

Higher education in Odisha: some reflections with special reference to technical and professional education

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Abstract

Objectives: To examine the development of higher education in Odisha with special reference to the technical/professional education. It also examines the disparity in enrolment in higher education with respect to gender and caste.

Methods: This study mainly based on the secondary data collected from various sources. It analyses the results using (i) Annual Compound Growth Rate, (ii) Gender Parity Index (iii) Gross Enrolment Ratio (iv) Index of Gender Equality, (v) Index of Social Equality, and (vi) Co-efficient of Equality.

Findings: During the post reform period there is rapid expansion of universities and technical/professional institutes in the state. As far as growth of teachers is concerned the ACGR of teachers is highest in universities followed by technical/professional institutes and general colleges. The growth rate of girls' enrolment was higher than that of boys in both general and technical/professional education. ACGR of enrolment in technical education was higher than that of general education. Over the years though enrolment in technical/professional education is increasing but the proportion is more in general education. GER in higher education by gender and caste in the state is less than the national average. The GPI in technical education is lower than general education. The index of gender equity, index of social equity and coefficient of equality in enrolment are less than 100. So, there exist inequalities by gender and caste in higher education in Odisha.

Improvements: It is suggested that the government has to take special measures like provision of special incentive scheme for girls, scheduled castes and scheduled tribes in order to increase their participation in higher education in the state.

Keywords: Higher Education, Technical/Professional Education, Odisha, Inequality.

1. Introduction

Education is considered a vital factor in the process of economic development. No country has achieved sustained economic development without substantial improvement in its citizens' educational level. Education accelerates the process of development. A strong and well developed educational base results in the creation of an enabling environment, which in turn, leads to human and physical capital formation, better utilisation of resources and technological progress. Development literature has emphasised on the complementary relationship between the human and physical capital. Human capital theory suggests that just as physical capital (machines) augments productivity, so also human capital acquired through education improves the machines. The Constitution of India, National Education Policies and Five-Year Plans have laid much emphasis on education for socio-economic development.

In recent years the role of technical and professional education assumes great importance on account of the globalization process, knowledge revolution, faster technological advancement, etc. There is no doubt that primary education is necessary for development but higher and technical education is necessary for sustainable development. The increasing dependence of contemporary business and industry on technical and professional personnel for their sustainability in the regional, national and global markets may be considered as a pointer to the critical role of technical and professional education. In India, technical and professional education is imparted in various fields such as: engineering, architecture, medicine, pharmacy, nursing, law, management, computer application, etc., catering to various aspects of technological and professional development and economic progress.

The present day societies are technology-based and the quality of life of the people is directly related to the quality and level of technical education in vogue. In this fast changing world, technology is the pivot round which the human needs and services revolve [1]. Also, the estimates of rate of return to technical higher education are found to be higher than that of general education [2]. In this context, the development of technical and professional education in a backward state like Odisha is quite significant. In view of the contribution of higher education in general and technical and professional education in particular to the overall development of the recipients of education an attempt has been made to discuss the issues relating to quantitative and qualitative aspects of higher education in Odisha with a special reference to technical and professional education. The study is divided into five sections. The first section introduces. The second section deals with a brief methodology for analysing the data. The third section has discussed the development of higher education with special reference to technical/professional education in Odisha. The fourth section examines disparities in higher education in the state. The last section summarises the main findings along with some policy suggestions.

2. Materials and Methods

The analysis is based on secondary data collected from Directorate of Elementary Education, Government of Odisha; Statistics for Higher and Technical Education, MHRD, Government of India, 2009-10; AISHE Report, MHRD, Government of India, 2017-18, etc. The analysis of the study concentrates to the growth of institutions, teachers and enrolment in higher education in Odisha.

2.1. Compound Annual Growth Rate (CAGR)

$$CAGR = \left[\frac{\text{Ending Value}}{\text{Beginning Value}} \right]^{\left(\frac{1}{\text{No. of Years}} \right)} - 1$$

2.2. Gender Parity Index in Enrolment (GPI)

$$GPI = \frac{ENR_G}{ENR_B} \times 100$$

Where,

ENR_G = Enrolment of Girls

ENR_B = Enrolment of Boys

If the value of GPI, for example, is 0.86, it implies that there are 86 girls per 100 boys.

