Education in India: Goals and Achievements

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4.1 Introduction

The foundation of any society is education. The importance of education in economic and social development of a country has been extensively recognized since the days of Adam Smith. Education plays a significant role in transforming human being into 'human capital' thorough imparting knowledge and skills required for the development of both traditional and the modern sectors of the economy. It also opens up new opportunities and avenues leading to enhancement of individual potentials and group potentials. Education is found as the most crucial input for empowering people to access to productive employment opportunities. Improvement in education level of an individual not only enhances efficiency but also augments the overall quality of his life. The other function of education is that it performs sorting function to assess and classify students on the basis of ability and performance. The current research evidences reveal that investing in the improvement of the quality of education contributes to higher economic returns and social returns. Enhancing the quality of an expanding and diverse education system has become the major challenge facing most countries around the globe (Varghese et al. 2018). According to GOI (2018), the number of educational institutes in India in 2016 was as follows: schools, 1,522,346; universities, 799; and colleges, 39,071. The enrolment of students at different levels of education was as follows: 25.36 million in school education and 1.71 million in higher education. The major problem of education system in India is that a vast share of passed-out students fail to achieve the desired quality. An obsessed education system with examinations in India has been characterised by rote learning to pass examinations with very low level of practical skills (Muralidharan 2019).

The Sustainable Development Goals (SDGs) were formulated as a continuation of the Millennium Development Goals (MDGs) and are being implemented globally. The SDGs consist of 17 Goals with 169 targets set by the United Nations in 2015 for the year 2030 and form a comprehensive framework for global development. The major goals of SDG4 are ensuring inclusive, equitable and quality education (including technical and vocational training) for all. It also aims to build and improve educational facilities for ensuring that all learners are able to acquire knowledge and skills required to promote sustainable development.

Some of the targets under SDG4 to be achieved by 2030 are *that* all girls and boys getting access to free, equitable and quality primary and secondary education, access to quality early childhood development etc. All these are expected to achieve quality education which is one of the

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goals of sustainable development. Education as Sustainable Development Goal has been discussed by various authors (Didham and Paul 2015; GOI 2017; Griggs et al. 2013; Kopnina and Meijers 2014; NITI Aayog 2015; Pandey 2018; Sachs 2012; United Nations 2019; Waage et al. 2015; WNTA 2017; NUEPA 2014; CII 2018; Goel & Vijay 2017).

The present paper aims to address the current status of education sector in India with respect to SDG. It will assess the performance of India in education sector and state-wise status of education sector at different levels of education, namely, primary, secondary and higher. The paper also evaluates the educational status of the states on the combined ranking. The methodology for constructing the state-wise index of education quality for present study is proposed as principal component analysis. The relevant variables for this study have been collected from different reports like ASER, DISE, AISHE and various other government documents.

4.2 Progress in the Education Sector in India

The major goal of Sustainable Development Goal 4 (SDG4) is to ensure universal quality education and lifelong learning. The flagship government education scheme of India, *Sarva Shiksha Abhiyan*, is aimed at achieving universal quality education for all Indians and is complemented in this effort by targeted schemes on nutritional support, higher education and teacher training programme. Literacy is a basic human right, guaranteed under the right to education enshrined in the Universal Declaration of Human Rights. It is a fundamental tool to empower people and, through them, communities and countries. There is a growing consensus throughout the world that equitable and inclusive access to 'quality' learning must be ensured for all children, youth and adults (ESCAP 2015). The Government of India has expressed commitment for achieving the Sustainable Development Goal (SDG4) by 2030. The Right to Free and Compulsory Education (RTE) Act 2009 enacted in 2010 provides for children's right to an education of equitable quality, based on principles of equity and non-discrimination (Government of India, Economic Survey 2017).

In India, universalisation of primary education has progressed significantly, in terms of the enrolment and completion rates of both girls and boys in both primary and elementary schools. The net enrolment ratio (NER) for boys and girls in primary education in India was at 100%, the youth literacy rate being at 92% for females and 94% for males. The trends of gross enrolment ratio (GER) at the levels of primary, second and higher education in India over 2005–2006 to 2015–2016 have been presented in Fig. 4.1.

Gender parity index (GPI) is used to measure the degree of gender disparities at different levels of education like primary, secondary and tertiary. GPI value of less than unity indicates that the enrolment for girls is higher than that for boys and vice versa if GPI value is more than unity. A GPI value lying between 0.97 and 1.03 is generally considered to reflect gender parity (ESCAP 2017). The trends of GPI at different levels of education in India are shown in Table 4.1. It shows that GPI has improved over years for all the sectors. The pupil–teacher ratio at different levels of education is given in Table 4.2. In Table 4.3, we have presented percentage expenditure on each subsector of education in India (Revenue Account) in 2014–2015 which shows that 3.75% of GDP is spent on education section sector as a whole. The expenditure shares of GDP are 1.93, 1.09 and 0.47, respectively, for primary, secondary and higher education in India. In Table 4.4, we have presented percentage of schools having total enrolment of 60 or less in 2010, 2014, 2016 and 2018 in India. It is discouraging to note that percentage of schools with total enrolment of 60 or less is rising over years.

Pupil–teacher ratio (PTR) is defined as the ratio of the number of pupils or students attending school and the number of existing teachers in the institution. This ratio is an important indicator to judge the quality of the institution. Firstly, it may be used as a tool to measure workload of teacher as well as the efficiency of allocation of resources in institutions, particularly in govern-

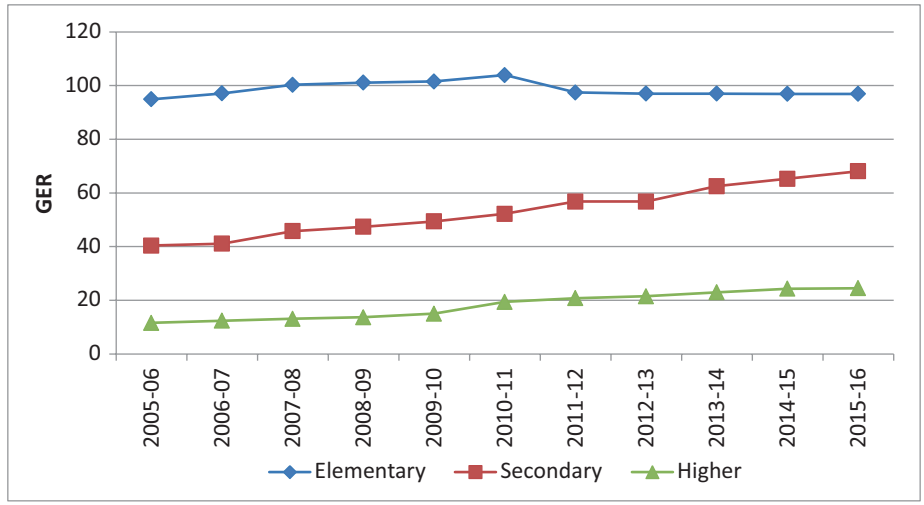

Fig. 4.1 GER in elementary, secondary and higher education in India. Source: Educational Statistics - At a Glance (Various Years), MHRD, GOI

