2		15
21	Uttar Pradesh	4	2	3	4	9	28	27
22	Uttarakhand	1	1	1	1	4	17	10
23	West Bengal	1			1	7	10	25
	India	46	34	10	80	127	304	371

Source: Government of India, Ministry of Human Resource Development (2019b)

Table 3: Gross Enrolment Ratio in Higher Education (18-23 yrs.) in India (2018-19)

Sl. No	State	Male	Female	Both
1	Andaman and Nicobar Islands	20.3	26.1	23.2
2	Andhra Pradesh	35.8	29.0	32.4
3	Arunachal Pradesh	29.9	29.5	29.7
4	Assam	19.1	18.3	18.7
5	Bihar	15.1	12.0	13.6
6	Chandigarh	41.6	63.9	50.6
7	Chhattisgarh	18.1	19.2	18.6
8	Dadra and Nagar Haveli	7.4	12.6	9.3
9	Daman and Diu	4.2	9.8	5.5
10	Delhi	43.2	50.0	46.3
11	Goa	26.4	35.0	30.1
12	Gujarat	22.0	18.7	20.4
13	Haryana	26.5	32.4	29.2
14	Himachal Pradesh	34.7	44.9	39.6
15	Jammu and Kashmir	29.6	32.2	30.9
16	Jharkhand	19.5	18.7	19.1
17	Karnataka	28.2	29.4	28.8
18	Kerala	30.8	43.2	37.0
19	Lakshadweep	3.4	11.6	7.4
20	Madhya Pradesh	21.8	21.2	21.5
21	Maharashtra	33.5	30.3	32.0
22	Manipur	33.6	33.8	33.7
23	Meghalaya	23.8	27.7	25.8
24	Mizoram	26.5	24.8	25.7
25	Nagaland	17.8	19.7	18.7
26	Odisha	24.2	20.0	22.1
27	Puducherry	41.7	51.6	46.4
28	Punjab	25.5	34.3	29.5
29	Rajasthan	23.1	23.0	23.0
30	Sikkim	54.0	53.9	53.9
31	Tamil Nadu	49.8	48.3	49.0
32	Telangana	35.8	36.5	36.2
33	Tripura	21.1	17.4	19.2
34	Uttar Pradesh	24.2	27.5	25.8
35	Uttarakhand	39.2	39.1	39.1
36	West Bengal	20.0	18.7	19.3
37	All India	26.3	26.4	26.3

Source: Government of India, Ministry of Human Resource Development (2019b)

Table 4: Pupil Teacher Ratio in Universities and Colleges under Regular mode (2018-19)

Sl. No	State	Pupil-Teacher Ratio
1	Andaman and Nicobar Islands	17
2	Andhra Pradesh	18
3	Arunachal Pradesh	45
4	Assam	31
5	Bihar	66
6	Chandigarh	38
7	Chhattisgarh	27
8	Dadra and Nagar Haveli	29
9	Daman and Diu	14
10	Delhi	29
11	Goa	17
12	Gujarat	32
13	Haryana	30
14	Himachal Pradesh	36
15	Jammu and Kashmir	35
16	Jharkhand	73
17	Karnataka	17
18	Kerala	16
20	Madhya Pradesh	37
21	Maharashtra	28
22	Manipur	25
23	Meghalaya	37
24	Mizoram	18
25	Nagaland	22
26	Odisha	32
27	Puducherry	15
28	Punjab	24
29	Rajasthan	36
30	Sikkim	44
31	Tamil Nadu	18
32	Telangana	18
33	Tripura	36
34	Uttar Pradesh	55
35	Uttarakhand	40
36	West Bengal	38

Source: Government of India, Ministry of Human Resource Development, (2019b)

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Comments on Professor R Radhakrishna's Kalinga Lecture 2020

"Towards Reforming Education in India"

1. Professor C. H. Hanumantha Rao

26 October 2019
Dear Prof. Radhakrishna,
Thank you for your Kalinga Lecture on Reforming Education in India. It is a comprehensive and very illuminating lecture. Unfortunately, all the major indicators of the state of education in India - quantity, quality, equity and accountability - reveal a depressing picture. This undoubtedly poses the most important policy challenge. Could you consider some initiative to highlight this issue at the national level?
Warm regards,
C.H. Hanumantha Rao