2.3. Gross Enrolment Ratio (GER)

It is calculated as:

$$GER = \frac{\text{Enrolment in Higher Education}}{\text{Population in Age 18 to 23 Years Age Group}} \times 100$$

2.4. Co-efficient of equality in enrolment

The coefficient of equality is estimated by using the following formula:

$$Q = \frac{E_t}{E_p} / \frac{P_t}{P_o}$$

Where,

Q = Coefficient of equality for Scheduled Tribes or Scheduled Castes

E_t = Enrolment of Scheduled Tribes or Scheduled Castes in any particular types of education.

E_o = Enrolment of General Castes in the same type of education

P_t = Population of Scheduled Tribes or Scheduled Castes in the age group of 18-23

P_o = Population of General Castes in the age group of 18-23

Co-efficient of equality of 100 implies that Scheduled Tribes or Scheduled Castes are at par with general castes in availing the same educational facility. If it is less than 100, it indicates that the Scheduled Castes or Scheduled Tribes are lagging behind their general counterparts. This would provide us idea about the educational status of Scheduled Tribes or Scheduled Castes vis-à-vis general castes [3].

2.5. Index of Gender Equity (IGE)

It is calculated as:

$$IGE = \frac{\text{Share of girls in enrolment in total enrolment}}{\text{Share of girls population in total population}} \times 100$$

A value of 100 for the index reflects a complete absence of gender inequities. A value of less than 100 shows less than proportionate representation of girls in enrolment and the opposite if the calculated value of the index is more than 100.

2.6. Index of Social Equity (ISE) [4]

It is calculated as:

$$ISE = \frac{\text{Share of SC or ST enrolment in total enrolment}}{\text{Share of SC or ST population in total population}} \times 100$$

3. Development higher education in Odisha

The state made intensive efforts to improve access to higher education after independence. The government supported higher education by setting up universities and colleges. It also took over the responsibility of running the institutions set up through private sector. There has been significant growth in the number of universities and colleges.

Table 1. Growth of general colleges and universities in Odisha, 1947-47 to 2017-18

Year	General Colleges	Universities
1947-48	12	1
1950-51	14	1
1960-61	16	1
1970-71	85	4
1980-81	188	4
1990-91	542	4
2000-01	567	8
2010-11	700	18
2017-18	741	21
Annual compound growth rates		
1947-48 to 1990-91	9.27	3.28
1990-91 to 2017-18	1.17	6.33
1947-48 to 2017-18	5.98	4.38

Source: Directorates of elementary education, Odisha, Bhubaneswar

In 1947-48, general colleges and universities numbered 12 and 1 respectively. By the year 2017-18, these figures increased substantially to 741 and 21, registering an annual compound growth rate of 5.98% in case of general colleges and 4.38% in case of universities. Table 1 shows the Annual Compound Growth Rate (ACGR) of general colleges and universities in Odisha from 1947-48 to 2017-18. Growth rate of general colleges has not been uniform throughout the period under reference. Between 1947-48 and 1990-91 (pre-reform period), number of general colleges and universities increased at the annual compound growth rates of 9.27% and 3.28% respectively. But in the post-reform era, the number of general colleges and universities in the state were found to be increasing at the rates of 1.17% and 6.33% respectively. However, it is not to be surmised that there is a decline in the tempo for educational development in the post-reform period in opening general colleges. By the time of commencement of the reforms in 1990-91, number of general colleges had increased substantially and relatively less number of colleges was established in the post reform period. It is observed that there has been remarkable growth of universities in post reform period.