Table 4.1 Gender parity index in education in India

Level/ year	Primary (I–V)	Upper primary (VI–VIII)	Elementary (I–VIII)	Secondary (IX–X)	Senior secondary (XI–XII)	(IX–XII)	Higher education
2005–2006	0.94	0.88	0.92	0.80	0.80	0.80	0.69
2006–2007	0.94	0.90	0.93	0.81	0.83	0.82	0.69
2007–2008	0.98	0.91	0.96	0.85	0.84	0.85	0.70
2008–2009	0.99	0.93	0.97	0.86	0.85	0.85	0.72
2009–2010	1.00	0.94	0.98	0.88	0.87	0.88	0.74
2010–2011	1.01	0.95	0.99	0.88	0.86	0.87	0.86
2011–2012	1.01	0.99	1.00	0.93	0.92	0.93	0.88
2012–2013	1.02	1.05	1.03	0.96	0.94	0.99	0.89
2013–2014	1.03	1.08	1.04	1.00	0.98	1.00	0.92
2014–2015	1.03	1.09	1.05	1.01	0.99	1.01	0.92
2015–2016	1.03	1.10	1.05	1.02	1.01	1.02	0.92

Source: Educational Statistics - At a Glance (Various Years), MHRD, GOI

Table 4.2 Pupil–teacher ratio

Highest level taught in the school/ years	Primary school	Upper primary school	Secondary school	Senior secondary school	Higher education
2007–2008	47	35	33	37	20
2008–2009	45	34	32	38	21
2009–2010	41	33	30	39	24
2010–2011	43	33	30	34	26
2011–2012	41	34	32	33	24
2012–2013	28	25	NA	NA	23
2013–2014	25	17	26	41	25
2014–2015	24	17	27	38	24
2015–2016	23	17	27	37	24

Source: Educational Statistics - At a Glance (Various Years), MHRD, GOI

Table 4.3 Percentage expenditure on each subsector of education in India (revenue account), 2014–2015

	% to total education expenditure	% to GDP
Elementary education	51.7	1.93
Secondary education	29.1	1.09
Higher (general) education	12.6	0.47
Higher (technical) education	4.7	0.18
Others	1.9	0.07
Total	100	3.75

Source: Analysis of Budgetary Expenditure on Education, 2014–2015, MHRD and DBIE, RBI

Table 4.4 Percentage of schools with total enrolment of 60 or less in 2010, 2014, 2016 and 2018 in India

	2010	2014	2016	2018
Primary schools (Std I–IV/V)	27.3	36.0	39.8	43.3
Upper rimary schools (Std I–VII/VIII)	2.7	7.2	8.9	10.7

School Report Card (Various Years), U-DISE & Educational Statistics - At a Glance (Various Years), MHRD, GOI

ment educational institutions. It also indicates the amount of individual attention a single student is expected to receive. The PTR should be 30:1 at primary level and 35:1 at upper primary level. As per the report of Unified District Information System for Education (UDISE), PTR at national level of India for primary schools was 23:1 in 2015–2016. Though some states of India are complying with PTR norms, states like Jharkhand, Bihar, Uttar Pradesh, and Madhya Pradesh possess higher percentages of schools with PTR greater than 30.

4.2.1 Status of Education in India

Education in India is provided by public schools (controlled and funded by three levels: central, state and local) and private schools. In the constitution of India, free and compulsory education has been given as a fundamental right for children between the ages of 6 and 14 years. The approximate ratio of public schools to private schools in India is 7:5. As per ASER 2018 report, 30.9% of children (age between 6 and 14) are enrolled in private school. The corresponding number widely varies with states; in Haryana 55.3% children enrolled in private school, in Kerala it is 46.9%, and in West Bengal it is only 7.9%.

As per the recent report by the National Commission for Protection of Child Rights (NCPCR), a huge number of Indian girls are found not attending presently any educational institutions, because of many reasons like doing household duties. The ASER of 2018 shows that 4.1% of girls (age 11–14) and 13.5% of girls (age 15–16) are not enrolled in school. This problem is very high in some states in India, like Gujarat, Chhattisgarh, Madhya Pradesh, Rajasthan and Uttar Pradesh.

According to the ASER of 2018, the percentage of children in Standard V who were able to read at Standard II level text is 50.3% on average. The corresponding number for the proportion of children who can at least do numerical division is 27.8%. It is obvious that the quality of education is not satisfactory. All these children are in the same grade and in the same age group, but their ability to read or do arithmetic varies widely. This variation has been referred to as one of the 'most critical constraints in the structure of the Indian education system today'. Table 4.5 also presents these indicators state wise. It may be noted that only 7.2% of students in Std V can do division in Meghalaya.

In school education, PTR is 38.9 in India in 2008, but it is 57.8 in 2018 with too much variation being present at state level. Most of the states have higher pupil–teacher ratio compared to standard level.

Table 4.6 also presents state-wise classroom–teacher ratio (CTR), and percentage of schools

Table 4.5 State-wise status of education in India

	Private school	Not in school		Std V: Learning levels	
State	% of children (age 6–14) enrolled in private schools	% of girls (age 11–14) not enrolled in school	% of girls (age 15–16) not enrolled in school	% of children who can read Std II level text	% of children who can do division
Andhra Pradesh	35.2	2.9	9.7	59.7	39.3
Arunachal Pradesh	35.2	2.9	8.6	37.1	27.3
Assam	24.8	2.6	9.6	40.1	17.8
Bihar	16.9	4.2	9.8	41.3	29.9
Chhattisgarh	20.0	5.6	21.2	59.5	26.9
Gujarat	12.4	3.6	24.9	53.7	20.1
Haryana	55.3	2.3	6.8	69.1	50.9
Himachal Pradesh	40.7	0.5	2.0	76.9	56.6
Jammu & Kashmir	40.1	2.4	12.5	41.9	25.0
Jharkhand	19.0	3.4	11.2	34.4	19.0
Karnataka	29.1	1.2	7.8	46.0	20.5
Kerala	46.9	0.5	0.6	77.2	43.7
Madhya Pradesh	26.1	7.7	26.8	41.6	19.8
Maharashtra	37.6	1.6	5.1	66.4	30.2
Manipur	70.4	1.6	5.4	67.5	50.5
Meghalaya	58.6	2.0	9.2	50.1	7.2
Mizoram	27.2	0.2	3.7	64.3	40.2
Nagaland	48.6	2.6	6.4	48.0	25.8
Odisha	10.5	2.1	12.3	58.4	25.4
Punjab	52.2	1.6	6.2	71.6	53.0
Rajasthan	35.8	7.4	20.1	49.1	23.3
Sikkim	30.7	0.9	5.1	41.7	12.5
Tamil Nadu	32.1	0.2	1.4	40.7	25.4
Telangana	41.8	0.9	6.2	43.7	27.1
Tripura	13.9	0.4	1.2	45.0	19.2
Uttar Pradesh	49.7	7.4	22.2	52.0	29.6
Uttarakhand	42.7	2.2	6.6	64.3	37.5
West Bengal	7.9	1.3	4.8	50.7	29.7
All India	*30.9*	*4.1*	*13.5*	*50.3*	*27.8*

Source: ASER Report, 2018

Table 4.6 Trends over time performance of schools with respect to selected right to education indicators by the state in years 2010 and 2018

