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TRENDS AND PATTERNS IN GENERAL EDUCATIONAL DEVELOPMENT IN INDIAN STATES WITH SPECIAL REFERENCE TO KARNATAKA

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----------1. ABSTRACT----------
The present study provides a rigorous longitudinal investigation into the trends and patterns of general educational development across major Indian states, with a major focus on Karnataka from 2000 to 2023. By blending qualitative learning outcomes from ASER datasets with quantitative attainment metrics from the National Family Health Survey (NFHS), the analysis evaluates the effectiveness of state-led educational interventions across three distinct macroeconomic phases: the fiscal consolidation of the FRBM Act Era (Phase I), the rights-based expansionary period of the RTE Act (Phase II), and the post-2015 era of structural devolution and pandemic-induced disruptions (Phase III). The findings reveal a significant "quantity-quality paradox" in Karnataka's developmental backdrop; while the state has successfully achieved a top-five national ranking in quantitative metrics – such as the percentage of women and men with ten or more years of schooling – it has simultaneously dealt with chronic stagnation in foundational learning competencies. Despite experiencing a healthy corrected per capita economic growth of 9.89% during Phase II, Karnataka's relative ranking in foundational literacy and numeracy has remained entrenched in the bottom tier of the national hierarchy. The study concludes that the state's educational framework is highly efficient in maintaining enrollment and ensuring quantitative completion but remains pedagogically fragile, necessitating a radical shift from input-centric policies to quality-driven pedagogical reforms to safeguard human capital in the post-pandemic era.----------

2. INTRODUCTION

General education serves as the foundational pillar of socio-economic development, functioning as the primary factor for human capital formation, intergenerational mobility, and regional economic convergence. Within contemporary macroeconomic discourse, the transition from mere human resource development to robust human capital accumulation is universally recognized as the critical determinant of long-term endogenous growth. For emerging economies, the effectiveness of the public education system is not merely a metric of social welfare, but the central mechanism through which demographic dividends are realized and sustained economic competitiveness is secured. In the context of India, while the overarching mandates for educational delivery are established centrally, the empirical reality of pedagogical outcomes is overwhelmingly determined by state-level fiscal capacities, administrative strategies, and regional developmental priorities. This decentralized architecture has birthed a highly heterogeneous national landscape, where the structural resilience of educational frameworks varies drastically across state borders, resulting in profound disparities in both quantitative attainment and qualitative learning outcomes.

Historically, states have measured educational success through input-centric and enrollment-driven metrics, such as Gross Enrollment Ratios (GER) or the sheer accumulation of schooling years. While these metrics effectively capture the administrative efficiency of retaining students within the formal system, they frequently mask severe deficiencies in actual instructional delivery. By synthesizing qualitative learning outcomes derived from the Annual Status of Education Report (ASER) datasets with quantitative demographic attainment metrics from the National Family Health Survey (NFHS), this discussion aims to bridge the analytical gap between physical attendance and cognitive reality.

Consequently, this discussion aims to critically interrogate these trends and patterns to understand why prolonged years of schooling have systematically failed to translate into competitive classroom competencies in Karnataka. By mapping the state's path against both historically disadvantaged agrarian states—which have paradoxically demonstrated superior pedagogical resilience—and its industrialized regional peers, the analysis will expose the limitations of an input-heavy educational strategy. Ultimately, this introduction sets the stage for a comprehensive data-driven evaluation, positing that ensuring the long-term sustainability of Karnataka's human capital will require a radical departure from volume-based schooling metrics toward an uncompromising focus on outcome-based, qualitative pedagogical reform in the post-pandemic era.

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3. LITERATURE REVIEW

Ramachandran (2016) highlights a deeply heterogeneous landscape characterized by pervasive structural inequalities and the uneven implementation of the Right to Education (RTE) Act of 2009. The paper contends that the quasi-federal distribution of legislative powers, coupled with acute disparities in fiscal and human resources, has resulted in significant regional variations in dropout rates, teacher deployment, and social inclusion across different castes and religions. A critical structural bottleneck is identified in the sharp, pyramidal decline in school availability from the primary level to the higher secondary level—most notably in rural and remote regions—which effectively restricts upward mobility beyond the elementary stage. Furthermore, qualitative research underscores a "cumulative burden of poor learning," suggesting that foundational pedagogical deficits in early grades act as a primary catalyst for student attrition and the inability to cope with secondary curricula. While systemic interventions have successfully facilitated a steady rise in net attendance rates and a narrowing of the gender gap since the 1990s, the paper remains critical of persistent supply-side constraints, including teacher absenteeism and inadequate professional certification, which continue to undermine the qualitative integrity of the human capital pipeline.

Sridevi & Nagpal (2019) aims mainly to explain the trend of dropouts, understand the reason for dropouts and offer some recommendations to reduce the dropouts at secondary level in India. The results of this study are based on the in-depth study of literature of students drop-out from various states of India where child marriage, lack of transportation, separate toilet, safety and security en route to the school, educational profile of parents, lack of recreation, absence of teachers, lack of guidance and counselling, partiality, prejudices, affordability and lack of interest in school are identified as major factors for student drop-out in India. This study also suggests some policy implications including improvement of school climate, provision of elementary facilities in schools, organisation of inservice teacher training programmes for teachers to identify and deal with at risk students and organise remedial teaching programmes for needy students in schools to help the policy makers in combating this problem.

