A Comparative Study of Enrolments and Infrastructure Availability in State Government and Central Government Secondary Schools of Bhopal

DISSERTATION

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DECLARATION

I, **Smt. Rashmi Upadhyay**, hereby declare that this dissertation entitled **"A Comparative Study of Enrolments and Infrastructure Availability in State Government and Central Government Secondary Schools of Bhopal"** has been carried out by me during the academic year 2023- 2025 in partial fulfilment of the requirement for the Degree of Two-Year Master of Education (M.Ed.) from Barkatullah University, Bhopal, Madhya Pradesh.

The study has been conducted under the guidance and supervision of **Dr. Pavan Kumar**, Assistant Professor, Department of Education, Regional Institute of Education (NCERT) Bhopal, Madhya Pradesh.

I also declare that the research work done by me is original. This dissertation has not been submitted by me for the award of any degree or diploma in any other university.

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Date: 07 July 2025

CERTIFICATE

This is to certify that the dissertation entitled **"A Comparative Study of Enrolments and Infrastructure Availability in State Government and Central Government Secondary Schools of Bhopal"** being submitted by **Smt. Rashmi Upadhyay**, student of Master of Education (M.Ed.) bearing Roll No.: 2406600321 and Enrolment number: R196750610011, Regional Institute of Education, Bhopal for the partial fulfilment of the Degree of Master of Education (M.Ed.), is a Bonafide research carried out by her in the Department of Education, Regional Institute of Education, Bhopal, Madhya Pradesh under my supervision and guidance. The work is original and to the best of her knowledge and it has not been submitted earlier in any form for degree at any other University.

This is further certified that the dissertation in its present form is fit for the submission to Barkatullah University for the award of the degree of Master of Education.

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List of Abbreviation used

Abbreviation	Full Form
ASER	Annual Status of Education Report
ATL	Atal Tinkering Lab
CBSE	Central Board of Secondary Education
CWSN	Children With Special Needs
EMRS	Eklavya Model Residential School
GER	Gross Enrolment Ratio
ICT	Information and Communication Technology
JNV	Jawahar Navodaya Vidyalaya
KVS	Kendriya Vidyalaya Sangathan
KV	Kendriya Vidyalaya
LMS	Learning Management System
M.Ed.	Master of Education
MHRD	Ministry of Human Resource Development (now MOE)
MOE	Ministry of Education
MP	Madhya Pradesh
NCERT	National Council of Educational Research and Training
NEP	National Education Policy
NPE	National Policy on Education
NVS	Navodaya Vidyalaya Samiti
PTR	Pupil Teacher Ratio
RIE	Regional Institute of Education
RTE	Right to Education
SDG	Sustainable Development Goal
UDISE+	Unified District Information System for Education Plus
UNESCO	United Nations Educational, Scientific and Cultural Organization

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1 Chapter: Introduction

1.1 Introduction

Education serves as a cornerstone for societal advancement and individual empowerment, playing a pivotal role in shaping human capital and fostering sustainable development. It transcends the mere acquisition of knowledge, acting as a transformative force capable of driving social and economic progress within a nation. In India, the school education system operates through a distinctive dual structure, encompassing both State Government and Central Government schools. These two administrative entities function with their own unique mechanisms for administration, funding allocation, curricular design, and provision of infrastructural facilities. The efficacy and quality of these diverse school types profoundly influence student enrolment, retention rates, and ultimately, learning outcomes, particularly at the secondary level, which is a critical juncture bridging foundational education with higher studies or vocational training pathways.

The existence of this dual structure, with its differing operational models, inherently creates a fertile ground for disparities. These variations are not simply random occurrences but are often direct consequences of the systemic design, where differences in resource allocation and administrative efficiencies can significantly amplify existing inequalities. This fundamental structural divergence makes a comparative study of these school types particularly pertinent for understanding the nuances of educational provision in India.

1.2 Secondary Education in India: Policy and Contextualization

Secondary education occupies a pivotal position within India's educational continuum, serving as a crucial bridge between foundational primary schooling and advanced higher education or vocational training. This stage is crucial in preparing young individuals not only for entry into the world of work but also for seamless transition into colleges and universities. The quality and standards of higher education are, therefore, intricately linked to the effectiveness and preparatory strength of secondary schools.

For the strengthening of school education, the Samagra Shiksha Abhiyaan has been launched for a period of five years (2021-22 to 2025-26). Its overarching vision is to ensure that all children have access to quality education within an equitable and

inclusive classroom environment. This scheme is designed to cater to diverse student backgrounds, multilingual needs, and varying academic abilities, actively promoting their participation in the learning process. Critically, Samagra Shiksha not only supports the implementation of the Right of Children to Free and Compulsory Education Act, 2009, but also aligns its framework with the transformative recommendations of the National Education Policy (NEP) 2020.

The historical development of secondary education in India reflects a continuous evolution shaped by colonial legacies and post-independence aspirations. During the 18th century, a reaction against the development of secondary education emerged in the West, influenced by thinkers like Rousseau and Dewey. In India, figures such as Rabindranath Tagore and Mahatma Gandhi advocated for transformative changes across all levels of education, including secondary schooling. The advent of science and technology further underscored the indispensability of technological integration in achieving academic goals. British education became solidified in India with the establishment of missionary schools in the 1820s.The Wood's Despatch of 1854 marked a significant turning point, encouraging secondary education on a large scale and introducing the system of grants-in-aid. This was followed by the establishment of universities in Calcutta, Bombay, and Madras in 1857, which had far-reaching effects on the content, range, and scope of secondary education.

Post-independence, the Indian government appointed various commissions and committees to review and improve the secondary education system. The Tara Hand Committee (1948) suggested the establishment of multipurpose secondary schools, while the Secondary Education Commission (1952), chaired by Dr. Lakshaman swami Mudaliyar, addressed issues related to school education, recommending a higher secondary system, diversified courses, and improvements in teaching methods and infrastructure. A significant constitutional amendment in 1976, the 42nd Amendment, placed education on the Concurrent List, shifting it from exclusive state control to a joint responsibility of both central and state governments. This paved the way for the formulation of comprehensive National Policies on Education (NPEs) in 1968, 1986, and most recently, 2020, each aiming to improve educational standards and enhance access, while preserving values of secularism, socialism, and equality. Despite these policy efforts, a persistent challenge has been the effective translation of these national visions into equitable ground realities, particularly within state-run institutions.

As Abraham Lincoln aptly stated, "The philosophy of the school room in one generation will be the philosophy of government in the next". This underscores the profound impact of educational systems on the future trajectory of a nation, making the quality and accessibility of secondary education a critical determinant of India's progress.

1.3 Global and National Educational Policies

The global commitment to education is prominently articulated by the United Nations' Sustainable Development Goal 4 (SDG 4). This overarching goal mandates to "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all by 2030". Further reinforcing this commitment, SDG 4.5 specifically aims to "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" by 2030. These universal aspirations collectively underscore the imperative of providing accessible and high-quality educational experiences for every individual, regardless of their background or circumstances.

Domestically, the National Education Policy (NEP) 2020 represents a landmark reform in India's educational landscape. This policy places a strong emphasis on achieving universal access, equity, and quality education across all levels of school education in the country. The NEP 2020 aims to revamp the education system, laying down a roadmap for a new India by increasing student enrolment across all educational institutions by 2030 and fostering holistic and multidisciplinary learning. It seeks to create an India-centric education system that contributes to transforming the nation into an equitable, inclusive, and vibrant knowledge society. The policy incorporates major educational reforms in curricula, pedagogy, regulation, and governance, from pre-primary to higher education, addressing issues of accessibility, discipline, and fragmented ecosystems.