	PTR and CTR				School facilities			
	% of schools complying with				% of schools that have			
	Pupil–teacher ratio		Classroom–teacher ratio		Office/store/office cum store		Playground	
State	2010	2018	2010	2018	2010	2018	2010	2018
Andhra Pradesh	60.0	61.5	53.9	70.0	57.0	58.6	61.2	61.9
Arunachal Pradesh	78.0	74.2	79.8	65.3	77.7	86.6	58.9	55.4
Assam	33.6	47.4	67.7	68.5	57.5	63.1	61.5	61.0
Bihar	8.8	19.7	48.2	59.6	69.0	83.7	48.3	51.1
Chhattisgarh	39.6	56.6	64.2	71.8	79.0	82.8	45.0	68.8
Gujarat	62.7	83.5	84.2	86.3	80.2	78.0	75.5	82.6
Haryana	40.3	76.3	75.1	79.2	85.8	88.3	79.7	83.4
Himachal Pradesh	60.6	56.8	76.7	78.9	75.9	79.8	75.6	81.7
Jammu & Kashmir		92.6		43.8		84.5		54.7
Jharkhand	11.2	28.3	81.2	83.1	84.9	86.6	37.9	39.1
Karnataka	69.4	79.4	82.8	82.6	72.1	81.8	66.0	78.9
Kerala	89.2	94.6	80.3	84.7	88.4	93.2	76.3	67.7
Madhya Pradesh	19.4	49.0	81.4	71.3	69.5	70.7	61.1	69.2
Maharashtra	58.9	77.6	87.6	83.7	34.3	38.7	84.7	86.8
Manipur	74.3	92.9	62.5	23.6	67.5	72.9	71.8	59.7
Meghalaya	54.3	45.2	84.2	78.1	34.6	47.5	45.8	54.4
Mizoram	89.1	75.4	57.6	69.1	78.5	84.1	39.0	65.5
Nagaland	91.9	97.6	78.6	56.1	83.8	82.4	64.2	52.1
Odisha	22.5	55.8	74.0	72.9	74.7	84.9	44.4	31.9
Punjab	34.9	76.1	76.9	72.8	78.5	80.1	69.3	72.0
Rajasthan	46.4	67.2	82.0	79.3	91.2	94.3	51.7	70.3
Sikkim	93.4	99.0	61.3	81.2	92.7	73.7	79.7	87.9
Tamil Nadu	47.0	59.9	75.2	81.2	54.8	50.9	68.7	72.5
Telangana	64.2	66.4	52.6	68.5	75.1	80.7	83.9	77.0
Tripura	68.5	82.2	60.0	70.3	89.6	84.2	89.5	83.5
Uttar Pradesh	16.1	33.3	81.6	71.3	88.6	86.3	60.8	71.3
Uttarakhand	13.7	31.3	87.4	81.8	87.7	90.7	67.0	68.6
West Bengal	26.2	64.3	64.8	54.8	79.0	81.5	42.1	52.8
All India	*38.9*	*57.8*	*76.2*	*72.9*	*74.1*	*77.2*	*62.0*	*66.5*

Source: ASER Report, 2018

with office/store and playground for the years 2010–2011 and 2017–2018.

Table 4.7 presents different physical infrastructure availability in schools, state wise in India, for the years 2010–2011 and 2017–2018. In India, 64.4% of schools have boundary wall. In Gujarat, 96% of schools have boundary wall, but in Meghalaya, it is only 12%. It is found that 91% of schools have kitchen sheds for cooking mid-day meal, which has improved compared to 2010. A lack of access to water and toilets in schools can seriously hamper with children's education and health. Though there is state-wise significant variation, 74.8% of schools have drinking water availability in India. Due to a lack of knowledge on good hygiene practices, many children fail to attend to schools regularly due to bouts of diseases like diarrhoea. In 2018, 74.2% of schools have usable toilet which has increased significantly from 2010. Girls are often found dropping out of schools when they reach puberty because of the embarrassment and the lack of private places in schools to maintain their dignity. One important indicator is the existence of facility girls' toilet in

Table 4.7 Facilities in schools for selected indicators by states in 2010 and 2018

	School facilities									
	% of schools with									
	Boundary wall		Kitchen shed for cooking mid-day meal		Drinking water available		Toilet available and useable		Girls' toilet available and useable	
State	2010	2018	2010	2018	2010	2018	2010	2018	2010	2018
Andhra Pradesh	47.2	55.1	64.2	72.9	64.8	58.1	38.6	86.4	25.4	81.1
Arunachal Pradesh	24.5	51.4	64.0	57.4	53.2	44.7	25.3	50.0	12.2	28.2
Assam	19.1	59.5	80.2	92.2	60.9	68.0	33.1	21.2	13.7	15.9
Bihar	48.1	55.7	64.0	91.6	78.7	89.7	33.6	75.6	18.1	63.0
Chhattisgarh	48.8	71.8	86.1	97.0	77.6	82.5	29.6	85.7	20.0	75.7
Gujarat	84.4	96.3	88.3	90.4	79.4	88.0	64.8	91.3	49.9	87.4
Haryana	82.7	90.8	51.0	88.2	74.6	82.0	67.9	90.8	52.8	84.4
Himachal Pradesh	37.9	63.6	82.5	99.3	83.2	89.4	56.0	94.2	38.7	86.3
Jammu and Kashmir		38.7		86.3		54.6		73.0		48.2
Jharkhand	27.0	34.8	73.5	88.7	73.8	82.6	26.8	74.9	20.9	72.5
Karnataka	59.3	84.7	92.9	93.0	75.8	76.8	38.4	70.8	31.8	66.4
Kerala	81.8	80.2	98.1	99.2	85.7	52.9	58.2	89.4	43.9	83.4
Madhya Pradesh	37.3	44.7	89.9	85.7	78.5	71.0	50.3	68.3	28.9	56.5
Maharashtra	57.5	74.0	78.2	94.9	69.0	70.9	53.0	70.1	43.2	63.9
Manipur	11.3	14.4	58.4	61.6	5.1	6.5	40.2	44.9	8.4	15.4
Meghalaya	14.2	12.7	60.6	84.5	23.9	15.5	24.5	44.8	14.8	29.9
Mizoram	37.7	35.5	96.2	96.1	48.5	57.4	55.6	44.6	30.8	34.9
Nagaland	42.8	36.4	81.7	83.0	37.0	27.3	53.9	61.8	30.6	47.0
Odisha	40.8	50.5	74.4	89.9	70.3	82.9	44.4	75.7	34.7	69.3
Punjab	82.8	92.6	94.7	99.1	83.1	82.7	61.2	89.5	49.4	83.9
Rajasthan	70.1	84.6	83.8	92.8	68.0	72.8	65.4	84.9	50.3	80.9
Sikkim	14.5	35.9	95.7	95.3	76.8	74.5	59.4	82.4	37.5	75.7
Tamil Nadu	60.7	75.6	96.7	96.2	80.5	80.2	44.6	90.2	35.1	86.2
Telangana	61.2	71.4	71.0	86.4	64.8	57.2	38.6	77.0	25.4	71.9
Tripura	19.4	31.6	88.2	98.3	40.0	45.6	43.0	53.0	30.3	32.7
Uttar Pradesh	44.4	72.4	89.3	95.4	82.2	85.1	47.4	72.7	33.9	67.2
Uttarakhand	66.8	58.3	96.3	98.0	68.3	75.6	53.4	85.8	24.0	67.2
West Bengal	34.5	55.1	86.3	94.0	67.2	81.3	52.1	81.1	23.7	67.7
All India	*51.0*	*64.4*	*82.1*	*91.0*	*72.7*	*74.8*	*47.2*	*74.2*	*32.9*	*66.4*

Source: School Report Card (Various Year), DISE

schools. In 2018, 66.4% of schools had girls' toilet in India with the presence of state-wise variation.