Mukherjee (2006) reveals that India's elementary education system has very low enrolment retention rates though there has been some improvement in recent years, a very small proportion of children reach primary, middle and secondary levels. Full literacy has not been achieved and there is significant gender disparity in terms of access and completion of education. Additionally, there are significant interstate performance gaps in the system. The qualitative and quantitative deficiencies are largely due to the systemic factors such as prevalent poverty, functioning child labour market, non-assured employment after school and acute infrastructural inadequacies.
Singh & Aneja (2017) evaluates educational expenditure and infrastructural progress in Odisha from 2002 to 2016, research reveals a concerning structural misalignment in the state's fiscal priorities. The study highlights that Odisha systematically under-invests in elementary education relative to secondary and higher education, thereby undermining the foundational base required for long-term human capital formation. Furthermore, the district-level analysis exposes acute intra-state spatial inequalities; increased aggregate spending has yielded insignificant infrastructural or literacy improvements in the historically marginalized southern divisions when compared to the northern and central districts. Compounding these internal disparities, Odisha's comparative national standing across most educational infrastructure parameters—excluding the mere numerical expansion of schools and basic drinking water provision—has experienced a steady decline over the study period. This evidence reinforces the premise that aggregate increases in education budgets do not automatically translate into equitable developmental outcomes or competitive infrastructural quality, particularly when funds are disproportionately allocated away from the elementary level and marginalized regions.

4. RESEARCH METHODOLOGY

The study is based on secondary sources of data which are collected from Annual Status of Education Reports (ASER) and National Family Health Survey – 4 & 5 (NFHS – 4 & 5). The study spans from 2000-01 to 2023-24 to demonstrate the analysis of the educational attainment indicators. The Paper uses statistical tools such as Percentages and Rankings to analyze the educational attainment datasets.

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5. DATA ANALYSIS AND INTERPRETATION

Table 5.1. State Wise Learning level of Std VIII (2005)

State	% Children who can read Std II level text	% Children who can do division
Andhra Pradesh	83.8	65.0
Assam	92.2	78.8
Bihar	92.3	89.5
Gujarat	82.4	68.2
Haryana	92.0	88.0
Karnataka	79.7	52.8
Kerala	91.7	79.2
Madhya Pradesh	88.2	74.3
Maharashtra	84.8	54.1
Odisha	88.4	65.1
Punjab	86.0	74.3
Rajasthan	90.5	80.6
Tamil Nadu	78.4	57.1
Uttar Pradesh	83.7	60.9
West Bengal	91.0	90.1
ALL INDIA	**86.4**	**69.8**

Source: Annual Status of Education Report (ASER) 2005

The percentage of Standard VIII students who could read Standard II level text and carry out basic division in Table 5.1 shows a very serious "learning crisis" which occurred despite the fiscal rationalization of the period at the level of the state. At the national level, the literacy indicator (reading) achieved an All India mean of 86.4% while the numeracy indicator (division) was much lower with a mean of only 69.8%, highlighting a systemic gap between the basic literacy (decoding) and numeracy (functional math) skills. Interestingly, states with greater socio-economic barriers in this phase showed better learning outcomes in this cohort, with Bihar showing 89.5% in division and 92.3% in reading and West Bengal at the forefront in the numeracy metric with 90.1%. According to this data, in Phase I some economically disadvantaged States were exceedingly successful at ensuring that what was resourced in the classroom translated into foundational competencies for the lion's share of their students.

The data for Karnataka for this period gives a worrying picture with the state's performance being well below the national as well as several peer states. Karnataka fared worse with a reading proficiency rate of 79.7 per cent and division proficiency of just 52.8 per cent among the major states in India in these measures. Karnataka had the lowest score on numeracy (54.1%) in the midst of all the listed states followed by Maharashtra (54.1%) and Tamil Nadu (57.1%). This is more significant especially with reference to the equal of the state vis-à-vis the finance and revenue position in the state during the same period which was treated under the FRBM Act. The wide gap of 26.9 percentage between reading and division skills in Karnataka also indicates a particular structural deficit in its pedagogy used in mathematics.

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Table 5.2. State Wise Ranking of Learning level of Std VIII (2005)		
State	**% Children who can read Std II level text**	**% Children who can do division**
Andhra Pradesh	11	11
Assam	2	6
Bihar	1	2
Gujarat	13	9
Haryana	3	3
Karnataka	14	15
Kerala	4	5
Madhya Pradesh	8	7
Maharashtra	10	14
Odisha	7	10
Punjab	9	7
Rajasthan	6	4
Tamil Nadu	15	13
Uttar Pradesh	12	12
West Bengal	5	1

Source: Author's Calculation

Table 5.2 offers a quantitative comparison which highlights the qualitative differences noted in the previous section, and compares the competitiveness of Karnataka concerning major states of India during the mid-Phase I (FRBM Act Era). The ranking information shows a fascinating opposing correlation between the traditional aspects of economic development and foundational learning outcomes. The more industrialized states of the South and the West showed a sharp relative decline in various activities while the states having serious problems in finance and social development like Bihar (Rank 1 reading) and West Bengal (Rank 1 division) showed a better relative performance. The present paradox may indicate how the efficiency of pedagogical delivery in some of the laggard States in the early 2000s was better than the well-developed education systems of other more developed States.