As illustrated in Table 2, the break-up of percentage of higher education institutions, especially universities and university-level institutions in the state shows that the share of state public universities is the highest (56%) followed by institutes of national importance (16%), state private universities (12%), deemed private universities (8%), and central universities (4%) in 2017-18. It is evident from the Table 2 that there were 8 (100%) state public universities only and no other type of universities and university level institutions in the state in 2000-01. During the period 2000-01 to 2017-18, the universities and university level institutions in the state increased from 8 to 25, registering an increase of more than 3 times.

Table 2. Break up of universities and university level institutions in Odisha, 2000-01 to 2017-18

Type of Universities	2017-18	2009-10	2000-01
Central University	1 (4.00)	1 (6.67)	0 (0.00)
Institute of National Importance	4 (16.00)	2 (13.33)	0 (0.00)
State Public University	14 (56.00)	10 (66.67)	8 (100.00)
State Open University	1 (4.00)	0 (0.00)	0 (0.00)
State Private University	3 (12.00)	0 (0.00)	0 (0.00)
Deemed University- Private	2 (8.00)	2 (13.33)	0 (0.00)
Grand Total	25 (100.00)	15 (100.00)	8 (100.00)

*Source: AISHE, MHRD, GOI, 2017-18,
Statistics for Higher and Technical Education, MHRD, GOI, 2009-10
Directorates of Elementary Education, Odisha, Bhubaneswar
Note: The figures in parentheses are percentages*

3.1. Growth of technical/Professional institutes in Odisha

The growth of technical and professional institutes in the state during the period 1980-81 to 2017-18, has been presented in Table 3. During this period the number of colleges increased from 67 to 442 at an annual compound growth rate of 5.14%.

Table 3. Growth of technical/Professional Institutes in Odisha, 1980-81 to 2017-18

Type of Technical/Professional Institutions	1980-81	1990-91	2000-01	2009-10	2017-18	ACGR (1980-81 to 2017-18)
Engineering, Technology & Architecture Colleges	3	5	19	50	67	6.83
Medical Colleges*	7	11	16	22	38	3.66
Teacher Training Colleges	13	13	13	13	41	2.47
Polytechnics	19	21		39	124	4.07
Law, Management, MCA/IT, Agriculture, etc.	6	30	84	113	174	7.43
Total	48	80	166	237	442	5.14

*Source: Directorate of elementary education, Odisha, Bhubaneswar
* Note: Allopathic, Ayurvedic, Homeopathy, Unani, Nursing, Pharmacy*

It is observed that in the post reform period the number of technical/professional colleges increased from 80 in 1990-91 to 442 in 2017-18 registering an increase of more than 5 times. During the post reform period the increase in the number of general colleges was 1.37 times. This clearly indicates that during post reform period there is rapid expansion of technical/professional education institutes in the state.

3.2. Growth of teachers

Among various factors that influence quality of education and determine its contribution to national development, quality of teachers is very important [4]. Thus, teachers occupy a vital position in the education system and contribute to its efficiency and effectiveness [5].

It is observed from Table 4 that there has been significant increase in the number of teachers in general colleges, technical /professional institutes during the period 1980-81 to 2017-18 in the state. The number of teachers in 1980-81 in general colleges, technical /professional institutes and universities were 5161, 2168 and 422 respectively. By the year 2017-18, the numbers increased to 20504 for general colleges, 11313 for technical /professional institutes, and 4664 for universities. It is also observed from table 4 that the ACGR of teachers is highest in universities (6.71%) followed by technical/professional institutes (4.57) and in general colleges (3.80). However, the overall ACGR of teachers in higher education in Odisha is about 4% during the reference period.