Table 4.8 presents trends over time performance of schools, for different states in India. In 2018, 29.4% of schools have a total enrolment less than 60. This indicator is very high for some states like Himachal Pradesh, Mizoram, Manipur, Meghalaya and Uttarakhand. In 62.4% of schools, Std II children were observed sitting with one or more classes and, in 53.9% of schools, Std IV children were observed sitting with one or more classes in India. Library books are available in 74.2% of schools in India with huge state-wise variation.

Table 4.9 presents state-wise computer availability in schools for the years 2010 and 2018. In 2018, 21.3% of schools had computer for children in India, with 75.4% in Kerala, 66.9% in

Table 4.8 Percentage of schools with respect to enrolment and library books

	Percentage of schools with									
	Total enrolment of 60 or less		Std II children observed sitting with one or more classes		Std IV children observed sitting with one or more classes		Library books available		Library books being used by the children on day of visit	
State	2010	2018	2010	2018	2010	2018	2010	2018	2010	2018
Andhra Pradesh	31.5	38.6	63.3	61.9	55.3	57.6	92.0	91.0	77.6	54.8
Arunachal Pradesh	33.9	49.0	31.7	37.3	26.9	27.2	13.0	24.1	6.3	4.4
Assam	40.9	41.0	43.4	52.2	40.8	46.5	20.8	73.1	10.5	38.8
Bihar	0.2	1.3	57.1	66.5	48.3	55.3	52.9	59.1	28.2	27.5
Chhattisgarh	16.1	40.2	64.9	71.3	51.1	53.3	72.9	89.7	36.5	23.8
Gujarat	4.6	12.8	36.5	50.9	33.0	45.4	83.8	85.3	48.5	40.5
Haryana	6.5	17.6	32.5	41.5	29.7	37.8	64.6	84.0	31.6	39.1
Himachal Pradesh	48.6	83.1	58.3	81.1	52.4	74.3	80.3	97.3	41.3	24.3
Jammu and Kashmir		52.4		61.3		52.1		58.9		26.6
Jharkhand	7.7	18.9	66.1	78.1	60.7	69.3	61.6	87.1	28.4	50.5
Karnataka	17.8	26.3	75.6	83.6	37.0	44.1	92.4	83.0	64.8	36.1
Kerala	19.9	24.1	7.1	17.0	5.4	21.0	83.1	90.0	62.4	30.5
Madhya Pradesh	10.4	33.8	66.9	82.6	57.4	75.0	56.3	84.0	29.1	43.8
Maharashtra	16.7	26.4	40.3	49.8	36.3	44.5	86.1	88.4	66.5	36.9
Manipur	35.3	63.6	37.7	43.9	32.1	38.4	9.2	9.0	5.9	3.2
Meghalaya	71.0	69.0	64.0	77.3	60.4	75.6	22.0	10.6	15.6	2.8
Mizoram	39.8	84.1	28.0	2.2	25.8	1.7	6.4	17.6	1.7	2.6
Nagaland	45.8	61.3	19.0	11.4	17.9	11.7	13.3	12.9	9.2	6.9
Odisha	21.4	31.3	72.8	78.9	62.1	69.8	65.3	80.3	46.8	54.0
Punjab	17.2	38.2	52.2	58.5	37.5	53.8	96.0	88.1	66.0	44.9
Rajasthan	13.0	17.7	66.2	72.9	52.9	60.3	63.7	81.8	23.3	34.1
Sikkim	23.2	53.3	9.0	23.8	9.2	20.4	44.1	52.3	26.5	31.8
Tamil Nadu	24.4	39.6	79.3	64.1	74.4	60.7	79.1	83.8	57.8	52.4
Telangana	17.2	34.8	57.1	60.5	48.3	49.0	92.0	77.7	77.6	55.7
Tripura	9.4	28.7	40.0	53.5	21.5	27.4	35.4	41.2	19.8	29.8
Uttar Pradesh	4.6	10.4	51.0	62.2	45.9	58.9	48.7	63.1	22.9	35.7
Uttarakhand	69.0	73.1	61.9	75.7	56.8	71.7	47.7	84.8	20.4	26.1
West Bengal	10.1	20.2	42.5	46.1	33.9	38.9	49.5	66.1	31.8	38.4
All India	*17.3*	*29.4*	*54.8*	*62.4*	*45.9*	*53.9*	*62.6*	*74.2*	*37.9*	*36.9*

Source: ASER Report, 2018

Gujarat, 64.6% in Maharashtra and 57.9% in Tamil Nadu, and some other states have too much lower value of this indicator. In 2018, 6.5% of schools have computer for children which is observed using them on day of visit. Table 4.9 also presents state-wise percentage of schools 'mid-day meal served in school on day of visit' for the year 2010 and 2018.

Table 4.10 presents state-wise performance grading index in school education. The performance grading index (PGI) (MHRD, 2018) is a measure of education quality to provide insights of the status of school education in states and UTs of India. The purpose of the index is to help states and UTs to find the gaps in education and, accordingly, prioritize areas for intervention for

Table 4.9 Percentage of schools with respect to computer availability and mid-day meals

	Percentage of schools with					
	Computer available for children		Computer available and children observed usingthem on day of visit		Mid-day meal served in school on day of visit	
State	2010	2018	2010	2018	2010	2018
Andhra Pradesh	9.3	22.6	6.2	6.6	99.7	96.0
Arunachal Pradesh	14.3	7.7	8.0	1.3	47.1	36.2
Assam	1.8	6.5	0.2	1.6	67.3	64.0
Bihar	6.9	3.4	4.0	0.6	57.2	84.5
Chhattisgarh	4.1	2.4	1.7	0.4	94.6	91.7
Gujarat	52.2	66.9	27.9	24.0	96.2	94.1
Haryana	17.4	18.3	6.9	5.1	93.7	85.3
Himachal Pradesh	6.7	6.6	3.2	2.1	98.0	93.1
Jammu and Kashmir		17.2		4.6		77.3
Jharkhand	7.0	6.6	4.1	1.1	92.6	79.0
Karnataka	29.4	41.8	13.4	9.9	96.0	97.5
Kerala	82.8	75.4	66.7	22.4	100.0	96.1
Madhya Pradesh	7.5	3.8	1.7	0.7	94.7	82.9
Maharashtra	33.3	64.6	19.8	19.0	90.7	94.7
Manipur	8.5	9.0	2.5	3.2	47.8	46.4
Meghalaya	2.8	2.1	0.9	0.7	51.9	47.9
Mizoram	7.7	9.9	5.9	0.4	94.0	89.2
Nagaland	14.8	13.2	3.7	2.4	31.9	27.4
Odisha	7.1	18.7	4.4	6.1	88.8	98.8
Punjab	10.7	21.5	5.2	3.8	97.9	93.4
Rajasthan	15.7	38.6	5.3	11.6	94.8	95.1
Sikkim	39.1	33.6	24.6	9.4	98.6	78.5
Tamil Nadu	47.0	57.9	29.4	29.3	99.4	98.7
Telangana	9.3	10.6	6.2	3.1	98.4	95.8
Tripura	8.5	4.4	5.3	0.9	74.7	96.5
Uttar Pradesh	1.4	3.3	0.3	0.7	71.3	93.3
Uttarakhand	6.7	9.8	1.5	0.7	95.0	88.1
West Bengal	1.3	6.7	0.5	1.2	63.4	81.6
All India	*15.8*	*21.3*	*8.6*	*6.5*	*84.6*	*87.1*

Source: ASER, 2018

ensuring robust school education system. At the same time, it may act as a good source of information for best practices. From the view point of access to school education, Tamil Nadu (79) and Kerala (78) are at better position compared to other states. From the view point of infrastructure and facilities, Punjab (139) and Goa (138) are at better position; from the equity aspects, Tamil Nadu (218) and Kerala (217) are at upper position compared to other states. From the view point of governance process, Gujrat (279) and Kerala (254) are at upper position compared to other states in India.