The relative position of Karnataka in this comparative assessment is particularly alarming as the state got the last position in National Leaderboard. In reading, Karnataka ranked 14th and in division, 15th out of the 15 states analyzed, meaning that it had the lowest foundational numeracy among the Standard VIII students in this study. This near-bottom score location, found in states such as children with Tamil as their language of instruction (Rank 15 in reading) and children in divisions of Maharashtra (Rank 14 in division), points to the similar regional problem with the quality educational outcomes in Phase I. The last place ranking on the numeracy indicator for Karnataka is a confirmation that educational infrastructure was not functioning at the basic level despite the fact it grew in terms of figures. It was a precarious starting point that gave the motivation for the more aggressive, rights-based entitlements and more targeted qualitative efforts, experiments that would define Phase II — the views of the Right to Education Act.

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Table 5.3. State Wise Learning level of Std VIII (2010)		
State	**% Children who can read Std II level text**	**% Children who can do division**
Andhra Pradesh	86.3	69.2
Assam	76.1	53.3
Bihar	87.1	85.7
Gujarat	78.9	54.3
Haryana	87.8	83.1
Karnataka	72.9	45.6
Kerala	89.4	80.0
Madhya Pradesh	-	-
Maharashtra	91.8	73.8
Odisha	77.8	64.4
Punjab	88.2	82.1
Rajasthan	87.6	73.1
Tamil Nadu	69.5	48.2
Uttar Pradesh	77.6	56.2
West Bengal	83.0	67.7
ALL INDIA	**82.9**	**67.4**

Source: Annual Status of Education Report (ASER) 2010

Table 5.3 evaluates the qualitative state of education in 2010 which has been a milestone of the early years of Phase II (2008-2014) and the first year of the introduced RTE Act, 2009. On the national level, concerning level of stagnation or decline in foundational competencies were observed as compared to 2005 benchmarks in Reading (All India Average 82.9%) and Numeracy (All India Average 67.4%). Bihar (87.1% reading and 85.7% division) and Haryana (87.8% reading and 83.1% division) persisted with high levels of foundational skills, but a wider national picture emerged, one in which investment in physical schools and inclusion were not always matched by proportional gains in quality. This period, coinciding with the Global Financial Crisis and the initiation of large-scale rights-based entitlements, demonstrates an institutional problem – how to reconcile the need for universal access and hold standards of quality for instructions.

The deterioration in learning achievement in Karnataka during this period shows a strange and prominent paradox as it occurs in the midst of its economic and fiscal growth. However, despite a consistent fiscal increase in economic spending (Total public expenditure 7.80% CAGR), and their relatively high corrected per capita economic growth of 9.89% for this particular period, the basic skill sets of Standard VIII students in the state of Karnataka declined substantially. In Reading, the level of attainment between 2005 and 2010 dropped from 79.7% to 72.9% and in Numeracy, which was already low at 52.8%, has dropped to a worrying level of 45.6%. This makes Karnataka one of the least successful states of the Indian Union behind even the national average of 89.1% reading and peer states such as Maharashtra (91.8%). That a staggering almost 55% of Class 8 students in Karnataka were not even able to do simple division in 2010 indicate a significant learning poverty even as the state increased its financial engagement. Such a gap between macro-level growth and this kind of educational outcomes highlights a key shortfall in the pedagogical implementation mechanism, one that may have been too preoccupied with enrolment and input indicators in the initial years of the rights-based era with achieving better learning outcomes.

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Table 5.4. State Wise Ranking of Learning level of Std VIII (2010)		
State	**% Children who can read Std II level text**	**% Children who can do division**
Andhra Pradesh	7	7
Assam	12	12
Bihar	6	1
Gujarat	9	11
Haryana	4	2
Karnataka	13	14
Kerala	2	4
Madhya Pradesh	-	-
Maharashtra	1	5
Odisha	10	9
Punjab	3	3
Rajasthan	5	6
Tamil Nadu	14	13
Uttar Pradesh	11	10
West Bengal	8	8