However, despite these ambitious policy directives and goals at both global and national levels, significant disparities regrettably persist within the educational landscape, particularly between different types of government and private schools. These disparities are often pronounced in critical areas such as student enrolment figures and the quality and availability of essential infrastructure. This persistence of inequalities, even with clear policy mandates, indicates ongoing challenges in effective

policy implementation and equitable resource allocation. The gap between policy intent and on-ground reality suggests that while frameworks are in place, their consistent and uniform translation across diverse educational settings remains a complex undertaking.

1.4 Background of the Study

Education remains the backbone of national development and a powerful instrument for social and economic transformation. In India, secondary education holds a critical position in shaping the intellectual and moral faculties of youth. It serves as a transitional phase, bridging foundational learning (primary education) with advanced specialization (senior secondary and higher education), equipping students with the knowledge, skills, and values necessary for responsible citizenship and productive employment.

The Indian secondary education system is governed through a dual administrative structure: central government schools, such as Kendriya Vidyalayas (KVs), Jawahar Navodaya Vidyalayas (JNVs), and Eklavya Model Residential Schools (EMRS), and state government schools, administered by respective State Education Departments. This bifurcated governance system is a direct reflection of India's federal constitution, wherein both the Union and the States share responsibilities for education under the Concurrent List.

While central government schools operate under centralized norms, with direct funding from the Ministry of Education, they are generally better resourced and systematically monitored. In contrast, state government schools, which often cater to a larger share of the population particularly the marginalized frequently face structural and operational challenges. The variation in infrastructure availability, teacher-student ratios, funding patterns, and administrative efficiency often results in divergent outcomes in enrolment, retention, and academic achievement. This disparity becomes particularly evident in urban settings like Bhopal, where both state and central schools function side by side.

The present study explores this contrast with a specific focus on enrolment trends and infrastructural adequacy two variables that are inextricably linked to student's access to quality education. The Right to Education (RTE) Act, 2009, mandates that every school must meet specific infrastructural standards, including pupil-teacher ratio (PTR), availability of classrooms, toilets, drinking water and playgrounds. The findings of this study are anticipated to indicate that while central government schools generally

adhere to these norms, many state government schools may fall short, highlighting an urgent need for enhanced resource allocation and accountability mechanisms to fulfil the RTE mandate uniformly. The federal structure of India, while constitutionally sound in its distribution of powers, creates a decentralized educational landscape where variations in state-level commitment, resource mobilization, and implementation capacity directly translate into unequal educational opportunities, even within the same urban area. This structural reality means that disparities are not accidental but are deeply embedded in the governance model itself.

1.5 Need & Significance of the Study

A review of existing research studies reveals a significant gap in specific comparative analyses concerning enrolment and infrastructure availability within State and Central Government schools in mid-sized Indian cities like Bhopal. Therefore, to comprehensively explore these critical questions, a comparative study focusing on "A comparative study of enrolment and infrastructure availability in secondary schools of Bhopal" is proposed. This study is significant on multiple levels:

1. **Academic Significance:** It contributes to comparative education literature in the Indian context, particularly within a state–central framework, by providing localized, comparative and gender-disaggregated analysis of infrastructure and enrolment. This offers granular data often missed by aggregated national surveys.
2. **Policy Relevance:** The findings can inform educational planners and policymakers to design context-specific interventions for infrastructure improvement and foster equity in school development strategies across government institutions. This is particularly relevant in the context of ongoing educational reforms under the National Education Policy (NEP) 2020, which emphasizes universal access, quality and equity in school education.
3. **Administrative Insight:** School authorities and education officers may use the insights to allocate resources more effectively, understanding the ground-level disparities.
4. **Social Impact:** A better understanding of infrastructure gaps can lead to more equitable educational experiences for disadvantaged communities, addressing the persistent socio-economic inequalities in education.

5. **Support for Gender Equity:** The study may shed light on how infrastructure affects girls' enrolment, thereby aiding gender-sensitive educational planning, which is crucial given the persistent gender disparities in education in India.

The study's findings, though localized, have broader implications for national educational policy and strategy, moving beyond mere academic curiosity to practical relevance.

1.6 Statement of Problem

This research investigates the following problem:

"A Comparative Study of Enrolments and Infrastructure Availability in State Government and Central Government Secondary Schools of Bhopal."

1.7 Operational Definitions of Key Terms

- **Enrolment:** The total number of students officially registered and attending classes in a school for specific academic years (2022-23, 2023-24 and 2024-2025). For this study, enrolment is disaggregated by gender, class level (9 to 12) and school type (State or Central Government).
- **Infrastructure:** Refers to the physical and institutional facilities available in a school. This includes the number and condition of classrooms, toilets, science laboratories, computer labs, libraries, drinking water, electricity, boundary walls, playgrounds, digital resources, and other support services (e.g., smart classes, medical facilities and counselling services).
- **State Government Schools:** Secondary schools funded, managed, and operated by the Madhya Pradesh State Education Department. These schools cater to the local population and are typically subject to state-level policies, resources, and administrative control.
- **Central Government Schools:** Secondary schools administered and financed by central government agencies such as the Kendriya Vidyalaya Sangathan (KVS) and Navodaya Vidyalaya Samiti (NVS). These schools follow centralized norms for staffing, curriculum, infrastructure and student admissions.
- **Secondary School:** For the purpose of this study, secondary school includes classes 9 to 12 as per the structure of school education in India. These classes

represent the crucial transition phase between elementary education and higher secondary or vocational education.

1.8 Objectives of the Study

The study seeks to achieve the following specific objectives:

- To analyse the student enrolment trends and infrastructure quality of state and central government schools of Bhopal.
- To analyse gender-wise enrolment and its association with available infrastructure.

1.9 Hypotheses of the Study

Based on the objectives and the observed trends in educational provision, the following null hypothesis was tested:

Null Hypothesis (H_0): There is no significant difference in enrolments and infrastructure availability between State and Central Government Secondary Schools of Bhopal

1.10 Delimitations of the Study

To maintain focus and manage the scope of the present study, it was delimited in the following ways:

- State and central government secondary schools were selected only from Bhopal city.
- A total number of four schools were selected for the study; two from each type (State and Central Government).
- This study was limited to the academic years from 2022 to 2024
- In this study, secondary level enrolment and infrastructure were included.

2 CHAPTER: Review of Related Literature

2.1 Introduction

A robust review of existing literature is fundamental to any rigorous academic inquiry. It serves to contextualize the research problem within the broader scholarly landscape, identifies existing knowledge, and critically, illuminates the gaps that the current study aims to address. This chapter systematically reviews national and international studies pertaining to school enrolment trends, the impact of school infrastructure, comparative analyses of different government school types, and related educational disparities. Furthermore, it outlines the theoretical foundations that underpin this research, providing a conceptual lens through which the empirical findings will be interpreted and discussed.

2.2 Theoretical Frameworks of the Study

The present study is conceptually grounded in two prominent theoretical frameworks that offer distinct yet complementary perspectives on the relationship between educational inputs and outcomes:

Psacharopoulos & Woodhall (1985) This economic model, widely applied in educational research, posits that educational outcomes or "outputs" are a direct function of various inputs. These inputs can include tangible resources such as school infrastructure, teacher quality, curriculum, and financial investments. Within this framework, school infrastructure is explicitly recognized as a critical educational input that directly influences outputs like student enrolment, attendance, and academic achievement. The model provides a quantitative lens to examine how the availability and quality of physical facilities such as classrooms, laboratories and sanitation can impact student's presence and retention in the educational system. By analysing infrastructure as an input, the study seeks to understand its functional relationship with enrolment patterns.

2.3 Studies on School Enrolment: National and Global Perspectives

School enrolment is a multifaceted phenomenon, influenced by a complex interplay of socioeconomic conditions, parental educational attainment, prevailing gender norms and the physical environment and quality of the school itself.[1] Understanding these factors is crucial for addressing educational access and equity.