With the socioeconomic advancement achieved during the last decades, many countries in Asia have called for highly skilled human resources who can further boost development of the economy in the backdrop of globalization and the knowledge of economy. In higher education, college density is defined as the number of colleges per lakh (0.1 million) of eligible population within age 18–23 years. The lack of institutional capacity with regard to population density also lessens the access opportunities for students. Such circumstances make the disadvantaged groups more vulnerable resulting in

Table 4.10 Performance grading index

	Access (highest 80)	Infrastructure and facilities (highest 150)	Equity (highest 230)	Governance process (highest 360)
Andhra Pradesh	70	99	194	211
Arunachal Pradesh	46	63	197	134
Assam	64	72	208	211
Bihar	56	86	203	140
Chhattisgarh	66	113	206	213
Goa	75	138	209	163
Gujarat	71	99	207	279
Haryana	74	116	211	252
Himachal Pradesh	76	96	209	215
Jammu & Kashmir	53	88	203	168
Jharkhand	53	95	204	144
Karnataka	69	100	212	165
Kerala	78	123	217	254
Madhya Pradesh	58	99	209	207
Maharashtra	76	113	212	155
Manipur	60	68	193	149
Meghalaya	50	57	186	165
Mizoram	57	102	184	218
Nagaland	43	63	195	130
Odisha	69	94	214	223
Punjab	74	139	200	214
Rajasthan	56	84	210	234
Sikkim	58	90	198	215
Tamil Nadu	79	121	218	224
Telangana	66	96	205	167
Tripura	67	70	207	173
Uttar Pradesh	62	73	202	134
Uttarakhand	72	102	194	188
West Bengal	53	58	195	189
A & N Islands	46	87	205	158
Chandigarh	75	133	213	260
Dadra & Nagar Haveli	73	110	221	202
Daman & Diu	73	99	208	163
Delhi	72	114	214	223
Lakshadweep	67	98	206	133
Puducherry	77	114	206	166

Source: Performance Grading Index (PGI) for States and UTs 2017–2018, MHRD

dropouts and discontinuation of higher education. Institutional distribution per lakh population should ensure greater opportunities for access. Disparities can also be observed between states of India in terms of the availability of colleges per lakh population. Table 4.11 presents number of colleges per lakh population for the year 2010–2011 and 2017–2018. In 2017–2018, numbers of colleges per lakh population in India are 28. The three states with the higher densities of colleges are Karnataka (51), Telangana (51) and Andhra Pradesh (48). On the other hand, Bihar (7), Jharkhand (8), Tripura (12) and West Bengal (12) are at the bottom in terms of college density. In Bihar and Jharkhand, college per lakh population is very low, that is why average enrol-

Table 4.11 Progress of higher education in India

		Number of colleges per lakh population		GER		GPI		PTR	
		2010–2011	2017–2018	2010–2011	2017–2018	2010–2011	2017–2018	2011–2012	2017–2018
1	A&N Islands	12	14	11.4	21.8	1.4	1.1	12.1	18.1
2	Andhra Pradesh	48	48	28.4	30.9	0.8	0.8	17.7	16.2
3	Arunachal Pradesh	11	19	26.9	29.7	0.6	0.9	31.0	26.2
4	Assam	13	14	13.4	18.2	1.0	1.0	24.0	28.0
5	Bihar	5	7	10.5	13.0	0.8	0.8	49.9	62.8
6	Chandigarh	18	13	41.4	56.4	1.0	1.4	18.4	22.8
7	Chhattisgarh	20	24	13.6	18.4	0.7	1.0	21.8	28.5
8	Dadra & Nagar	9	13	3.6	9.1	1.1	1.7	25.6	27.4
9	Daman & Diu	7	15	3.5	5.2	2.1	2.2	11.1	13.6
10	Delhi	8	8	32.5	46.3	0.9	1.1	61.0	89.7
11	Goa	25	32	33.2	28.0	1.2	1.3	13.0	15.7
12	Gujarat	27	30	21.3	20.1	0.8	0.8	25.2	26.3
13	Haryana	33	30	24.1	28.7	0.8	1.1	20.9	38.1
14	Himachal Pradesh	38	45	26.0	37.9	1.0	1.2	22.3	24.1
15	J&K	14	23	16.8	27.7	1.0	1.1	29.7	26.1
16	Jharkhand	5	8	8.1	18.0	0.9	1.0	46.2	53.1
17	Karnataka	44	51	25.5	27.8	0.9	1.1	14.0	15.0
18	Kerala	29	44	21.9	36.2	1.3	1.3	15.1	17.8
19	Lakshadweep	0	0	0.0	7.6		3.8	13.2	12.3
20	Madhya Pradesh	23	24	13.6	21.2	0.8	0.9	31.9	31.3
21	Maharashtra	35	33	27.6	31.1	0.8	0.9	22.3	26.3
22	Manipur	23	26	35.9	31.8	0.9	1.0	18.9	23.3
23	Meghalaya	16	18	17.5	24.7	1.3	1.0	13.6	19.8
24	Mizoram	21	23	21.6	22.9	1.0	0.9	13.7	14.1
25	Nagaland	20	27	21.5	17.8	0.7	1.0	21.3	16.7
26	Odisha	23	23	16.1	22.0	0.8	0.9	18.0	25.1
27	Puducherry	54	47	31.2	45.4	0.9	1.1	7.9	12.2
28	Punjab	29	33	19.4	30.3	0.6	1.2	18.2	16.7
29	Rajasthan	29	33	18.2	21.7	0.7	0.9	27.6	29.0

(continued)

Table 4.11 (continued)

		Number of colleges per lakh population		GER		GPI		PTR	
		2010–2011	2017–2018	2010–2011	2017–2018	2010–2011	2017–2018	2011–2012	2017–2018
30	Sikkim	14	22	24.2	37.4	0.9	1.2	14.7	16.4
31	Tamil Nadu	27	35	32.9	48.6	0.8	1.0	18.4	17.5
32	Telangana		51		35.7		0.9	20.8	17.2
33	Tripura	8	12	13.6	21.2	0.7	0.8	22.6	28.5
34	Uttar Pradesh	17	28	16.3	25.9	1.1	1.1	27.9	25.4
35	Uttarakhand	28	37	27.8	36.3	1.1	1.0	35.1	43.1
36	West Bengal	8	12	12.4	18.7	0.8	0.9	32.7	34.8
	India	23	28	19.4	25.8	0.9	1.0	22.9	26.0

Source: AISHE Report (Various Years), MHRD

ment per college is too much high compared to other states in India.