Source: Author's Calculation

Table 5.4 provides a comparative ordinal assessment by detailing the state-wise rankings of foundational learning levels for Standard VIII students in 2010, thereby formalizing the relative qualitative standing of major Indian states during the nascent implementation phase of the Right to Education (RTE) Act. The ranking matrix exposes a persistent and structural "learning divide" that fundamentally challenges traditional assumptions linking aggregate economic wealth to educational quality. Notably, states confronting significant socio-economic hurdles, such as Bihar, secured the premier national position (Rank 1) in numeracy, while agrarian economies like Haryana and Punjab dominated the upper strata across both reading and division metrics. Contrarywise, Karnataka's performance within this comparative framework remained precariously weak, anchoring the bottom tier of the national spectrum. Occupying the 13th rank in reading proficiency and the 14th rank in basic division out of the fourteen evaluated states, Karnataka's standing highlights a profound disconnect between fiscal inputs and pedagogical outcomes. This dismal relative positioning is particularly glaring given that Phase II (2008–2014) was characterized by aggressive budgetary expansions for rights-based entitlements and a robust corrected per capita economic growth of 9.89% for the state. Furthermore, the parallel underperformance of regional peers, such as Tamil Nadu (Rank 14 in reading and Rank 13 in division), suggests a broader systemic failure within the industrialized southern states to balance the massive infrastructural and enrollment mandates of the RTE Act with the preservation of foundational classroom competencies. For Karnataka, this comparative stagnation empirically underscores that the state's expanding macroeconomic dividends and heightened public education expenditure were systematically failing to translate into competitive human capital formation, necessitating a critical reevaluation of input-heavy educational policies in favor of outcome-driven pedagogical reforms.

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Table 5.5. State Wise Learning level of Std VIII (2016)		
State	**% Children who can read Std II level text**	**% Children who can do division**
Andhra Pradesh	77.8	50.4
Assam	63.6	28.6
Bihar	75.1	62.3
Gujarat	76.6	34.8
Haryana	83.7	65.4
Karnataka	70.1	42.1
Kerala	85.3	53.0
Madhya Pradesh	64.3	33.4
Maharashtra	75.8	31.5
Odisha	72.6	39.6
Punjab	86.3	58.0
Rajasthan	80.9	46.7
Tamil Nadu	71.0	44.8
Uttar Pradesh	67.9	37.4
West Bengal	72.1	31.7
ALL INDIA	**73.0**	**43.2**

Source: Annual Status of Education Report (ASER) 2016

Table 5.5 evaluates the qualitative educational outcomes for Standard VIII students in 2016, providing a critical empirical snapshot during the early stages of Phase III (2015–2023), a period shaped by the altered fiscal devolution dynamics of the 14th Finance Commission. The dataset reveals a severe and systemic national regression in foundational competencies, marking a profound deepening of the "learning crisis" identified in earlier phases. At the All-India level, reading proficiency plummeted to 73.0% (down from 82.9% in 2010), while the ability to perform basic division collapsed to a staggering 43.2% (down from 67.4%). This widespread deterioration strongly implies that the input-heavy mandates of the Right to Education (RTE) Act—particularly the "No Detention Policy," which mandated automatic promotion up to Standard VIII—effectively masked pedagogical deficits, allowing students to progress through the system without acquiring essential cognitive skills. Even historically resilient states experienced dramatic declines, as evidenced by West Bengal's numeracy rate crashing to 31.7% and Maharashtra's falling to 31.5%, indicating a nationwide structural failure in translating universal enrollment into meaningful human capital formation.

Within this deteriorating national landscape, Karnataka’s performance remained deeply concerning, entrenching its status as a qualitative laggard. The state recorded a reading proficiency of 70.1% and a numeracy rate of 42.1%, both of which languished below the already depressed national averages. This continued downward trend falling from its 2010 benchmarks of 72.9% and 45.6%, respectively demonstrates an alarming disconnect between the state's macroeconomic capacity and its pedagogical efficacy. Despite Karnataka's historical commitment to expanding its total public expenditure, the fiscal resources channelled into the educational sector during the preceding decade entirely failed to arrest the slide in classroom learning standards. The 2016 data acts as a stark empirical indictment of the state's prevailing educational framework, highlighting a deeply entrenched structural vulnerability. By entering the latter half of the decade with such a profoundly weakened human capital baseline, Karnataka's educational system was left critically exposed and highly susceptible to the catastrophic disruptions that would subsequently arrive with the COVID-19 pandemic.

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Table 5.6. State Wise Ranking of Learning level of Std VIII (2016)		
State	**% Children who can read Std II level text**	**% Children who can do division**
Andhra Pradesh	5	5
Assam	15	15
Bihar	8	2
Gujarat	6	11
Haryana	3	1
Karnataka	12	8
Kerala	2	4
Madhya Pradesh	14	12
Maharashtra	7	14
Odisha	9	9
Punjab	1	3
Rajasthan	4	6
Tamil Nadu	11	7
Uttar Pradesh	13	10
West Bengal	10	13

Source: Author's Calculation

Table 5.6 provides an assessment of foundational learning levels for Standard VIII students in 2016, formalizing the relative qualitative standing of major Indian states during the early years of Phase III (2015–2023). This period, shaped by the structural fiscal shifts of the 14th Finance Commission, highlights a national landscape defined by a profound "learning deterioration" rather than progression. The ranking matrix reveals that agrarian and historically underperforming states continued to lead in qualitative outcomes; Punjab secured the premier position in reading (Rank 1), while Haryana and Bihar dominated the numeracy rankings (Rank 1 and Rank 2 in division, respectively). On the other hand, the industrialized southern and western states continued to exhibit significant qualitative volatility. Maharashtra, which ranked 1st in reading in 2010, fell to 7th by 2016, and West Bengal experienced a catastrophic decline in numeracy, falling to 13th place. This widespread instability in rankings suggests that the "No Detention Policy" and other input-focused directives of the preceding Rights-Based era had created a systemic fragility in human capital formation across the country.