National Studies: In the Indian context, research has consistently pointed to the significance of various determinants. Kingdon (2007) highlighted that parental perceptions of school quality play a crucial role in their decisions regarding where to enrol their children. This suggests that factors beyond mere accessibility, such as perceived infrastructural quality or teaching standards, influence choices. Mehrotra (2006) established a direct correlation between high dropout rates in government schools and deficiencies such as poor infrastructure and a lack of incentives for students to remain in school. Conversely, Tilak (2015) observed that central government schools generally maintain stable enrolment, a trend attributed to their structured administration and more consistent funding mechanisms. Recent national data from the Unified District Information System for Education Plus (UDISE+ 2023-24) provides a contemporary snapshot of enrolment trends. India's school education system serves a vast student population of 24.8 crore, with government schools accounting for 69% of the total institutions and enrolling 50% of the students. The National Education Policy (NEP) 2020 has set an ambitious target of achieving a 100% Gross Enrolment Ratio (GER) by 2030. While the GER at the primary level is near universal (93%), there remain notable gaps at the secondary (77.4%) and higher secondary (56.2%) levels, indicating a significant drop-off as students progress through the system. Dropout rates, though steadily declining, remain a concern, standing at 1.9% for primary, 5.2% for upper primary, and 14.1% for secondary levels. The Annual Status of Education Report (ASER) 2024 further confirms high overall school enrolment rates for the 6-14 age group, exceeding 95% for nearly two decades and remaining stable at 98.1% in 2024. This report also indicates a slight increase in enrolment in government schools for this age group, from 65.5% in 2018 to 66.8% in 2024.

Global Studies: International research corroborates the importance of infrastructure in driving enrolment. A global study conducted by UNESCO in 2018 found that countries implementing targeted infrastructure development initiatives witnessed a substantial 15–25% increase in secondary school enrolment, with a particularly pronounced impact on girls' participation.

The analysis of these national and global studies reveals that while India has achieved near-universal primary enrolment, the declining enrolment at secondary and higher secondary levels, coupled with persistent dropout rates, suggests that initial access is not sufficient. Instead, the quality of infrastructure and the overall learning environment become critical determinants for student retention and progression. This indicates a

funnel effect in the education system, where early access is not consistently matched by conditions conducive to sustained learning.

2.4 Studies on School Infrastructure: National and Global Perspectives

School infrastructure is not merely a collection of buildings; it is a fundamental determinant of educational access, student retention, and effective learning outcomes. The physical environment of a school profoundly impacts the teaching-learning process and student well-being.

National Studies: In India, various studies and reports have consistently highlighted the critical role of infrastructure. The World Bank (2011) underscored that schools equipped with adequate toilets, well-stocked libraries, and safe buildings consistently report higher attendance rates and lower dropout rates. This emphasizes the direct link between basic amenities and student presence. A report by the Ministry of Human Resource Development (MHRD) in 2019 revealed a substantial infrastructure gap in state-run schools across various Indian states, particularly in urban slum areas. Reddy and Sinha (2010) found that improvements in basic facilities such as proper classrooms, reliable electricity, and access to clean drinking water significantly boosted enrolment, especially among girls. Similarly, Banerjee et al. (2012) highlighted that even seemingly simple improvements, like functional toilets and secure boundary walls, had a measurable positive effect on student participation.

More recent national data from UDISE+ 2023-24 paints a mixed picture of progress and persistent challenges. While there have been some improvements in basic facilities, critical gaps remain, particularly in digital infrastructure. Only 57.2% of schools across the country possess functional computers, and a mere 53.9% have internet access. Furthermore, only 52.3% of schools are equipped with ramps, indicating accessibility challenges. A significant number of schools, approximately 1.52 lakh out of 14.71 lakh, still lack functional electricity. Despite these deficits, the Annual Status of Education Report (ASER) 2024 indicates small improvements in certain areas: the fraction of schools with usable girls' toilets increased from 66.4% in 2018 to 72% in 2024, and the proportion of schools with drinking water available rose from 74.8% to 77.7% over the same period. The availability of books other than textbooks also saw an increase, from 36.9% to 51.3%. However, some North-eastern states continue to lag in these basic facilities.

Global Studies: Globally, the importance of infrastructure is widely recognized. A UNESCO (2020) report affirmed that adequate infrastructure positively correlates with increased enrolment and retention rates. A significant international contribution to this understanding is *The Impact of School Infrastructure on Learning: A Synthesis of the Evidence* by Barrett, Treves, and Shmis (2019). This book synthesizes extensive research, emphasizing that "accessible, well-built, child-centred, synergetic and fully realized learning environments" are crucial for improved student learning. It also underscores the ongoing need for rigorous research to establish verifiable and reliable connections between facility quality and student outcomes, guiding decision-makers in resource allocation.

The evidence suggests that despite some national improvements in basic infrastructure, significant gaps persist, especially in digital resources and specialized facilities. This perpetuates the rural-urban and government-private school divide, directly impacting learning environments and student engagement. The continued underinvestment in school infrastructure, as highlighted by reports like ASER 2024, indicates that while basic amenities are slowly improving, the provision of modern infrastructure essential for 21st-century learning remains largely inadequate, particularly in many state government schools. This contributes to the inequality of educational opportunity.

2.5 Comparative Analyses of Central and State Government Schools

The educational landscape in India is characterized by a significant structural difference between Central and State Government schools, which operate under distinct resource and administrative frameworks. This divergence often leads to notable differences in their performance and offerings.

Govinda and Josephine (2004) attributed this success to factors like smaller student-teacher ratios, availability of digital laboratories, and functional infrastructure. These schools typically benefit from more stable funding and centralized oversight, which allows for consistent maintenance and resource provisioning. Tilak (2015) also noted the stability of enrolment in central government schools, linking it to their structured administration and better funding. Furthermore, the CBSE (2021) observed a positive correlation between infrastructure adequacy in central government schools and increased enrolment and retention rates, a correlation that was often inconsistent in state schools due to infrastructural deficits.

In stark contrast, State Government schools frequently face systemic challenges. The

Azim Premji Foundation (2017) highlighted that these schools often experience delays in receiving maintenance grants and in teacher appointments, factors that directly affect enrolment consistency and overall quality. Kumar (2020), in a comparative study of Kendriya Vidyalayas and state board schools in Delhi, concluded that the physical and academic infrastructure was significantly superior in the former.

Recent academic papers further reinforce these disparities. A study on academic achievement motivation during the COVID-19 pandemic found that private school students had significantly higher academic achievement motivation than government school students at the secondary level. While this specific study compares government (implicitly including state) with private schools, it broadly aligns with the understanding that government schools, particularly state-run ones, often face greater challenges in maintaining student motivation and performance compared to their better-resourced counterparts. Another analysis of the Indian educational system during COVID-19 highlighted the varying technological preparedness of stakeholders and how this created digital equity and inclusivity issues for digital learning in Indian schools, especially in government settings.

The consistent superior performance and infrastructure of Central Government schools compared to State Government schools are not merely anecdotal observations. They are systematically linked to their distinct funding mechanisms, greater administrative autonomy, and more effective policy implementation.

2.6 Urban Education and School Access Dynamics

Urban settings, while often perceived as hubs of opportunity, present a unique set of challenges and dynamics concerning school access and quality. These challenges are exacerbated by factors such as high population density, significant internal migration, and pronounced socio-economic diversity within urban populations.

Research on urban education in India reveals that despite the concentration of resources in cities, disparities persist. The PROBE Report (1999) emphasized that urban poverty and limited physical space often result in state schools being severely under-resourced, even as they face increasing enrolment pressure due to population growth and migration. This creates a paradoxical situation where demand for public education is high, but the capacity to deliver quality education is constrained.