Gross enrolment ratio (GER) in higher education is the ratio of number of students enrolled in higher education institutions within the country and eligible population (within age 18–23 years) in a year. Though India aims to attain GER of 30% by 2020, it is still far behind countries like China having GER of 43.39% and US having GER of 85.8%. On the basis of geographical location, the disparities in gross enrolment ratio (GER) across states are also apparent. Table 4.11 presents state-wise GER in higher education in India for the years 2010–2011 and 2017–2018. In 2017–2018, GER in higher education is 25.8. Differences in GER among states highlight the regional disparities in access to higher education. Thirteen states had a GER less than the national average, and 16 states have registered GER higher than national average (25.8%). Tamil Nadu has the highest GER in India at 48.6%. States like Tamil Nadu (48.6%), Himachal Pradesh (37.9%), Kerala (36.2%), Andhra Pradesh (30.4%), Haryana (28.7%) and Punjab (30.3%) had GER higher than national average. However, states like Bihar (13), Nagaland (17.8), Jharkhand (18), Assam (18.2), Chhattisgarh (18.4) and West Bengal (18.7) had GER ratio far less than the national average. Bihar had the lowest GER with just 13% of its eligible population (in age group of 18–23 years) pursuing higher education.

The gender parity index (GPI) is a socio-economic index usually designed to measure the relative access to education of females compared to males. Here we present state-wise GPI in higher education in India for the years 2010–2011 and 2017–2018. From the report published by All India Survey of Higher Education (AISHE), we see in Table 4.11 that GPI in India was 0.97 in 2017–2018. Especially in the state like Goa, Kerala, Himachal Pradesh and Haryana, more women are enrolled than men. In the states like Andhra Pradesh, Gujarat, Mizoram, Odisha, Tripura and West Bengal, GPI is less than the expected level. In these states, more males are enrolled than females.

Table 4.11 also presents state-wise pupil-teacher ratio (PTR) in higher education in India for the years 2010–2011 and 2017–2018. In 2017–2018, PTR in higher education was 26 in India.

4.3 Financing Education

The global community has been advocating for countries, especially developing countries, to invest more in education to increase access and participation and also to improve the quality of education. Government investment on education should care for addressing equitable distribution of resources across education subsectors, and it should support programmes for marginalized and disadvantaged groups. An increased focus on innovative financing which supports good-quality public education without imposing burden is needed. Funding of education will need to be drawn from multiple sources.

In order to achieve all the targets of Goal 4, significant financial gaps are found in case of early childhood development and tertiary and higher education. There is a gap of USD 429 billion to ensure access to quality early childhood care and preprimary education. Further, India will require an additional USD 301 billion for ensuring quality vocational, technical and tertiary education. For enhancing the standards of Indian higher to make it comparable with world standards, additional finance is required (Technology and Action for Rural Advancement 2015).

In India, though education falls under concurrent list, the states bear major primary responsibility for education expenditure. The share of education expenditure in gross state domestic product (GSDP) is the most commonly used indicator for measuring the priority given to education by states of India. A higher percentage of GSDP invested on education denotes a higher level of attention in education. During 2004–2005, the expenditure on education by all states was 2.5% of the total GSDPs of the states. During 2014–2015, this was increased to 3%. For the time period under study (2004–2005 to 2014–2015), states

like Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Kerala, Manipur, Meghalaya, Mizoram, Nagaland, Rajasthan, Sikkim and Tripura were spending relatively higher proportion of the GSDP on education among all the states of the country.

During 2004–2005, average higher education expenditure by all states was 0.28% of GSDP, which was increased to 0.32% of GSDP in 2014–2015. During 2014–2015, states like Assam, Bihar, Manipur, Mizoram, Odisha and Jammu & Kashmir were spending relatively higher proportion of the GSDP on higher education among all the states of India.

The data in Table 4.12 also present that in most of the states, proportionate expenditure on education in GSDP has increased in the study period. However, this has not happened in higher education. In 11 states (mostly in eastern and north-eastern states) out of 28 states, the share of higher education to SDP has increased.

Table 4.12 Education expenditure percentage to GSDP

Region	State	2004–2005	2014–2015 (BE)
Central	Chhattisgarh	2.3	3.8
	Madhya Pradesh	2.2	2.6
Eastern	Bihar	3.3	5.9
	Jharkhand	2.1	2.9
	Odisha	2.5	3.3
	West Bengal	2.3	2.6
North Eastern	Arunachal Pradesh	5.4	8.2
	Assam	4.5	7.2
	Manipur	6.1	5.5
	Meghalaya	4	4.2
	Mizoram	7.1	8.9
	Nagaland	3.8	5.4
	Sikkim	8.8	5.6
	Tripura	5.3	5
Northern	Haryana	1.7	2.5
	Himachal Pradesh	4.2	4.9
	Jammu and Kashmir	2.5	4.5
	Punjab	2.1	2.2
	Uttarakhand	4.2	3.6
	Uttar Pradesh	2.6	3.3
Southern	Andhra Pradesh	3.1	2.7
	Karnataka	2.6	2.9
	Kerala	3	3.3
	Tamil Nadu	2	2.2
Western	Goa	2.4	2.1
	Gujarat	1.9	2.1
	Maharashtra	2.4	2.3
	Rajasthan	3	3.4
All States		*2.5*	*3*

Source: Analysis of Budgetary Expenditure on Education, MHRD; DBIE, RBIBE = Budget Estimate

4.4 SDG4 and Indicators

In Table 4.13, we have presented the targets of SDG4 for ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all. The selected indicators have been taken from the Baseline Report (GOI 2019b).

4.5 State-Wise Performance and Ranking by SDG

We have used principal component analysis (PCA) to derive the index of education development for different states in India. The important factors have been extracted using PCA. Therefore, the importance of the factors in measuring education quality is not the same. Using the proportion of these percentages as weights on the factor score coefficients, a non-standardized index (NSI) has been developed using the formula:

$$\text{Education Quality Index}(\text{INEQ}) = w_1 * f_1 + w_2 * f_2 + \cdots + w_k * f_k$$

where w_i is the weight of the factor i and f_i stands for ith factor.

To determine the education quality index, we have considered the following 37 education quality variables as given in Table 4.14. In Table 4.14, we have presented the maximum, minimum and average values of all the 37 variables taken for consideration. As the range suggests, there is huge variation among the states in the development of education quality. The scree plot derived from the factor analysis (Fig. 4.2) reveals that there are eight factors with eigen value greater

Table 4.13 Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all TARGETS

Targets	Indicators used in the present study
4.1 By 2030, it is to be ensured that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes.	1. Gross enrolment ratio (GER) in higher secondary education, *2015–2016 (in percentage)* 2. Percentage of students in grades III, V, VIII and X achieving at least a minimum proficiency level in terms of nationally defined learning outcomes to be attained by pupils at the end of each of the above grades during 2017–2018
4.2 By 2030, it is to be ensured that all girls and boys have access to quality early childhood development, care and preprimary education so that they are ready for primary education	–
4.3 By 2030, it is to be ensured equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university	1. Gross enrolment in higher education, i.e. graduation and above including certificates, diploma etc. during 2015–2016 2. Gender parity index
4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship	Percentage enrolment in technical and vocational education
4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations	Enrolment rate of children with disabilities during 2015–2016
4.6 By 2030, it is to be ensured that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy	Percentage literacy rate of youth during 2011
4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development	National indicator not yet evolved
4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all	Proportion *(in percentage)* of schools with access to (1) electricity, (2) computers for pedagogical purposes, (3) adapted infrastructure and materials for students with disabilities/disabled friendly ramp and toilets, (4) basic drinking water, (5) single-sex basic sanitation facilities and (6) basic hand washing facilities (*2015–2016)*
4.b By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing states and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries	National indicator not yet evolved
4.c By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing states	Proportion *(in percentage)* of trained teachers, by education level, *2015–2016*