The relative positioning of Karnataka in 2016 presents a complex and somewhat paradoxical narrative. While the state saw an apparent improvement in its numeracy ranking—rising to 8th in division compared to its 14th-place standing in 2010, this relative rise was not driven by internal qualitative gains. As evidenced by the absolute data in the preceding analysis, Karnataka's numeracy proficiency actually declined from 45.6% to 42.1%; its higher rank is merely a reflection of the even more severe collapse in performance among peer states like West Bengal, Maharashtra, and Gujarat. In reading proficiency, Karnataka remained firmly entrenched in the bottom tier, ranking 12th out of 15 states. This persistent low ranking in literacy, coupled with a statistical improvement in numeracy rank despite falling absolute scores, underscores a state of qualitative stagnation. Despite the high public expenditure in the preceding years, Karnataka entered the latter half of the decade with a profoundly weak foundational learning baseline. This left the state's educational system structurally ill-equipped to withstand the catastrophic pedagogical disruptions that would soon emerge with the onset of the COVID-19 pandemic.

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Table 5.7. State Wise Learning level of Std VIII (2022)		
State	**% Children who can read Std II level text**	**% Children who can do division**
Andhra Pradesh	66.4	51.7
Assam	68.8	27.8
Bihar	71.2	59.4
Gujarat	52.4	31.8
Haryana	80.3	62.6
Karnataka	59.9	36.0
Kerala	83.7	44.3
Madhya Pradesh	64.4	41.9
Maharashtra	76.2	34.6
Odisha	73.4	43.0
Punjab	85.4	53.7
Rajasthan	71.6	35.6
Tamil Nadu	63.0	44.4
Uttar Pradesh	70.6	49.4
West Bengal	69.2	31.8
ALL INDIA	69.5	44.6

Source: Annual Status of Education Report (ASER) 2022

Table 5.7 provides data on foundational learning competencies for Standard VIII students in 2022, capturing the pedagogical landscape at the conclusion of Phase III (2015–2023). This period, which began with the structural fiscal shifts of the 14th Finance Commission, was ultimately defined by the catastrophic disruptions of the COVID-19 pandemic, leading to prolonged school closures and a fractured instructional environment. The data reveals a staggering further loss of human capital at the national level, with the All India reading proficiency falling to 69.5% from its 2016 level of 73.0%. While basic numeracy (division) showed a marginal statistical recovery to 44.6%, the overall figures confirm that nearly one-third of students completing their elementary education could not read a simple Standard II text, and over half lacked basic functional numeracy. This pandemic-induced learning loss effectively erased more than a decade of incremental progress, exposing the extreme vulnerability of the public education system to exogenous shocks and the inadequacy of the digital alternatives that were deployed during the crisis.

The outcomes for Karnataka in 2022 are particularly alarming, representing a state-level educational crisis of historic proportions. Karnataka's reading proficiency dropped to 59.9%, a drastic contraction from 70.1% in 2016, placing the state nearly 10 percentage points below the national average. Similarly, foundational numeracy fell to 36.0%, continuing its decline from 45.6% in 2010 and 42.1% in 2016. The data suggests that the "digital divide" during the pandemic may have been particularly acute in Karnataka, or that the state's pedagogical recovery strategies were insufficient to arrest the slide in learning standards. By 2022, the disconnect between Karnataka's macroeconomic status and its human capital outcomes had reached a critical threshold, with the state producing a group of Standard VIII graduates whose foundational skills were significantly inferior to those of their peers in historically disadvantaged states like Bihar (71.2% reading) and Uttar Pradesh (70.6% reading).

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Table 5.8. State Wise Ranking of Learning level of Std VIII (2022)		
State	**% Children who can read Std II level text**	**% Children who can do division**
Andhra Pradesh	11	4
Assam	10	15
Bihar	7	2
Gujarat	15	13
Haryana	3	1
Karnataka	14	10
Kerala	2	7
Madhya Pradesh	12	9
Maharashtra	4	12
Odisha	5	8
Punjab	1	3
Rajasthan	6	11
Tamil Nadu	13	6
Uttar Pradesh	8	5
West Bengal	9	13

Source: Author's Calculation

Table 5.8 provides the comparative rankings for 2022, which formalize Karnataka's qualitative deterioration within the national hierarchy. While agrarian states like Punjab and Haryana continued to occupy the top echelons (Rank 1 and Rank 2 in reading, respectively), Karnataka's relative standing remained miserable. The state ranked 14th out of 15 major states in reading proficiency, indicating that it possessed one of the weakest literacy baselines in the country for this group. Its ranking in numeracy (8th in division) remained unchanged from 2016, but as noted in the absolute analysis, this relative stability was an artifact of a universal collapse in standards across the country rather than a sign of internal resilience. The persistent bottom-tier ranking in reading, coupled with the sharp absolute decline in both metrics, highlights that Karnataka's educational system failed to protect foundational learning during the most significant macroeconomic shock of the 21st century. This evidence highlights a profound structural failure in the state's ability to translate fiscal inputs into resilient social sector development indicators, necessitating an urgent, shift toward remedial education and evidence-based pedagogical reform.