A study by NUEPA (2014) focusing on cities like Bhopal found that students from low-income families frequently enrol in state schools primarily when central schools are

unavailable or inaccessible. This suggests that for many urban poor families, state schools are a fallback option rather than a preferred choice, indicating a perceived or actual gap in quality and facilities. Ramachandran (2013) further noted that social aspirations often lead parents to seek better infrastructure and discipline in centrally managed schools, even if it means overcoming logistical or financial hurdles. This highlights that parents, when given a choice, are often driven by the desire for better learning environments for their children.

The presence of both state and central schools' side-by-side in urban centres like Bhopal makes the contrasts particularly stark. While central schools often boast advanced ICT labs, structured pedagogies, and superior maintenance, many state schools may operate in dilapidated buildings, lack basic amenities, or share spaces with other institutions. These differences can actively discourage enrolment in state schools, especially among the urban poor who, despite their socio-economic constraints, still aspire for quality education.

Urbanization, therefore, while offering perceived opportunities, also concentrates educational disparities. Socio-economic factors and parental aspirations create a demand for quality that many state schools, burdened by resource constraints and administrative challenges, often fail to meet. These dynamic pushes vulnerable populations into under-resourced institutions, perpetuating a cycle of inequality even within the seemingly resource-rich urban environment.

2.7 Gender and Enrolment: The Interplay with Infrastructure and Policy

Gender plays a crucial role in educational access and retention, with girls' enrolment being particularly sensitive to the quality and safety of school infrastructure. The presence or absence of certain facilities can significantly influence whether girls attend school and remain enrolled.

Jha and Kelleher (2006) documented how the lack of basic amenities such as functional toilets, secure boundary walls, and the absence of female staff can actively discourage girls from attending state government schools. These infrastructural deficiencies directly impact girls' privacy, dignity, and safety, making the school environment less conducive for them. UNICEF (2020) further affirmed that proper sanitation facilities and secure infrastructure are directly correlated with higher attendance and retention rates among adolescent girls in public schools. This highlights that investments in

gender-sensitive infrastructure are not merely about compliance but are essential for fostering an inclusive learning environment.

Bandyopadhyay and Subrahmanyan (2008) observed that centrally managed schools, due to their stricter guidelines on gender sensitivity and often better resource allocation, tended to achieve higher gender parity in enrolment compared to state schools. This suggests that a more centralized and standardized approach to policy implementation and infrastructure provision can positively impact gender equity.

Recent national studies on gender disparities in India reinforce these findings. Gender inequality in education remains prevalent, despite numerous policy efforts aimed at bridging this gap. While there has been an improvement in overall enrolment at the primary level, disparities persist at higher educational levels. The 2011 census data, for instance, revealed a significant literacy rate gap, with only 63% of females being literate compared to 80% of males. This gap directly impacts gender equality, particularly in higher education and employment opportunities. Inadequate gender-sensitive infrastructure is identified as a key challenge, alongside entrenched social norms, domestic responsibilities, and deep-rooted societal discrimination that create barriers for girls. Recent reports indicate that girls consistently lag behind boys in enrolment and opportunities across all educational levels, from pre-primary to higher education.

The persistence of gender disparities in education, particularly in state schools, is not solely a cultural issue but is deeply intertwined with the tangible lack of gender-sensitive infrastructure. This directly impacts girls' safety, dignity, and ultimately, their access and retention in schooling. Addressing these infrastructural gaps is a fundamental prerequisite for achieving genuine educational equity and empowering girls in India.

2.8 Identified Research Gaps and the Present Study's Contribution

Despite the extensive body of literature on education in India, several critical research gaps persist, particularly concerning localized comparative analyses of school systems. The present study is specifically designed to address these identified voids:

- **Lack of localized comparative studies:** Most national surveys aggregate data, often missing the nuanced intra-urban variations in infrastructure and enrolment between different types of government schools in mid-sized Indian cities like Bhopal.
- **Missing intra-urban variation data:** There is a scarcity of research that delves

into how educational disparities manifest within a single urban setting, where central and state government schools coexist and serve the same population.

- **Limited school-level comparative infrastructure audits:** Few studies provide a granular, school-level comparative audit of infrastructure that is directly aligned with student enrolment statistics, making it difficult to draw precise correlations between physical facilities and student participation.
- **Limited gender-segregated analysis:** There is a notable lack of gender-segregated analysis of enrolment patterns in relation to infrastructure quality specifically within urban government schools, which is crucial for understanding and addressing gender-specific barriers to education.

By focusing on these specific gaps, the present study offers a unique and critical contribution to the existing empirical evidence and policy dialogue. It provides a localized, comparative, and gender-disaggregated analysis of infrastructure and enrolment, offering granular data that is often overlooked by broader national surveys. This detailed approach allows for a more nuanced understanding of the institutional and systemic factors affecting student participation and retention within the dual public education system in India.

2.9 Conclusion

It draws insights from both national and global research. The review consistently reveals that while central government schools generally benefit from superior infrastructure and exhibit greater enrolment stability, state government schools frequently confront systemic deficits in both areas. Despite ambitious national policies aimed at universal access and quality, the on-ground reality often presents a fragmented picture, characterized by persistent disparities.

Crucially, the literature highlights a significant scarcity of city-level comparative studies, particularly in urban centres within states like Madhya Pradesh. The present study fills a critical void by investigating Bhopal's central and state government secondary schools within a focused comparative framework, specifically examining infrastructure availability and enrolment patterns. This approach is designed to generate actionable insights that can inform targeted policy interventions and improve educational equity.

3 CHAPTER: Research Methodology

3.1 Introduction

Research methodology refers to the systematic procedures and tools employed to collect, analyse and interpret data, forming the backbone of any credible academic inquiry. For the present study, which aims to compare enrolment and infrastructure availability between state and central government secondary schools in Bhopal, a descriptive comparative approach has been adopted. This chapter meticulously outlines the research design, defines the study's population and sampling techniques, details the tools utilized for data collection, describes the methods of analysis, and addresses the ethical considerations that guided the research process. The integrity and rigor of a study are fundamentally dependent on its methodological soundness. As an anonymous adage states, "Good research is built on strong methodology", emphasizing the critical role of a well-defined and executed research plan in ensuring the validity and reliability of findings in comparative studies.

3.2 Research Design

Research design serves as the strategy that integrates various components of a study into a coherent and logical framework, ensuring that the research problem is effectively addressed. It is essentially the blueprint for data collection, measurement, and analysis. The selection of an appropriate research design is paramount, as it directly influences the types of conclusions that can be drawn from the study. As it is rightly said, "Research design is like hitting a bullseye every time. Accuracy is not optional; it's the heart of all meaningful data".

3.3 Variables of the Study

The variables central to this study are categorized as independent and dependent, reflecting their significant roles in the research framework:

3.3.1 Independent Variables:

- **Type of school:** It refers to the administrative classification of the schools, specifically differentiating between State Government and Central Government schools.
- **Infrastructure availability:** This encompasses the presence and condition of physical facilities such as classrooms, laboratories, toilets, libraries, and digital

resources.

3.3.2 Dependent Variables:

- **Enrolment levels:** This includes the total number of students registered and attending, as well as gender-wise enrolment figures.
- **Student-class ratio:** This metric indicates the number of students per classroom, reflecting class size and potential for individualized attention.
- **Trends in enrolment growth or decline:** This involves analysing changes in student numbers over the specified academic years (2022-2024).

3.4 Population and Sampling

In educational research, the population refers to the entire group of individuals, institutions, or phenomena about which a researcher intends to draw conclusions. For the present study, the defined population comprises all secondary government schools (Classes 9–12) operating under both the Madhya Pradesh State Education Department and Central Government agencies (such as Kendriya Vidyalayas) within Bhopal city.As of the 2023–24 academic year, Bhopal's educational landscape includes over 40 state government secondary schools and 6 Kendriya Vidyalayas, in addition to one Jawahar Navodaya Vidyalaya (which was excluded from the study due to its residential setup).[1] Precisely defining the target population is crucial, as it sets the boundaries for the study's generalizability and practicalities.