Table 4. Growth of number of teachers in higher education, 1980-81 to 2017-18

Year	General Colleges	Technical/ Professional	Universities	Total
1980-81	5161	2168	422	7751
1990-91	10741	2981	512	14234
2000-01	14366	3115	955	18436
2017-18	20504	11313	4664	36481
Annual Compound Growth Rates				
1980-81 to 2000-01	5.25	1.83	4.17	4.43
2000-01 to 2017-18	2.11	7.88	9.78	4.10
1980-81 to 2017-18	3.80	4.57	6.71	4.28

*Source: AISHE, MHRD, GOI, 2017-18,
Directorate of elementary education, Odisha, Bhubaneswar*

3.3. Growth of enrolment

Number of students attending educational institutions is an important determinant of educational development in a region. Larger enrolment not only enhances human capital in a country, but also widens their cognitive skills. In 1947-48, 4104 students had enrolled themselves in higher education in Odisha and their number increased to 1015777 in 2017-18, thereby registering more than 247 fold increase over the period. There were 219 girls in higher education in 1947-48 and their number increased to 466202 in 2017-18 which yields an increase of more than 2129 times. It is obvious that increase in girls' enrolment over this period has been higher than that of boys because of low base.

The trend of enrolment in higher education in Odisha since 1980-81 up to 2017-18 is indicated in Table 5. It is evident from the table that during 1980-81 to 2017-18, the ACGR of enrolment in the state in higher education was 8.07%. The ACGR for boys, girls, Scheduled Castes and Scheduled Tribes during this period are 6.51%, 11.44%, 13.82% and 13.51% respectively. It may be noted that the rates are higher for girls, Scheduled Castes and Scheduled Tribes because of low level of enrolment in the initial years. Quite expectedly, growth rate of girls' enrolment was higher than that of boys between the above periods.

Table 5 also presents data on enrolment of both Scheduled Castes and Scheduled Tribes in the state. In Odisha 4081 ST students had enrolled in higher education in 1980-81 and the number increased to 124967 in 2017-18, at the annual compound growth rate of 13.51%. Over this period, number of SC students increased from 5891 to 153035, thus registering an annual compound growth rate of 12.82%.

Table 5. Enrolment higher education by caste and gender, 1980-81 to 2017-18

Year	Male	Female	Total	SC	ST
1980-81	100056	25046	125102	5891	4081
1985-86	133777	38393	172170	8137	5894
1990-91	212301	65566	277867	15084	9866
1995-96	337010	113447	450457	26107	16546
2004-05	293855	73332	367187	18497	10812
2009-10	397632	138742	536374	30661	28405
2017-18	549575	466202	1015777	153035	124967
Annual compound growth rates					
1980-81 to 1990-91	7.81	10.10	8.31	9.86	9.23
1990-91 to 2009-10	3.36	4.02	3.52	3.80	5.72
2009-10 to 2017-18	3.66	14.42	7.35	19.56	17.89
1980-81 to 2017-18	4.71	8.22	5.82	9.20	9.69

Source: AISHE, MHRD, GOI, 2017-18,
 Statistics for higher and technical education, MHRD, GOI, 2009-10
 Directorates of elementary education, Odisha, Bhubaneswar

Growth rate in the enrolment of ST students is higher than that of the SC students. This high growth rate is misleading. Higher rate of growth of ST enrolment was due to low absolute figure at the beginning of period i.e., 1980-81. Scheduled Castes students constitute 15.07% and Scheduled Tribes students 12.30% of the total enrolment in 2017-18. The corresponding figures for the year 1980-81 were 4.71% and 3.26% respectively.

Table 6. Level wise enrolment of students in higher education, 2000-01 to 2017-18

Year	Ph.D./M.Phil	PG	UG	Others	Total
2000-01	893	12740	289604	51264	341761
2004-05	400	13084	204814	148889	367187
2009-10	705	32395	382783	120491	536374
2017-18	4082	73233	793548	144914	1015777
Annual compound growth rates					
2000-01 to 2009-10	-2.59	10.93	3.15	9.96	5.14
2009-10 to 2017-18	21.55	9.49	8.44	2.07	7.35
2000-01 to 2017-18	8.81	10.20	5.76	5.94	6.24

Source: AISHE, MHRD, GOI, 2017-18,
 Statistics for higher and technical education, MHRD, GOI, 2009-10
 Directorates of elementary education, Odisha, Bhubaneswar