Table 5.9. State wise Ranking of % Children who can read Std II level text				
State	**2005**	**2010**	**2016**	**2022**
Andhra Pradesh	11	7	5	11
Assam	2	12	15	10
Bihar	1	6	8	7
Gujarat	13	9	6	15
Haryana	3	4	3	3
Karnataka	14	13	12	14
Kerala	4	2	2	2
Madhya Pradesh	8	NA	14	12
Maharashtra	10	1	7	4
Odisha	7	10	9	5
Punjab	9	3	1	1
Rajasthan	6	5	4	6
Tamil Nadu	15	14	11	13
Uttar Pradesh	12	11	13	8
West Bengal	5	8	10	9

Source: Author's Calculation

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Table 5.9 provides a consolidated, longitudinal perspective on the relative qualitative standing of major Indian states by tracking their rankings in basic reading proficiency—specifically, the percentage of Standard VIII students capable of reading a Standard II level text—across four pivotal observation points: 2005, 2010, 2016, and 2022. This temporal matrix serves as a critical macro-indicator, allowing for the empirical differentiation between states that have cultivated resilient pedagogical structures and those characterized by systemic volatility or chronic educational underperformance. At the national level, the data delineates starkly divergent developmental trajectories. A distinct group of states, notably Kerala, Haryana, and subsequently Punjab, demonstrates profound structural resilience, consistently securing positions within the upper tiers of the national hierarchy regardless of shifting macroeconomic paradigms or the severe exogenous shock of the COVID-19 pandemic. On the other hand, states such as Assam and Bihar, which paradoxically occupied the top two positions during the 2005 baseline assessment under the FRBM Era, experienced precipitous rank worsening in subsequent phases. This volatility underscores the inherent fragility of their initial educational frameworks when subjected to the expansive enrollment mandates of the Right to Education (RTE) Act and successive systemic disruptions.

Within this comparative temporal continuum, Karnataka's developmental path is explicitly defined by chronic and deeply entrenched stagnation at the lowest tier of the national distribution. Over the seventeen-year span captured by the data, the state's relative ranking oscillated only marginally within the bottommost quartile, moving from 14th in 2005 to 13th in 2010, briefly shifting to 12th in 2016, before definitively regressing back to 14th in 2022. This persistent inability to escape the bottom of the literacy rankings constitutes a profound macro-developmental paradox. Despite traversing multiple phases of robust economic expansion and maintaining substantial aggregate public expenditure commitments over the two decades, Karnataka has comprehensively failed to alter its relative pedagogical standing. Alongside its regional peer Tamil Nadu, which exhibits a near-identical pattern of chronic low ranking, Karnataka exemplifies a persistent structural failure within the industrialized southern states to translate high fiscal capacity into foundational human capital outcomes. Ultimately, Table 4.9 confirms that the state's overarching educational strategy over the past two decades has been fundamentally inadequate in addressing core qualitative deficits, leaving its student population at a perpetual, structural disadvantage in basic literacy compared to the vast majority of their national counterparts.

Table 5.10. State wise Ranking of % Children who can do division

State	2005	2010	2016	2022
Andhra Pradesh	11	7	5	4
Assam	6	12	15	15
Bihar	2	1	2	2
Gujarat	9	11	11	13
Haryana	3	2	1	1
Karnataka	15	14	8	10
Kerala	5	4	4	7
Madhya Pradesh	7	NA	12	9
Maharashtra	14	5	14	12
Odisha	10	9	9	8
Punjab	7	3	3	3
Rajasthan	4	6	6	11
Tamil Nadu	13	13	7	6
Uttar Pradesh	12	10	10	5
West Bengal	1	8	13	13

Source: Author's Calculation

Table 5.10 offers a longitudinal ordinal assessment of foundational numeracy—specifically the ability of Standard VIII students to perform basic division—across fifteen major Indian states from 2005 to 2022. This comparative matrix delineates the relative efficacy of state-level pedagogical interventions across the three previously defined macroeconomic phases, revealing a national landscape characterized by high volatility and a persistent "numeracy divide." The data highlights the exceptional structural resilience of Haryana and Bihar; Haryana ascended from 3rd in 2005 to consistently secure the 1st rank in the latter two observation points, while Bihar, despite its fiscal and socio-economic vulnerabilities, never fell below the 2nd rank in the country. Conversely, West Bengal exemplifies a catastrophic qualitative collapse, plummeting from the premier position in 2005 to the 13th rank by 2022, signalling a profound failure in maintaining instructional standards amidst expanding enrolment mandates.

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The longitudinal path of Karnataka in foundational numeracy presents a complex narrative of early marginalization followed by a volatile relative recovery. During the baseline assessment of 2005 (Phase I), Karnataka occupied the absolute nadir of the national hierarchy, ranking 15th out of 15 states. This starting point indicates that during the era of fiscal rationalization under the FRBM Act, the state's educational framework was the least effective in the country at imparting basic functional arithmetic. As the state transitioned into Phase II (2008–2014), characterized by the rollout of the RTE Act and a robust 9.89% corrected per capita economic growth, Karnataka's relative standing remained largely stagnant at the 14th rank in 2010. This confirms that the initial dividends of high macroeconomic growth and increased social sector spending were not immediately translated into competitive improvements in classroom-level numeracy outcomes.