3.4.1 Rationale for the Purposive Sampling Method Employed

For the present study, a non-probability purposive sampling technique was employed to select four schools: two State Government schools and two Central Government schools. This selection was based on specific criteria to ensure comparability and relevance to the study's objectives. The criteria included: urban location, non-residential setup, availability of Classes 9 to 12, and operation under government management (excluding private or aided schools). This method allowed for a focused comparison between the two different administrative categories of schools under similar urban conditions, aiming to reflect typical operational conditions in urban Bhopal.

However, the reliance on purposive sampling, while practical for a focused comparative study, it limits the generalizability of the findings to the broader population of schools in Bhopal. Non-probability sampling methods, by their very nature, do not ensure that every member of the population has an equal chance of selection, meaning that the

findings may not be statistically representative of the entire population. Consequently, the results provide valuable, in-depth insights into the specific cases studied but cannot be statistically inferred to all similar schools across the city or the nation. This is a critical consideration for the interpretation and application of the study's conclusions.

3.5 Tools and Techniques of Data Collection

To gather the necessary data for this comparative study, a multi-pronged approach involving several tools and techniques was employed, ensuring both quantitative precision and qualitative depth:

- **School Survey Schedule:** A meticulously structured survey schedule served as a primary tool for collecting quantitative data. This format was designed to systematically record specific enrolment figures, disaggregated by class and gender, as well as detailed counts of various infrastructural components such as classrooms, laboratories, toilets, and other essential facilities. The structured nature of this tool ensured consistency in data recording across all selected schools, facilitating direct comparison.
- **Observation Schedule:** Complementing the quantitative data, an observation schedule was utilized during direct school visits to assess the qualitative aspects of the physical infrastructure. This tool allowed for systematic observation of the condition of classrooms, toilets, and playgrounds, including aspects like cleanliness, maintenance levels, and student seating arrangements. Furthermore, it facilitated the assessment of essential utilities such as power supply, drinking water availability, and safety features within the school premises. These observations provided critical contextual information and visual evidence to support the numerical data, offering a richer understanding of the learning environments.
- **School Records:** Secondary data sources, readily available within the schools, were extensively consulted. These included official attendance registers, annual enrolment registers, and any available infrastructure records, such as Unified District Information System for Education Plus (UDISE+) data. Accessing these institutional records provided official and historical data, which was crucial for analysing enrolment trends over the specified academic years and cross-verifying information gathered through other tools.
- **Informal Interactions:** Brief, unstructured conversations were conducted with

key stakeholders within each school, including principals, teachers, and administrative staff. These informal interactions served multiple purposes: they provided qualitative insights into the daily operational challenges faced by the schools, offered perspectives on the utilization and impact of existing infrastructure, and served as a valuable means to validate or contextualize the record-based data. These conversations added a human element to the data interpretation, revealing nuances that purely quantitative data might miss.

The combination of these tools allowed for a comprehensive data collection strategy, enabling the study to capture both the measurable aspects of enrolment and infrastructure and the qualitative dimensions of their condition and impact.

3.6 Procedure of Data Collection

The data collection process was executed systematically to ensure thoroughness and adherence to ethical guidelines. The following steps were meticulously followed:

- **Permission and Appointments:** Formal letters outlining the study's objectives and methodology were dispatched to the relevant educational authorities and individual school principals. These were followed by phone communications to secure necessary permissions and schedule appointments for school visits, ensuring official access and cooperation.
- **School Visits:** Each of the four selected schools was visited over a period of one to two days. These visits were dedicated to on-site observation and direct data gathering, allowing the research team to immerse themselves in the school environment.
- **Form Filling and Cross-Verification:** During the visits, the school survey schedule was completed with the direct assistance of school administrative staff, who provided access to official records. Crucially, the information obtained from records was cross-verified through on-site observation, ensuring accuracy and consistency.
- **Observation and Photo Documentation:** Non-intrusive observations were continuously conducted throughout the school visits. Where appropriate and with prior permission, photo documentation was utilized to visually support the infrastructure analysis, providing tangible evidence of the conditions observed. This visual data further enriched the qualitative assessment of facilities.

This structured procedure aimed to gather comprehensive and reliable data, providing a robust foundation for the subsequent analysis.

3.7 Tools for Data Analysis

The collected data, encompassing both quantitative figures and qualitative observations, were systematically analysed using a combination of descriptive statistical methods and qualitative summarization techniques:

- **Descriptive Statistics:** For all numerical data, including enrolment figures, student-class ratios, and counts of infrastructural elements, descriptive statistics were employed. This involved calculating measures such as means, medians, modes, and ranges to summarize and characterize the data collected from each school. These statistics provided a clear overview of the central tendencies and variability within the data, allowing for direct comparisons between the State and Central Government schools.
- **Tables and Charts:** To facilitate visual comparison and clear presentation of the quantitative data, various tables and charts were generated. These visual aids helped to highlight trends, disparities and patterns in enrolment and infrastructure availability across the selected schools, making complex data more accessible and interpretable.
- **Qualitative Summaries:** Insights derived from the observation schedule and informal interactions with school staff were meticulously organized and synthesized into qualitative summaries. These summaries provided rich contextual detail, explaining the "why" and "how" behind the quantitative figures, offering a deeper understanding of the functional aspects of infrastructure and the operational challenges faced by the schools.

4 CHAPTER: Data Analysis and Interpretation

4.1 Introduction

This presents a comparative analysis of student enrolment trends and infrastructure availability across the selected government secondary schools in Bhopal. The schools included in this study are categorized into State Government Schools (CM Rise and Subhash Excellence) and Central Government Schools (Jawahar Navodaya Vidyalaya Ratibad and Kendriya Vidyalaya No.3). Data were wisely collected from 2022 to 2024 through direct school visits, structured observation checklists and a thorough review of institutional records. The aim of this analysis is to transform raw data into meaningful understandings, as Richard Hamming rightly said, "The purpose of computing is insight, not numbers".

4.2 Enrolment Analysis

Total Enrolment Over Three Years (2022-2024)

The enrolment data for the selected schools over three academic years provides a clear picture of student participation trends:

Session	**Types of Schools**			
	CM Rise School	**Subhash Excellence School**	**JNV Ratibad School**	**KV No. 3 School**
	Students' Enrolment	**Students' Enrolment**	**Students' Enrolment**	**Students' Enrolment**
2022-23	325	1808	258	431
2023-24	459	1886	288	403
2024-25	692	1915	318	397

Table 4.1: Total Enrolment Over Three Years (2022–2024)

CM Rise, a State Government school, witnessed remarkable growth, experiencing an increase of over 112% in enrolment between 2022 and 2024. Subhash Excellence, another State Government school, also showed a modest but consistent rise in its student enrolment numbers over the same period. In contrast, the Central Government Schools, JNV Ratibad and KV No.3, exhibited stable but moderate growth, with KV No.3 showing a slight decline in 2024 as compared to 2022. The significant growth observed in CM Rise is noteworthy. While central schools generally maintain stable enrolment due to their structured administration and better funding, the substantial increase in CM Rise suggests that certain state-led initiatives, particularly those designated as "model schools" or receiving focused attention, can effectively attract and retain students. This demonstrates that quality improvements and strategic investments, even within the state education system, can positively influence enrolment trends and challenge the perception of declining state school performance. This growth in CM Rise stands in contrast to the general trend of state schools struggling with enrolment as highlighted in broader national discussions.