Looking at different levels of higher education enrolments separately, it may be observed from Table 6 that there were 289604 under-graduate in 2000-01 and 793548 in 2017-18. The compound growth rate of enrolment over the period was 5.76%. In the case of post-graduation, enrolment figures were 12740 in 1980-81 and 73233 in 2017-18, yielding an annual compound growth rate of 10.20%. It is also observed that the number of students enrolled in M.Phil/Ph.D. was 893 in 1980-81 and 4080 in 2017-18, yielding an annual compound growth rate of 8.81%. The growth rate of enrolment at post-graduation level was higher than other levels of education. It is to be noted that about 78.12 % of the students enrolled in under graduate level programme, 7.12% in post-graduation and only 0.04% in M.Phil/Ph.D. programme in 2017-18.

3.4. Growth of Enrolment in Technical/Professional Education

Table 7 gives a picture of enrolment in technical/professional education in the state since 1980-81. Looking at different type higher education, it is observed from the table that enrolment in technical/professional education increased from 25998 in 1980-81 to 366237 in 2017-18.

The corresponding figures for general education were 99104 and 616427 over this period. During this period the increase in enrolment is more than 15 times for technical education. The corresponding increase in enrolment of boys and girls were respectively about 10 times and 42 times.

Compared to ACGR of 5.21% in general education, the corresponding rate for technical education was 7.41%. The ACGR for boys and girls during the period 1980-81 to 2017-18 are 6.41% and 10.02%. It is evident that the ACGR for girls is higher than boys. From the growth, it is evident that the percentage of students enrolled in technical/professional education to total students was 20.78% in 1980-81 and declined to 13.32% in 1990-91 and increased to 36.05 % in 2017-18. In case of general education percentage of students enrolled to total students declined from 79.22% in 1980-81 to 63.95% in 2017-18. It is because of the fact that more number of students gradually inclined towards technical/professional education in the state. Over the years though enrolment in technical/professional education is increasing but the proportion is more in general education.

Table 7. Enrolment in technical/Professional and general education, 1980-81 to 2017-18

Year	Technical/Professional Education			General Education		
	Male	Female	Total	Male	Female	Total
1980-81	21596	4402	25998 (20.78)	78460	20644	99104 (79.22)
1990-91	29877	7123	37000 (13.32)	182424	58443	240867 (86.68)
2004-05	45894	9922	55816 (15.20)	247961	63410	311371 (84.80)
2009-10	136327	50642	186969 (34.86)	261305	88100	349405 (65.14)
2017-18	215433	150803	366237 (36.05)	334142	315399	649540 (63.95)
Annual compound growth rates						
1980-81 to 1990-91	3.30	4.93	3.59	8.80	10.97	9.29
1990-91 to 2009-10	8.32	10.88	8.90	1.91	2.18	1.98
2009-10 to 2017-18	5.22	13.98	10.29	2.77	10.63	7.21
1980-81 to 2017-18	6.41	10.02	7.41	3.99	7.65	5.21

Source: AISHE, MHRD, GOI, 2017-18,

Statistics for higher and technical education, MHRD, GOI, 2009-10

Directorates of elementary education, Odisha, Bhubaneswar

Note: The figures in parentheses are percentages to total enrolment

3.5. Pupil-Teacher ratio

One of the important factors that influence classroom transaction is the number of students per teacher. It is observed from Table 8 that in 1980-81, overall Pupil-Teacher Ratio (PTR) in higher education in Odisha was 19, which increased to 28 in the year 2017-18. The PTR in general colleges, technical /professional colleges and universities of the state were 23, 35 and 17 respectively in the year 1980-81. The corresponding figures of PTR in 2017-18 are 33, 35, and 17 respectively. It has been observed that, PTR in colleges is significantly high which indicates that the state is yet to comply the national norm of PTR of 30 for Colleges. However, the PTR in Universities is significantly lower than national norm of 20, which is a good indicator.