3 April 2019
Dear Prof. Radhakrishna,
Thank you for your Kalinga Lecture on education which I have read with great interest. As I had felt when I read your earlier paper on this subject, Human Resource Development deserves highest priority for achieving growth as well as social equity in India. This message comes out sharply in your Kalinga lecture also. On the issue of achieving quality, I am glad to note that you have emphasised ensuring higher outlays as well as autonomy in the case of higher education and activating teacher-parent associations as well as Panchayati Raj institutions in respect of school education. I think, devolving the subject of school education to Panchayati Raj institutions along with corresponding resources deserves serious consideration in this context.
Warm regards,
C. H. Hanumantha Rao
Honorary Professor, Centre for Economic and Social Studies (CESS), Hyderabad

2. Professor C. T. Kurien

2 April 2020
Dear Professor Radhakrishna,
Thank you very much for sharing your Kalinga Lecture "Towards Reforming Education in India." As with everything you write, this one is also full of information and insights. This needs to be carefully studied, and I shall do so. You have rightly raised the problem of quantity vs quality, and your observations about the subtle and not so subtle interference in autonomy, especially in the field of higher education is a matter of concern.
Warm regards,
C. T. Kurien
Chairman, Malcolm and Elizabeth Adiseshiah Trust

3. Professor N. V. Varghese

31 March 2020
Dear Sir,
Thank you very much for sending a copy of your Kalinga Lecture "Towards Reforming Education in India." Since it is lockdown period, I could get a chance to read it immediately. It has come out well and I enjoyed reading it and benefited from the presentation.
The diagrammatic presentation of continuing gender gap at the literacy level and its convergence at higher education level is revealing and that in itself is an interesting trend in education development.
Thanking you once again for sending a copy of your lecture.
With best regards,
Varghese
Vice Chancellor, National Institute of Educational Planning and Administration

4. Professor Amiya Bagchi

1 April 2020
Dear Professor Radhakrishna,
This is a particularly useful lecture, in regard to the state of higher education in India and the issue of gender gap in education.
Best wishes
Amiya Bagchi
Emeritus Professor, Institute of Development Studies Kolkata, and
Adjunct Professor, Monash University

5. Professor J. M. Reddy

2 April 2020
Dear Prof Radhakrishna garu,
Excellent as usual. Congratulations. You may include a discussion on what needs to be done to improve quality. What is to be done to have some universities in India to reach top 100 in the world.
Best wishes
JM Reddy,
Vice Chancellor, ICFAI

[The current version addresses some of the concerns raised in the above comments.]

About Professor R Radhakrishna

Professor R Radhakrishna did his post-graduation in Economics and Statistics from Andhra University, and PhD in Economics from Gokhale Institute of Politics and Economics (Poona University). At present he is the Chairman of Centre for Economic and Social Studies (CESS), Hyderabad. He was the Chairman of Madras Institute of Development Studies, served as governing council member of several research institutes, and contributed profusely to policy making bodies at state and national level.

Professor Radhakrishna held several important administrative positions – Chairman of National Statistical Commission, Government of India (2009-12) in the rank of Minister of State; Director/Vice-Chancellor of Indira Gandhi Institute of Development Research (2001-07); Vice-Chancellor of Andhra University (1998-2001); Member Secretary of Indian Council of Social Science Research, Ministry of Human Resource Development (1994-97); Director of Centre for Economic and Social Studies (1985-2004) and Professor of Economics, University of Hyderabad (1980-85), among others. He served as an expert consultant to several international organizations: International Institute for Applied Systems Analysis, Vienna, 1978, Australian Centre for International Agricultural Research in 1997; UNESCO's Management of Social Transformation (MOST) in 2004; UNDP Regional Bureau for Asia and Pacific in 2005, World Bank, Asian Development Bank, UNDP, UNOPS, and FAO among others. He was a Visiting Fellow at the University College of Wales, Aberswyth, 1976-77.