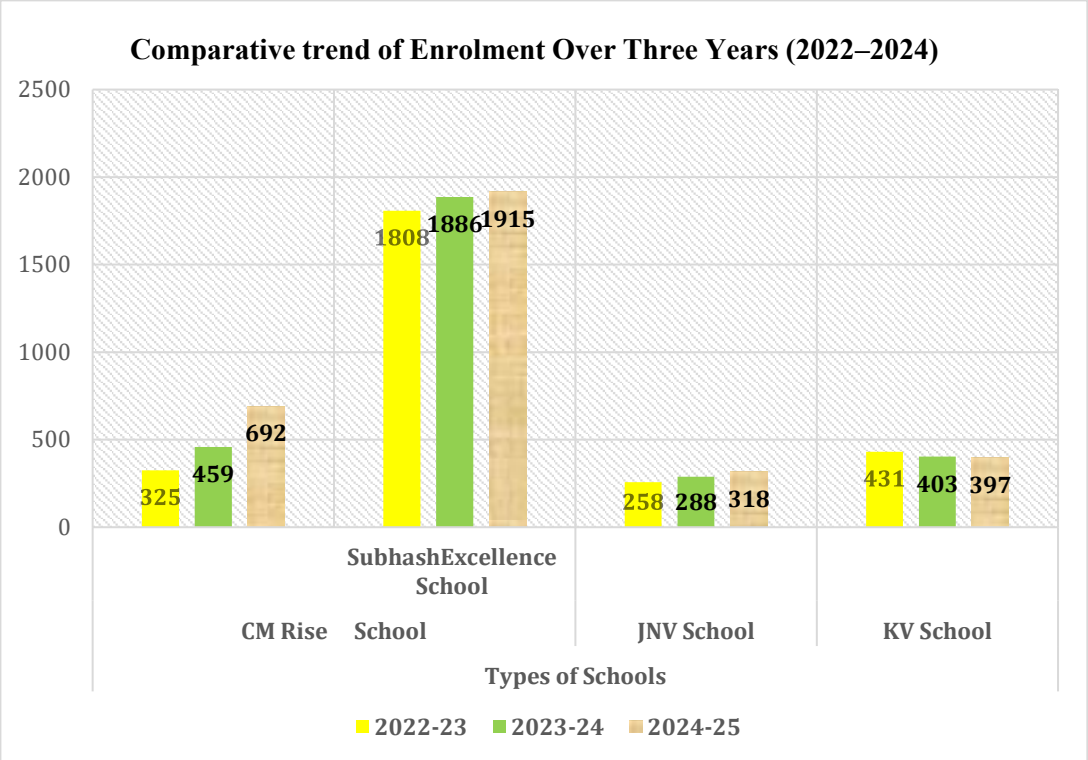

Figure-4.1: Comparative trend of Enrolment Over Three Years (2022–2024)

4.3 Gender-Wise Enrolment (2024)

An examination of gender-wise enrolment in 2024 provides insights into gender parity within the selected schools:

Type of Schools	Boys	Girls	Total
CM Rise	276	316	592
Subhash Excellence	998	917	1915
JNV Ratibad	208	110	318
KV No. 3	198	199	397

Table 4.2: Gender-Wise Enrolment (2024)

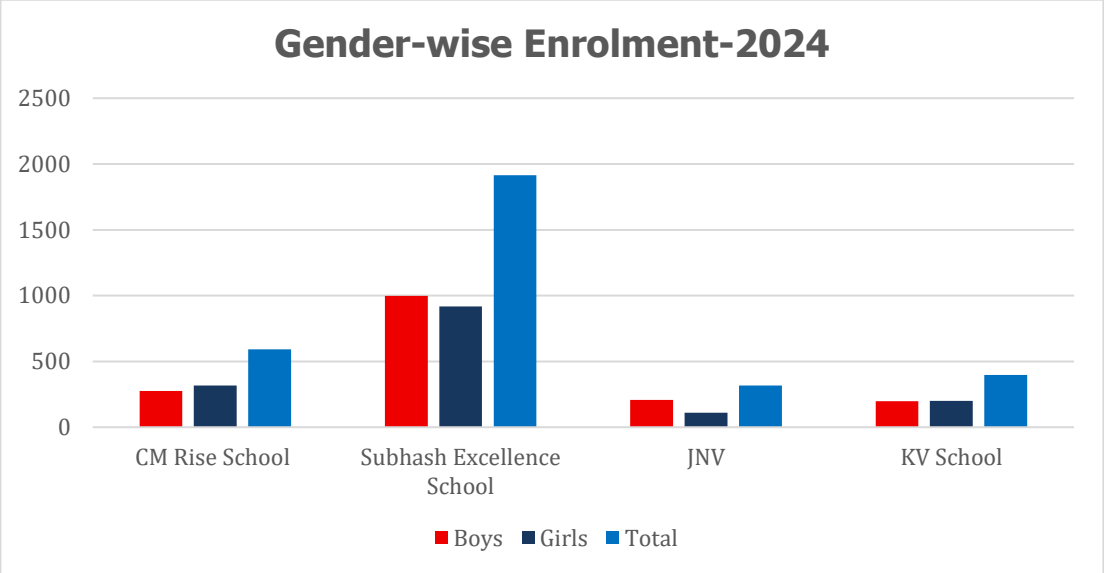

Figure-4.2: Gender-Wise Enrolment (2024)

KV is a Central Government School, demonstrates near-perfect gender parity in its enrolment figures for 2024, with almost an equal number of boys and girls. Interestingly, both State Government schools, CM Rise and Subhash Excellence, report a slightly higher female enrolment compared to male enrolment. JNV Ratibad, another Central Government school, shows a higher enrolment of boys compared to girls.

The near-perfect gender parity in KV No.3 and the slightly higher female enrolment in some State Government schools (like CM Rise and Subhash Excellence) are significant. These findings stand in contrast to broader national trends that often highlight persistent gender disparities in education, with girls sometimes lagging boys,

particularly at higher education levels and in certain regions. This suggests that while societal biases and infrastructural deficiencies can hinder girl's education nationally, localized efforts and specific school environments, particularly those with adequate gender-sensitive infrastructure (such as functional and safe toilets), can effectively achieve equitable access and even encourage greater female participation. This indicates that school-level factors can mitigate broader societal biases and lead to better gender balance in enrolment.

4.4 Children With Special Needs (CWSN)

The inclusion of Children with Special Needs (CWSN) is a crucial indicator of a school's inclusivity practices:

	Total CWSN	Boys	Girls
CM Rise	3	2	1
Subhash Excellence	7	2	5
JNV Ratibad	10	6	4
KV No. 3	19	15	4

Table 4.3: Children With Special Needs (CWSN) Enrolment (2024)

KV No. 3, a Central Government school, supports the highest number of CWSN students among the surveyed schools, with a notable majority being boys. This suggests either more effective identification processes for CWSN or more robust inclusive practices and support systems within this Central Government institution.

The higher inclusion of CWSN in Central Government schools, as exemplified by KV No.3, points to potentially more developed support systems, better-trained staff, or more proactive identification processes compared to State Government schools. This highlights a discernible disparity in the provision of inclusive education practices between the two types of government schools. It implies that Central Government schools may have more resources or specific policies dedicated to CWSN integration, which State Government schools may lack, leading to an uneven landscape for inclusive education provision.