Source: GOI (2019a, b)

Table 4.14 Statistical summary of the variables taken

		Average	Max	Min
4.1 GER	Secondary	68.60	93.23	46.34
	Higher secondary	60.46	98.16	21.54
4.1Percentage of students in grades III, V, VIII and X achieving at least a minimum proficiency level in terms of nationally defined learning outcomes to be attained by pupils at the end of each of above grades during 2017–2018	Class-3 Language	90.29	97.00	74.80
	Class-5 Language	85.55	95.40	69.40
	Class-8 Language	82.82	92.20	64.30
	Class-3 Math	88.69	96.20	74.00
	Class-5 Math	79.81	92.10	64.20
	Class-8 Math	60.93	84.00	43.30
4.3 Gross enrolment in higher education, i.e. graduation and above including certificates, diploma etc. during 2015–2016	Male	25.50	48.44	4.11
	Female	25.88	70.44	9.22
	Total	25.58	57.59	5.74
4.4 Percentage enrolment in technical and vocational education	Technical education	13.69	44.10	2.70
	Vocational education	3.13	10.60	0.40
4.5 (i) Enrolment rate of children with disabilities during 2015–2016	Primary	1.35	3.33	0.53
	Upper primary	1.36	3.70	0.48
	Elementary	1.32	3.28	0.12
	Secondary	0.76	2.66	0.10
	Higher Secondary	0.33	0.95	0.04
4.5 Gender parity index	Primary	1.01	1.13	0.90
	Secondary	1.03	1.24	0.83
	Higher Secondary	1.08	1.98	0.78
	Tertiary Education	1.07	2.49	0.70
4.6 Percentage literacy rate of youth during 2011	Male	92.17	99.04	79.56
	Female	86.48	99.03	63.69
	Total	89.50	99.04	72.29
4.a Proportion of children with access to:	Electricity	72.80	100.00	19.45
	Computers for pedagogical purposes	41.61	100.00	9.37
	Adapted infrastructure and materials	80.14	100.00	50.00
	Basic drinking water	95.79	100.00	63.81
	Single-sex basic sanitation facilities	98.03	100.00	83.94
4.c Proportion of trained teacher by education level	Primary	77.80	100.00	28.68
	Upper primary	83.60	100.00	21.14
	Elementary	70.27	100.00	9.85
	Primary	18.17	39.00	5.00
	Upper primary	12.81	31.00	5.00
	Secondary	23.14	66.00	7.00
	Higher secondary	31.19	97.00	11.00

Source: GOI (2019a, 2019b) and other relevant reports

than 1, and they together explain about 82.25% variation of the variables as revealed from factor analysis.

After obtaining the factor scores, we have used the following formula to find the index value of education quality (INEQ) for each state.

$$\text{INEQ} = \left(\text{Index} - \left(-866559\right)\right) / \left(0.9003696 - \left(-866559\right)\right)$$

The average value of index was calculated to 0.472 with standard deviation of 0.2405. Table 4.15 presents the derived values of index and the ranks of the states in the education quality.

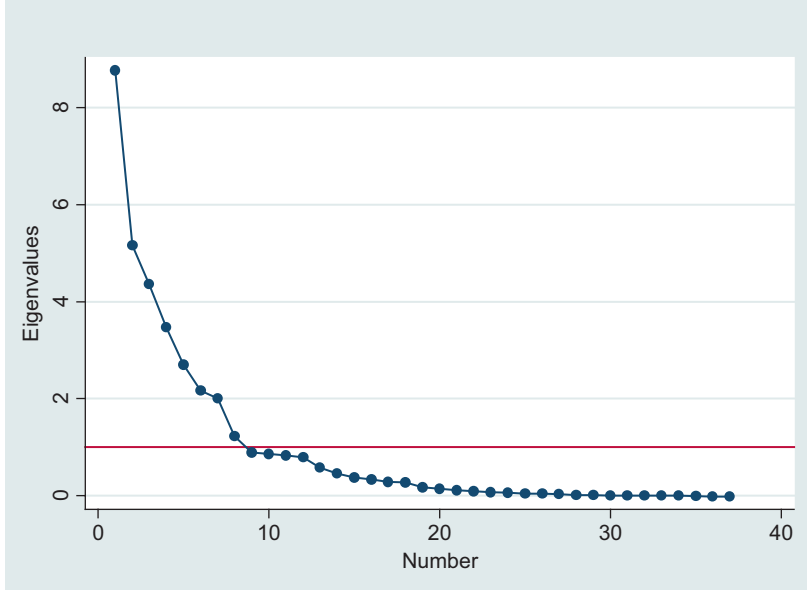

Fig. 4.2 Scree plot of eigenvalues after extraction of factors (Source: Own estimation)

Table 4.15 State-wise rank of quality of education in India

State	PCA score	Rank
Andhra Pradesh	0.470	18
Arunachal Pradesh	0.079	34
Assam	0.264	29
Bihar	0.000	36
Chhattisgarh	0.449	20
Goa	0.730	4
Gujarat	0.441	22
Haryana	0.442	21
Himachal Pradesh	0.774	3
Jammu & Kashmir	0.243	30
Jharkhand	0.284	27
Karnataka	0.705	6
Kerala	1.000	1
Madhya Pradesh	0.230	31
Maharashtra	0.533	14
Manipur	0.681	9
Meghalaya	0.169	33
Mizoram	0.668	10
Nagaland	0.278	28
Odisha	0.395	24
Punjab	0.429	23
Rajasthan	0.217	32
Sikkim	0.286	26
Tamil Nadu	0.683	8
Telangana	0.553	13
Tripura	0.523	15
Uttar Pradesh	0.031	35
Uttarakhand	0.588	12
West Bengal	0.465	19
Andaman & Nicobar Islands	0.481	17
Chandigarh	0.942	2
Dadra & Nagar Haveli	0.495	16
Daman & Diu	0.380	25
Nct Of Delhi	0.662	11
Lakshadweep	0.719	5
Puducherry	0.700	7

Source: Own estimation

4.6 Innovative Programmes for Improving Quality of Education in India

Many innovative programmes have been taken up in India for improving the quality of education (Pandey 2018). The following are some of the government programmes that have been taken up in recent years.

Padhe Bharat Badhe Bharat (PBBB) (Early Reading and Writing with Comprehension and Early Mathematics Programme): *PBBB* is a nationwide sub-programme of the *Sarva Shiksha Abhiyan* (SSA) initiated in 2014 to ensure quality at the foundational years of schooling, i.e. classes I and II.

Beti Bachao, Beti Padhao (BBBP) (Save Girl Child, Educate Girl Child): *BBBP* is one of the most leading and ambitious flagship programmes launched by the Government of India in 2015 to address the issue of decline in child sex ratio (CSR). The major objective of BBBP has been to prevent gender-biased sex-selective elimination and ensure survival and protection of the girl child and education of the girl child.

The Rashtriya Avishkar Abhiyan (RAA): It was launched in 2015 for strengthening learning of mathematics and science in upper primary classes for encouraging children of the age group 6–18 years.