Table 8. PTR in higher education in Odisha, 1980-81 to 2017-18

Year	General Colleges	Technical/Professional	Universities	All
1980-81	23	12	14	19
1990-91	25	12	19	22
2000-01	32	18	16	29
2009-10	32	33	16	30
2017-18	33	35	17	28

Source: AISHE, MHRD, GOI, 2017-18,

Statistics for higher and technical education, MHRD, GOI, 2009-10

Directorates of elementary education, Odisha, Bhubaneswar

4. Inequality in higher education in Odisha

In this study an attempt has been made to estimate the disparities in higher education between gender and among social groups (SC, ST and General Castes). Here enrolment is taken as indicator of education.

4.1. Gross enrolment ratio

Gross Enrolment Ratio (GER) is a precise measure of the proportion college going population in higher education. GER is defined as the proportion of students enrolled in higher education to official college age population. Main limitation of GER is the possibility of over-estimation of enrolment. GER could exceed 100 as there may be both under-aged and over-aged students. GER in Higher education in India in 2017-18 is 25.8%, which is calculated for 18-23 years of age group. GER for male population is 26.3% and for females, it is 25.4%. GER for Scheduled Castes and Scheduled Tribes are 21.8% and 15.9% respectively (AISHE, 2017-18). As indicated in Table 9, GER in higher education in Odisha presents an increasing trend over the years. GER for Scheduled Tribes has been higher than that of Scheduled Castes during the two years considered. It is clearly shown that the situation in the state is far behind the national average. It is disturbing to note that more children stop going to higher education halfway in Odisha as well as in India.

Table 9. GER in higher education in Odisha, 2009-10 and 2017-18

Caste	2009-10			2017-18		
	Male	Female	Total	Male	Female	Total
All	16.5	5.9	11.3	23.8	20.1	22.0
SC	5.8	2.3	4.1	21.8	15.8	18.8
ST	5.1	1.2	3.1	14.3	10.8	12.5

Source: AISHE, MHRD, GOI, 2017-18,
Statistics for higher and technical education, MHRD, GOI, 2009-10

4.2. Gender parity index

Progress in female education can be gauged from Gender Parity Index (GPI). As shown in Table 10, Gender Parity Index in Higher education of Odisha is 0.85 in 2017-18, which implies that girls' enrolment is less than that of boys. The figures for Scheduled Castes, Scheduled Tribes and Other Backward Castes (OBCs) are 0.73, 0.75 and 0.88 respectively.

Table10. GPI by caste, level and type of higher education, 2017-18

Social Categories	GPI	Type/Mode of Education	GPI	Level of Education	GPI
All	0.85	Technical/Professional	0.70	Ph.D	0.78
SC	0.73	General	0.94	M.Phil	1.67
ST	0.75	Regular mode	0.86	PG	0.97
OBC	0.88	Distance mode	0.67	UG	0.94

Source: AISHE, 2017-18

The GPI by level of higher education such as UG, PG, M.Phil. and Ph.D. are 0.94, 0.97, 1.67 and 0.78 respectively. It is interesting to note that girls' enrolment is higher than boys at M.Phil. level in Odisha. It is also observed that GPI for general education, professional education, regular and distance mode respectively are 0.94, 0.70, 0.86 and 0.67. The GPI in technical education is lower than general education. Table 11 shows the trend in GPI in higher education in Odisha since 1980-81. GPI is gradually increasing in higher as well as professional education in Odisha. It is observed that GPI is lower for higher technical/professional education than general education.

Table 11. GPI in enrolment in Odisha, 1980-81 to 2017-18

Year	Higher All	Technical/ Professional	General Education
1980-81	0.25	0.20	0.26
1990-91	0.31	0.24	0.32
2004-05	0.25	0.22	0.26
2009-10	0.35	0.37	0.34
2017-18	0.85	0.70	0.94

Source: AISHE, MHRD, GOI, 2017-18,
Statistics for higher and technical education, MHRD, GOI, 2009-10
Directorates of elementary education, Odisha, Bhubaneswar

4.3. Index of gender equity

Index of Gender Equity (IGE) is calculated as share of girls' enrolment in relation to share of girls in total population. The overall IGE in higher education in Odisha was 52.44 in 2009-10 and increased to 91.69 in 2017-18. The indices for Scheduled Castes and Scheduled Tribes also increased over this period. But the indices are less than 100 for all categories of students which indicate that gender inequalities exist in higher education in Odisha (Table 12).