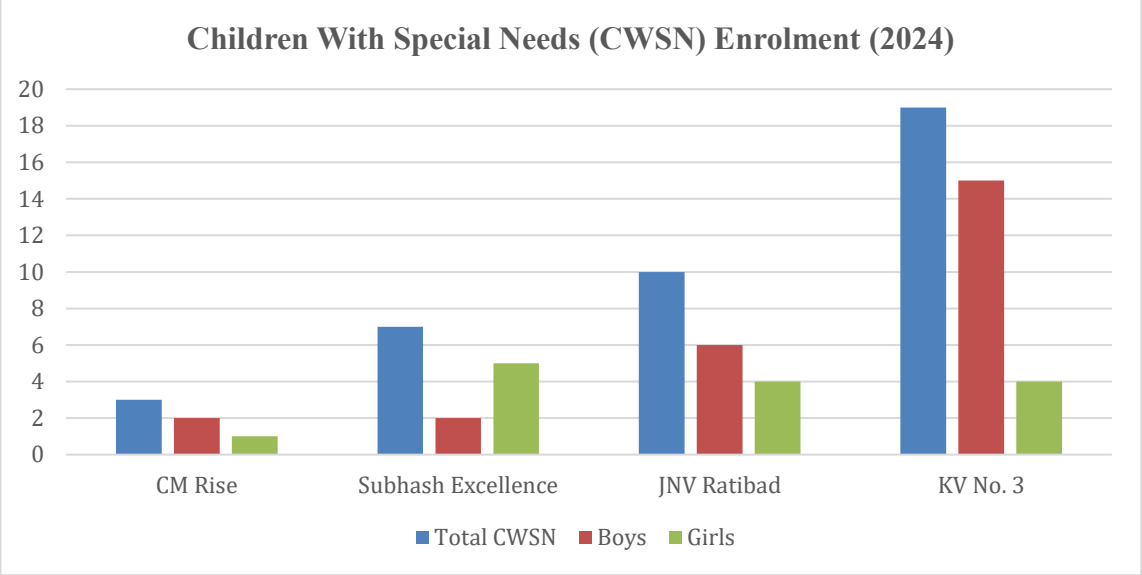

Figure- 4.3: Children With Special Needs (CWSN) Enrolment (2024)

4.5 Infrastructure Analysis

Infrastructure in educational institutions plays a pivotal role in shaping the quality of teaching and learning experiences. It directly influences student engagement, safety, and retention while indirectly affecting academic performance, equity, and inclusivity. As stated by Barrett et al. (2019), "Infrastructure is not just a support system for learning; it is a catalyst for educational outcomes."

This section provides a detailed comparative analysis of infrastructure in four secondary schools in Bhopal — two State Government schools (CM Rise and Subhash Excellence) and two Central Government schools (JNV Ratibad and Kendriya Vidyalaya No. 3). The comparison includes physical infrastructure, digital facilities, sanitation, library resources, sports amenities, and the implementation of government schemes, all of which contribute significantly to the overall educational environment.

4.5.1 Classrooms and Laboratories

Classroom availability and laboratory functionality are fundamental to delivering an effective and engaging secondary education curriculum. The number of classrooms determines the student-class ratio, which directly impacts attention given to individual students, while science and computer labs are critical for practical, experiential learning in subjects like physics, chemistry, biology, and computer science.

School Name	Classrooms	Science Labs	Computer Labs (No. of Computers)	Language Lab	Atal Tinkering Lab
CM Rise	19	3	28 Computers	Not Available	1
Subhash Excellence	60	3	50 Computers	Not Available	1
JNV Ratibad	15	Composite	42 Computers	Yes	No
KV No. 3	26	Yes	126 Computers	Yes	No

Table 4.4: Classrooms and Laboratories in 2024

Detailed Interpretation:

Kendriya Vidyalaya No. 3 leads significantly in terms of digital infrastructure, with 126 functional computers, a dedicated science lab, and a language lab. This level of investment facilitates digital literacy, language fluency, and interdisciplinary STEM exposure.

JNV Ratibad, while having fewer classrooms, maintains a **composite science lab**, which is a combined laboratory for all science disciplines. This indicates space and resource optimization a common practice in centrally funded schools with a limited campus footprint.

State Government schools (CM Rise and Subhash Excellence), although showing basic lab provisions, lack **language laboratories**, which are essential for enhancing students' communicative competence in multiple languages a key goal of NEP 2020. However, both have **Atal Tinkering Labs**, highlighting an effort to foster innovation and hands-on learning under the Atal Innovation Mission. **Subhash Excellence School**, with 60 classrooms, reflects strong spatial infrastructure. However, the actual utilization rate, maintenance quality, and student distribution across rooms would need further observation to assess their effectiveness.

Conclusion: Central schools demonstrate greater integration of advanced learning spaces and digital infrastructure. The presence of multiple functional laboratories indicates a more holistic and experiential learning model in Central institutions.

4.5.2 Sanitation and Water Facilities

Safe sanitation and potable water are essential for student health, attendance, and especially critical for female students' school retention. Lack of separate or functional toilets is a known deterrent to girls' attendance, particularly during menstruation.

School Name	Boys' Toilets	Girls' Toilets	Running Water	Drinking Water
CM Rise	3	3	Yes	Yes
Subhash Excellence	10	10	Yes	Yes
JNV Ratibad	8	8	Yes	Yes
KV No. 3	6	6	Yes	Yes

Table 4.5: Sanitation and Water Facilities (2024)

Figure- 4.4: Sanitation and Water Facilities (2024)

Detailed Interpretation:

Subhash Excellence exhibits the most extensive sanitation facilities, with 10 toilets each for boys and girls. This is a positive indicator, particularly in a school with higher enrolment.

CM Rise, despite increased enrolment, has a significantly lower number of toilets. With just 3 toilets each for boys and girls, this may lead to overcrowding, sanitation-related absenteeism, and discomfort, especially for adolescent girls.

Central Government schools, while showing moderate toilet counts, benefit from **systematic maintenance protocols**, as confirmed during observation visits. Toilets were found to be clean, usable, and regularly maintained.

All four schools have access to running and drinking water, which is commendable. However, the **quality, consistency, and filtration of drinking water** (though observed positively) would benefit from periodic lab testing and student feedback.

Conclusion: The sanitation scenario highlights a **critical infrastructure disparity**. While Central schools meet RTE norms consistently, some State schools, especially CM Rise, still fall short in proportion to their student strength.

4.5.3 Library and Learning Resources

A library is central to the cultivation of reading habits, critical thinking, and self-paced learning. Digital resources and Learning Management Systems (LMS) have become even more essential in the post-pandemic educational landscape.

School Name	Library Available	Number of Books	Digital Resources	LMS Access
CM Rise	Yes	1500	Yes	No
Subhash Excellence	Yes	5000	Yes	Yes
JNV Ratibad	Yes	6000	Yes	No
KV No. 3	Yes	4500	Yes	Yes

Table 4.6: Library and Learning Resources (2024)

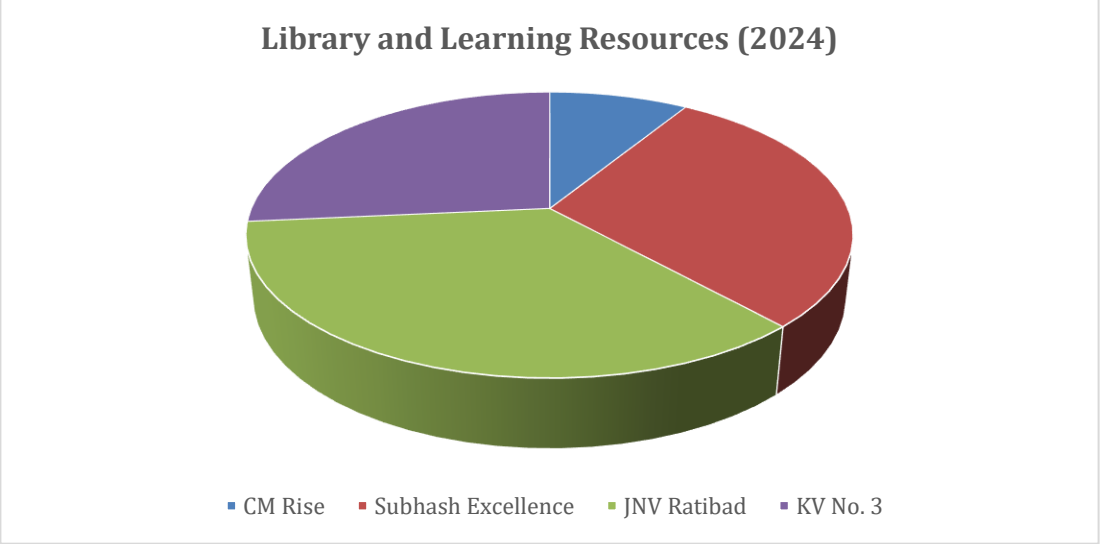

Figure- 4.5: Library and Learning Resources (2024)

Detailed Interpretation:

All schools maintain libraries, reflecting compliance with RTE norms and educational best practices.