Information and Communication Technologies (ICT): The Government of India has taken several initiatives for introducing good governance of school system through ICT-based initiatives in 2015 which includes the following: (1) ***Saransh*** (launched in 2015) is an initiative of Central Board of Secondary Education (CBSE) for allowing schools for online self-review to identify areas of improvement of students, teachers and curriculum. (2) ***Shaala Siddhi (self-assessment of all schools and external evaluation of sample schools):*** An initiative taken by NUEPA in 2015 aims to enable all schools to self-evaluate their performance and monitor their strengths and areas of improvement, both at the elementary and secondary levels. (3) **e-Pathshala** is an online platform launched in 2015 for showcasing and disseminating digital resources containing textbooks and other learning resources like audio, video, periodicals and a variety of other print and non-print materials for its stakeholders-students, teachers, educators, researchers and parents. (4) **Aadhar Link**: All school-going children in the age group of 5–18 years in the country are being covered under *Aadhar* (12-digit identification number) since 2017 which would help in tracking of dropout children from school and also for monitoring their academic performance and for ensuring benefits to be disbursed to them in cash or kind under various centrally sponsored schemes.

4.6.1 Accreditation of Educational Institutes

All universities and higher education institutes in India have been mandated to get themselves accredited either by National Assessment and Accreditation Council (NAAC) or National Board of Accreditation (NBA). The primary objective of accreditation is to ensure that an institution meets certain standards of quality. The accreditation is based on outcomes rather than inputs. NAAC was set up by University Grants Commission (UGC) in 1994 to monitor quality of Higher Education Institutes (HEIs) and it is presently considered as a major Quality Assurance (QA) body in India. Out of the 7876 higher education institutes assessed in first cycle by NAAC in India, 1844 institutes (23%) achieved 'A' grade denoting good quality. The National Institutional Ranking Framework (NIRF) approved by the Ministry of Human Resource Development (MHRD) was launched on 29th September 2015 in India, the fourth edition of NIRF rankings of the HEIs in India being published in 2019. The better performing states in terms of accreditation are: Tamil Nadu, Karnataka, Kerala and West Bengal.

4.6.2 Prime Minister's Research Fellowship

In order to attract bright students to do research in India to solve the country's daunting challenges, a Special Prime Minister's Research Fellowship Scheme for 1000 graduates, with CGPA of 6 and above on a 10-point scale, from IITs, NITs and IISERs, has been instituted. These meritorious students will fit to receive Rs. 70,000–Rs. 80,000 per month as fellowship grant.

4.6.3 Imprint

In order to tap the great research talent in IIT and IISc and to address the science and technology challenges to make India self-reliant, MHRD has launched in 2015 a catalytic scheme called Impacting Research, Innovation and Technology (IMPRINT). Many innovative research areas are being addressed under this scheme.

4.6.4 GIAN

Global Initiative of Academic Networks (GIAN) has been formulated by the MHRD in 2015 to attract the reputed international faculty from all over the world to Indian universities to provide opportunity to Indian faculty to share knowledge in cutting edge areas, to provide opportunity to Indian students and to gather knowledge from reputed faculty abroad. A large number of international faculties have visited different institutions in India for conducting relevant courses.

4.6.5 SWAYAM

SWAYAM is a programme initiated by the Government of India (GOI) in 2017 to achieve the three cardinal principles of education policy, viz. access, equity and quality. SWAYAM seeks to give the opportunity to students to join the mainstream of the knowledge economy through digital revolution. A National MOOC portal study webs of Active-Learning for Young Aspiring Minds (SWAYAM) has been created that has more than 1000 courses from the best faculties of India in the domain of engineering science, mathematics, humanities and social sciences, economics, management, arts and recreation and languages. These are available free of cost or at very low cost to any interested learner. These courses are available anytime, anywhere on any device. Students wanting certifications shall be registered and shall be offered a certificate after successful completion of the course with a little fee. Status of SWAYAM in India is presented in Table 4.16.

4.6.6 Smart India Hackathon

In 2017, the AICTE and MHRD have embarked upon a national level Smart India Hackathon to provide students a platform to solve some of the pressing problems they face in their daily lives. The major purpose of the initiative is to harness creativity and expertise for innovative solution of India's daunting problems.

4.6.7 Skill India

The campaign of 'Skill India' started in 2015 which aims to train 400 million Indian people in different skills by 2022. India needs huge skilled manpower in the coming decades to use its demographic dividend to its best. Hence, skills are required in new technology domains in the immediate future Mohanty & Zaidi (2012). IoT (Insert on Things), AI (Artificial Intelligence), Robotics, Data Analysis and Club Computing are being imparted as part of the curriculum. Some are being imparted to school drop-outs under Pradhan Mantri Kaushal Vikas Yogana (PMKVY), launched in 2015. The AICTE has imitated several other schemes for improving the quality of technical education and providing enriching experience to students in colleges. It has also initiated awards for clean and green campuses and *Chhatra Vishwakarma* awards for innovative

Table 4.16 National coordinators in SWAYAM

National coordinators	Appointed for	Partnering institutes	Completed courses	Student enrolment	Exam registration	Successful certification
AICTE	Self-paced and international courses	–	86	120,141	16	–
CEC	Nontechnical undergraduate education	19	265	263,560	5221	1627
IGNOU	Out of the school students	3	36	47,529	483	–
IIMB	Management studies	3	36	74,627	1121	206
NCERT	School education	8	75	78,375	–	–
NIOS	School education	1	130	2,944,430	–	–
NITTTR, Chennai	Teacher training programme	–	22	66,179	1377	–
NPTEL	Technical and engineering (UG and PG)	26	1300	6,335,382	627,866	305,530
UGC	Nontechnical post-graduation education	5	220	164,997	4965	1853

Source: Based on SWAYAM, MHRD, https://swayam.gov.in/ (data as on 15-5-2019)

projects and best student start-up. The AICTE has mandated all colleges to adopt at least five villages each under *Unnat Bharat Abhiyan*.

4.7 Conclusion

We have employed the methodology of factor analysis to construct the index of education quality development of the states in India. The results suggest there is huge variation in the education sector development of the states in India with poor education development in some states like Bihar, UP, Arunachal Pradesh, Meghalaya, Rajasthan and Madhya Pradesh. The states which are in better position in terms of education quality index are Kerala, Chandigarh, Himachal Pradesh, Goa, Lakshadweep, Karnataka, Puducherry and Tamil Nadu.

There is a pressing need for strengthening public education system in the country. Certain violations of RTE Act at the state level have weakened the implementation of the Act. It is extremely important to strengthen community and local institutions for bridging the gaps and providing free and compulsory 12 years of school education. The Central Government needs to substantially increase the share of education in the total central budget. Pupil–teacher ratio (PTR) needs to be improved. In the past two decades, post the onset of the so-called economic liberalization, the role of private sector in education has grown rapidly in India. It should be noted that marginalised people or economically weaker section of the population does not get deprived in getting the quality education.

Digital initiative has tremendous potential to impact the education of students and capacity building of teachers and educators and provide solutions to mitigate challenges being faced in the Indian education system. An enhanced focus on innovative financing strategies that do not burden the poor but do support good-quality public education is needed (ESCAP 2015). The efficiency of public investment on education can be enhanced through numerous measures like child-oriented teaching methods focussing on skill formation, using languages that students understand and lowering absenteeism with efficient utilisation of class time by teachers and responsible school management (ESCAP 2019). Some other suggestions for the improvement of school education are universal functional and numeracy of the school students by the end of class 3, univer-

sal preschool education to support readiness for class 1 in school, inclusion of extensive practical training through apprenticeship for teachers, introduction of charter schools (public funded schools but managed by private entities) and introduction of vocational education (Muralidharan 2019).

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