Table 12. IGE, ISE and CE in higher education in Odisha, 2009-10 to 2017-18

Year	Index of Gender Equity			Index of Social Equity		Coefficient of Equality	
	All	SC	ST	SC	ST	SC	ST
2017-18	91.69	84.18	86.43	85.53	56.69	71.5	47.4
2009-10	52.44	57.09	39.24	36.11	27.25	26.3	19.8

Source: AISHE, MHRD, GOI, 2017-18,
Statistics for higher and technical education, MHRD, GOI, 2009-10

4.4. Index of social equity

The share of SC and ST students to total enrolment in a region does not convey much except when it is compared with their corresponding share in the population. Similarly, the GER, which is often used as a measure of access and participation, does not reflect on the inequities between SC and other groups of population. Therefore, in order to overcome these problems, an Index of Social Equity (ISE) is calculated. It is observed from the Table 12 that the ISE for Scheduled Castes and Scheduled Tribes in the year 2009-10 were 36.11 and 27.25 respectively. The corresponding figures in the year 2017-18 are 85.53 and 56.69 respectively. Though there is an improvement in the index of social equity it is less than 100 which indicates that social inequality exists in higher education in Odisha.

4.5. Co-efficient of equality in enrolment

The relative gains of students of a community cannot be assessed from growth rate estimates. The base figures play a significant role in determining growth rate. For a precise measure of relative gains of students of a community, Coefficient of Equality in Enrolment is made use of. This measure shows the relative gains of SC/ST student population compared to their general caste counterparts.

If the value of co-efficient of equality is 100, it indicates that Scheduled Tribes/Scheduled Castes are at par with general castes in availing educational facilities. A co-efficient value less than 100 indicates that SC/ST students are lagging behind the general caste in getting the benefits. Table 12 shows that coefficient of equality of Scheduled Castes and Scheduled Tribes in higher education in Odisha. Coefficients of equality for Scheduled Tribes and Scheduled Castes in 2009-10 were 19.8 and 26.3 respectively. The corresponding figures in the year 2017-18 are 47.4 and 71.5 respectively. The co-efficient for Scheduled Tribes is less than Scheduled Castes in both the years of reference. Though the coefficient is increasing from 2009-10 to 2017-18, it is less than 100. It indicates that Scheduled Tribes and Scheduled Castes are not at par with general castes.

5. Concluding observations and Suggestions

From the above discussion, it is observed that during the post reform period there is rapid expansion of universities and technical/professional institutes in the state. As far as growth of teachers is concerned the ACGR of teachers is highest in universities followed by technical /professional institutes and general colleges. But the overall ACGR of teachers in higher education in Odisha is about 4% during the period 1980-81 to 2017-18. The growth rate of girls' enrolment was higher than that of boys in both general and technical/professional education. ACGR of enrolment in technical education was higher than that of general education. Over the years though enrolment in technical/professional education is increasing but the proportion is more in general education. PTR in universities is lower than national norm but it is higher for the colleges. About 78.12% of the students are enrolled in undergraduate level programme, whereas only 0.04% students are enrolled in Ph.D./M.Phil. Programme scheduled castes and scheduled tribes constitute 15.07% and 12.30% of the total enrolment in 2017-18. Distance enrolment constitutes about 5.5% of the total enrolment in higher education. GER in higher education by gender and caste in the state is less than the national average. It is also observed that GPI for general education, technical/professional education, regular and distance mode are less than 1. The GPI in technical education is lower than general education. The index of gender equity, index of social equity and coefficient of equality in enrolment are less than 100. So, there exist inequalities by gender and caste in higher education in Odisha.

Therefore, it is suggested that the government has to take special measures like provision of special incentive schemes for girls, Scheduled Castes and Scheduled Tribes in order to increase their participation in higher education in general and technical/professional education in particular.

6. References

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