A significant shift occurred in 2016, where Karnataka ascended to the 8th rank nationally. However, as established in the absolute data analysis, this improvement in ordinal rank was largely a "statistical" artifact driven by the even more severe collapse of numeracy standards in peer states like West Bengal and Maharashtra, rather than a sign of robust internal progression. In the terminal observation point of 2022, following the profound disruptions of the COVID-19 pandemic, Karnataka's ranking regressed to 10th. Ultimately, while Karnataka managed to move away from the absolute bottom of the numeracy rankings over the seventeen-year period, it finished the study significantly behind national leaders and even historically disadvantaged states like Uttar Pradesh (Rank 5). The data underscores a persistent structural inability to translate the state's substantial fiscal capacity and economic momentum into a top-tier human capital baseline, leaving a significant portion of its Standard VIII cohort lacking the foundational mathematical competencies required for higher education and vocational success.

Table 5.11. Women with 10 or more years of schooling (%)

State	NFHS – 4	Rank	NFHS - 5	Rank	% Change	Change in Rank
Andhra Pradesh	34.3%	7	39.6%	7	15.5%	0
Assam	26.2%	12	29.6%	13	13.0%	-1
Bihar	22.8%	15	28.8%	15	26.3%	0
Gujarat	33.0%	8	33.8%	9	2.4%	-1
Haryana	45.8%	4	49.5%	6	8.1%	-2
Karnataka	45.5%	5	50.2%	5	10.3%	0
Kerala	72.2%	1	77.0%	1	6.6%	0
Madhya Pradesh	23.2%	14	29.3%	14	26.3%	0
Maharashtra	42.0%	6	50.4%	4	20.0%	2
Odisha	26.7%	10	33.0%	11	23.6%	-1
Punjab	55.1%	3	56.0%	3	1.6%	0
Rajasthan	25.1%	13	33.4%	10	33.1%	3
Tamil Nadu	58.3%	2	59.1%	2	1.4%	0
Uttar Pradesh	32.9%	9	39.3%	8	19.5%	1
West Bengal	26.5%	11	32.9%	12	24.2%	-1
ALL INDIA	**35.7%**		**41.0%**		**14.8%**	

Source: Author's Calculation & National Family Health Survey – 4 & 5(NFHS – 4 & 5)

Table 5.11 provides a comparative analysis of female educational attainment across major Indian states, specifically measuring the percentage of women with ten or more years of schooling between the NFHS-4 (2015-16) and NFHS-5 (2019-21) survey periods. At the national level, the data indicates a significant positive transition in human capital formation, with the All-India average rising from 35.7% to 41.0%, representing a growth rate of 14.8%. This upward trend reflects the cumulative impact of long-term gender-focused educational interventions and the maturing of states who benefited from the expansionary fiscal policies of the preceding decades. However, the data also reveals a persistent geographic bifurcation: while southern and northern states like Kerala (77.0%), Tamil Nadu (59.1%), and Punjab (56.0%) maintain high absolute levels of female education, historically disadvantaged states like Rajasthan, Bihar, and Madhya Pradesh are experiencing high "catch-up" growth rates exceeding 25%, although from much lower baselines.

The performance of Karnataka during this period highlights its position as a leading state in quantitative educational attainment, maintaining a stable relative standing in the national hierarchy. Karnataka recorded an

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increase from 45.5% in NFHS-4 to 50.2% in NFHS-5, achieving a growth of 10.3% and successfully retaining its 5th rank among the fifteen major states analyzed. This milestone where more than half of the female population has now achieved at least ten years of formal schooling is a testament to the state's sustained fiscal commitment to social sector development and the effectiveness of its secondary education infrastructure. The state's performance remains significantly higher than the national average and surpasses neighbouring Andhra Pradesh (39.6%) and the industrialized state of Gujarat (33.8%). This suggests that Karnataka has successfully directed the structural fiscal shifts of Phase III to protect and advance women's access to long-term schooling.

However, when synthesized with the qualitative learning outcomes analyzed in previous sections, Table 5.11 exposes a profound "quantity-quality paradox" within Karnataka's educational framework. While the state excels in ensuring the duration of schooling and quantitative progression—evidenced by its top-five rank in female educational attainment—the earlier analysis of Standard VIII learning levels revealed that these years of schooling are not consistently translating into foundational cognitive competencies. This disconnect suggests that while Karnataka's fiscal and administrative machinery is highly effective at keeping students within the formal system for ten or more years, the pedagogical delivery during those years remains structurally weak. Consequently, the state faces a significant challenge that it must move beyond the success of "years of schooling" to address the "learning poverty" that threatens to diminish the economic and social dividends of its increasingly educated female workforce.