Professor Radhakrishna, guided 25 doctoral students and 10 M.Phil students. He worked on several pressing economic problems, and made pioneering contributions on poverty and wellbeing, food security, agriculture and rural development. He authored and edited 20 books and monographs, and more than 100 papers in national and international journals. His well cited publications are: Complete Expenditure Systems for India, International Institute for Applied Systems Analysis, Austria, 1978, India's Public Distribution System: A National and International Perspective published by World Bank, 1998; Empowering Rural Labour published by Indian Institute for Human Development, 1998; India Development Report 2008 published by Oxford University Press; and Handbook of Poverty in India: Perspectives, Policies, and Programmes published by Oxford University Press, 2005. In recognition of his significant academic contributions, he was awarded VKRV Rao Prize in Economics in 1985, and Telugu Atma Gaurava Puraskaram, Government of Andhra Pradesh in 1998. He was awarded honorary Doctorate by Dr. B.R. Ambkar University, Srikakulam, 2017. He was the conference president of Asian Association of Social Science Research Councils in 1995, Indian Society of Agricultural Marketing in 1996, Indian Society of Labour Economics in 2002, Indian Econometric Society in 2008, elected Conference President of Indian Economic Association, 2016, and President of Indian Association of Social Science Institutes, 2017. He served as an editorial board member of several journals including Journal of Quantitative Economics, Asia Pacific Journal of Rural Development, Journal of Asian Economics, IUP Journal of Applied Economics and Indian Economic Journal.

Professor Radhakrishna's achievements in academic administration are well recognized. During his long tenure as the Director of Centre for Economic and Social Studies, the institute was

recognized by the ICSSR as a centre of excellence in social sciences. As the Director of IGIDR, he introduced several innovative programmes including well recognized Masters in Economics, a unique international collaborative doctoral programme in Law and Economics, and also strengthened the institutes' social policy research programme. He worked as the Chairman of a number of Review Committees appointed by the University Grant Commission and Indian Council of Social Science Research.

Professor Radhakrishna has been deeply involved in the policy making of several national organizations from time to time. During his tenure as Chairman of National Statistical Commission (NSC), he caused to finalize: a) National Policy on Official Statistics, b) Draft Bill on National Statistical Commission (NSC), c) Code of Statistical Practices, and d) Formulated Guidelines for Outsourcing Statistical Activities.

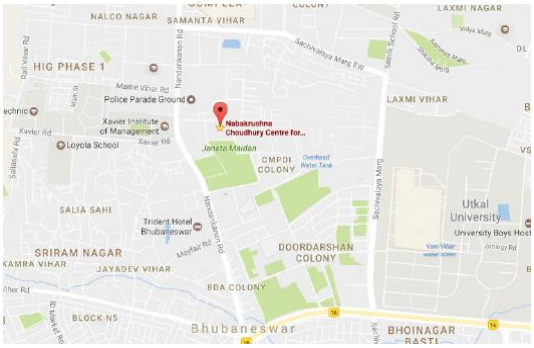
Professor Radhakrishna also chaired a number of official Committees on planning and poverty. Of them, the Expert Group on Agricultural Indebtedness (2006-07) and the Committee on Credit Related Issues under SGSY (2008-09) are well known. Taking into considerations the views of the Expert Group, Government of India introduced the farm loan waiver scheme and following the recommendations of the latter committee, Government of India established National Rural Livelihood Mission. He was also a member of three important Planning Commission Expert Groups on Poverty: Task Force on Projections of Minimum Needs and Effective Consumption Demand, 1977-78; Expert Group on Estimation of Proportion and Number of Poor, 1989-93 (Lakdawala Committee); and Expert Group to Review the Methodologies on Estimation of Poverty, 2006-08 (Tendulkar Committee). He was also associated with two Vision documents: Chairman, Agricultural Group of Vision 2020, Government of Andhra Pradesh, 1997; and Member, Vision 2020, Planning Commission, 2000.

About Kalinga Lecture

The Kalinga Lecture Series was instituted by the Centre in conjunction with the Government of Odisha in 1990 as a public event. Some of the scholars who have delivered Kalinga Lectures in the past include Professor C. Rangarajan, Professor V. R. Panchamukhi, Professor B. K. Roy Burman, Professor Pranab K. Bardhan, Professor Michael M. Cernea, Professor Amiya Kumar Bagchi, Professor Prasanta K. Pattanaik and Professor Yoginder K. Alagh. The Kalinga Lecture 2020 "Towards Reforming Education in India" is being delivered by Professor R. Radhakrishna.

About Nabakrushna Choudhury Centre for Development Studies

Nabakrushna Choudhury Centre for Development Studies (NCDS), ନବକୃଷ୍ଣ ଚୌଧୁରୀ ଉନ୍ନୟନ ଗବେଷଣା କେନ୍ଦ୍ର, established in March 1987, is registered under the Societies Registration Act, 1860. It is being jointly funded by the Indian Council of Social Science Research, Ministry of Human Resource Development, Government of India, and Planning and Convergence Department, Government of Odisha. Focusing on socio-economic research, this institute is the only one of its kind that serves as a policy think tank in the state of Odisha.



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