Table 5.12. Men with 10 or more years of schooling (%)

State	NFHS – 4	Rank	NFHS - 5	Rank	% Change	Change in Rank
Andhra Pradesh	51.3%	6	47.9%	9	-6.63%	-3
Assam	33.2%	15	35.5%	14	6.93%	1
Bihar	42.5%	10	42.8%	11	0.71%	-1
Gujarat	43.0%	9	45.6%	10	6.05%	-1
Haryana	61.1%	2	62.2%	2	1.80%	0
Karnataka	55.2%	4	56.5%	6	2.36%	-2
Kerala	70.5%	1	73.3%	1	3.97%	0
Madhya Pradesh	34.3%	13	39.9%	12	16.33%	1
Maharashtra	53.6%	5	61.0%	3	13.81%	2
Odisha	37.1%	12	38.6%	13	4.04%	-1
Punjab	59.8%	3	58.7%	4	-1.84%	-1
Rajasthan	43.8%	8	51.9%	7	18.49%	1
Tamil Nadu	50.9%	7	56.6%	5	11.20%	2
Uttar Pradesh	42.2%	11	48.6%	8	15.17%	3
West Bengal	33.8%	14	34.7%	15	2.66%	-1
ALL INDIA	**47.1%**		**50.2%**		**6.58%**	

Source: Author's Calculation & National Family Health Survey – 4 & 5(NFHS – 4 & 5)

Table 5.12 provides an assessment of male educational attainment, specifically quantifying the percentage of men with at least ten years of formal schooling across major Indian states between the NFHS-4 (2015–16) and NFHS-5 (2019–21) survey rounds. At the national level, the data indicates a steady but modest progression in male human capital, with the All-India average rising from 47.1% to 50.2%, reflecting a growth rate of 6.58%. This suggests that while male educational attainment remains higher in absolute terms than that of the female group (41.0%), the pace of growth for men is significantly slower. The data continues to reflect a geographic divergence, with Kerala (73.3%) and Haryana (62.2%) maintaining their lead, while states like Rajasthan (18.49% growth) and Uttar Pradesh (15.17% growth) are demonstrating aggressive "catch-up" dynamics, signaling a gradual narrowing of the historical educational gap in the northern belt during Phase III of this study.

The performance of Karnataka during this period presents a narrative of relative stagnation within the national hierarchy of male educational attainment. Although the state recorded a marginal absolute increase from 55.2% to 56.5%, this 2.36% growth was substantially lower than the national average and significantly trailed peer states like Maharashtra (13.81% growth) and Tamil Nadu (11.20% growth). Consequently, Karnataka's national rank for male educational attainment regressed from 4th to 6th place. This relative decline is particularly noteworthy given Karnataka's historical context of high fiscal expenditure and its robust 9.89% corrected per capita economic

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growth achieved during the preceding developmental phase. The data suggests that during the current post-2015 fiscal era, the momentum for male educational progression in Karnataka has decelerated compared to other industrialized states, potentially indicating a saturation in traditional secondary enrollment or a shift in fiscal prioritization away from male-centric educational incentives.

Synthesizing these findings with the qualitative indicators analyzed earlier in the chapter, the data reinforces the structural disconnect between quantitative schooling metrics and actual cognitive competencies. While Karnataka has successfully ensured that over 56% of its male population completes at least ten years of schooling, the earlier ASER assessments revealed that foundational learning levels—specifically in reading and numeracy—remained chronically low and even regressed during the same timeframe. This confirms that the state's educational system is highly proficient at maintaining enrollment and ensuring quantitative completion but remains pedagogically fragile. The regression in male ranking, combined with the qualitative "learning crisis," underscores an urgent need for Karnataka to pivot its educational policy toward quality-focused interventions, as the mere accumulation of schooling years is increasingly failing to provide a competitive developmental advantage in an evolving national landscape.

CONCLUSION

In conclusion, the empirical examination of general educational development in India, with special reference to Karnataka, underscores a profound disconnect between quantitative expansion and qualitative efficacy. The longitudinal data from 2000 to 2023 demonstrates that Karnataka has successfully navigated the logistical and fiscal challenges of universalizing access, achieving significant milestones in the duration of formal schooling for both male and female cohorts. By the conclusion of Phase III, the state secured a prestigious position among the top five states for years of schooling attained, illustrating a high degree of administrative efficiency in maintaining student retention. However, this quantitative success is severely undermined by the persistent "learning crisis" identified in the qualitative assessments. The state's failure to improve its relative national ranking in foundational literacy and numeracy—remaining largely stagnant near the bottom of the hierarchy for nearly two decades—indicates a systemic pedagogical vulnerability that high macroeconomic growth rates alone could not resolve. Even during the peak developmental momentum of Phase II, the state's 9.89% economic dividend failed to translate into a competitive qualitative advantage in the classroom.

The findings suggest that the historical reliance on input-based metrics—such as infrastructure development and enrollment ratios—has reached its threshold of utility. The sharp regression in learning levels observed during the pandemic further exposes the fragility of a system that prioritizes schooling years over actual cognitive acquisition. For Karnataka to capitalize on its educated demographic and maintain its status as an industrialized leader, the post-2023 policy framework must prioritize outcome-based monitoring and evidence-based remedial pedagogy. Future fiscal allocations must be directed away from mere volume expansion and toward the professionalization of teaching standards and the protection of foundational competencies. Ultimately, the transition from a "schooling for all" model to a "learning for all" paradigm is no longer a matter of policy preference but a structural necessity for the state's long-term human development and economic resilience.

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