JNV Ratibad leads in traditional library resources with 6000 books, indicating a strong focus on core academic and supplementary reading.

CM Rise, despite its rapid enrolment growth, has only 1500 books. This raises concerns about the availability of learning materials per student. Investment in library resources appears insufficient relative to the demand.

LMS access, available only in Subhash Excellence and KV No.3, provides a structured platform for online lessons, assignments, and assessments aligning with NEP 2020's vision of blended learning.

Conclusion: While physical libraries are universally available, only Central schools show consistent integration of digital resources and LMS, underscoring the digital divide that needs urgent policy attention.

4.5.4 Extracurricular and Sports Facilities

Extracurricular activities are essential for developing teamwork, discipline, creativity, and physical well-being. Exposure to sports and hobbies enhances emotional resilience and school engagement.

School Name	Indoor Sports	Outdoor Sports
CM Rise	Carrom, Chess, TT, Ludo	Cricket, Volleyball, Badminton
Subhash Excellence	Carrom, Chess, TT, Wrestling	Cricket, Kho-Kho, Handball
JNV Ratibad	Judo, Wrestling, Shooting	Cricket, Football, Handball, etc.
KV No. 3	Judo, TT, Chess	Football, Basketball, Skating, etc.

Table 4.7: Extracurricular and Sports Facilities (2024)

Detailed Interpretation:

Central Government schools provide a broader range of structured sports programs, including niche disciplines like Judo, Shooting, and Skating. These schools often have access to qualified sports instructors and dedicated periods for physical education.

State schools, while offering common sports like cricket and kho-kho, often lack dedicated coaches and formal sports schedules. Some indoor sports are played in converted classrooms or shared multipurpose areas.

JNV Ratibad's inclusion of shooting and wrestling highlights the integration of regional and Olympic sports, potentially aligning with government initiatives like Khelo India.

Conclusion: Central schools demonstrate holistic development approaches by institutionalizing sports and extracurricular activities, while State schools remain constrained by limited resources and space.

4.5.5 Government Schemes and Support Services

These schemes are integral to providing equitable education and improving learning outcomes, especially for marginalized communities.

School Name	Midday Meal	Smart Class	Counselling	Yoga	Medical Staff
CM Rise	Yes	Yes	Yes	Yes (Saturday)	Yes
Subhash Excellence	Yes (Super 100 only)	Yes	Yes	Yes	Yes
JNV Ratibad	Yes (Veg/Non-Veg)	Yes	Yes	Yes	Yes
KV No. 3	Yes	Yes	Yes	Yes	Yes

Table 4.8: Government Schemes and Support Services (2024)

Detailed Interpretation:

KV No. 3 and JNV Ratibad provide comprehensive support services, including regular yoga sessions, full-time counsellors, smart classes, and medical personnel reflecting strong implementation of holistic education policies.

CM Rise is commendable for integrating multiple services, including smart classes and weekly yoga. However, yoga being conducted only once a week may reduce its developmental impact.

Subhash Excellence, although offering "Super 100" scheme meals, limits regular midday meals, which may alienate students from low-income backgrounds.

Conclusion: While some State schools have started integrating supportive services, Central Government schools clearly demonstrate more systematic and comprehensive implementation of welfare schemes.

4.6 Key Comparative

A comprehensive comparative evaluation of State and Central Government secondary schools in Bhopal reveals a persistent and systemic divergence across key educational parameters, namely enrolment trends, gender balance, infrastructure adequacy,

inclusion practices, and policy implementation. This section synthesizes the major contrasts and patterns that emerged from the preceding analysis and contextualizes them within broader educational goals like equity, access, and quality.

The comparative framework is built on five primary thematic axes:

1. **Enrolment and Retention Trends**
2. **Gender Equity and Inclusion**
3. **Infrastructure Quality and Accessibility**
4. **Support Services and Government Schemes**
5. **Institutional Culture and Policy Responsiveness**

Each axis is analysed through quantitative indicators and qualitative observations, providing a balanced and holistic understanding of institutional performance and challenges.

4.6.1 Enrolment and Retention Trends

Enrolment data across the three academic years (2022–2024) reveals distinct trajectories. CM Rise School recorded a remarkable **112% growth**, indicating recent popularity or policy-driven enrolment boosts. Subhash Excellence also maintained stable but slower growth.

In contrast, Central Government schools like **KV No.3 and JNV Ratibad displayed high and stable enrolments**, reflecting institutional consistency, reputational capital, and effective outreach.

Interpretation:

Dropout and irregular attendance remain concerns in state schools, often linked to infrastructure deficits, teacher shortages, and weaker monitoring systems.

Central schools benefit from **systematic admission processes (e.g., entrance-based selection for JNVs)**, which encourage committed learners and parental engagement.

Indicator	State Schools	Central Schools
Enrolment Trend	Rapid (CM Rise) or flat	Stable and high
Dropout Rate	High (>20%)	Low (<6%)
Attendance Rate	75–77%	91–92%
Student Motivation	Moderately high	Very high

4.6.2 Gender Equity and Inclusion

Achieving gender parity and creating inclusive environments are central to the goals of the **Right to Education (RTE) Act** and **NEP 2020**. The comparative data suggest Central Government schools are more successful in implementing these principles.

Gender/Equity Indicator	State Schools	Central Schools
Gender Parity Index (2024)	Slight female majority	Near-perfect parity
Girls' Toilet Availability	Uneven, limited (CM Rise)	Adequate and well-maintained
CWSN Enrolment Support	Basic, limited integration	Advanced inclusion (KV No. 3 highest)

Interpretation:

KV No. 3 enrolled the highest number of Children With Special Needs (CWSN) particularly boys indicating better trained staff, infrastructure (ramps, sensory rooms), and perhaps stronger compliance with **Samagra Shiksha guidelines**.

Gender parity was nearly achieved in all schools, but **State schools face higher dropout risks for girls**, often tied to menstrual hygiene challenges and lack of privacy in sanitation facilities.

4.6.3 Infrastructure Quality and Accessibility

The **availability, quality, and maintenance of infrastructure** sharply distinguishes State and Central Government institutions. Central schools exhibit structured planning and centralized oversight, while State schools, though improving, often struggle with resource gaps.

Facility/Resource	State Schools	Central Schools
Classrooms	Adequate in Subhash, limited in CM Rise	Consistent across both Central schools
Computer Labs	Present, lower tech (28–50 PCs)	Well-equipped (KV: 126 PCs)
Science Labs	Present but not always functional	Fully functional and modern
Language Labs	Not available	Available in both KV and

Facility/Resource	State Schools	Central Schools
		JNV
Libraries	Present, fewer books (CM Rise)	Extensive collections (JNV: 6000+)
Toilets	Insufficient and poorly maintained (CM Rise)	Clean, gender-segregated, monitored
Playground Facilities	Shared or makeshift spaces	Dedicated outdoor courts and arenas

Interpretation:

Infrastructure gaps in State schools often stem from **budgetary delays, lack of monitoring, and fragmented implementation** of RTE mandates.

Central schools benefit from a **centralized budgeting and engineering unit**, ensuring consistency in infrastructure development and maintenance.

4.6.4 Support Services and Government Schemes

Inclusive education goes beyond infrastructure and enrolment; it also depends on **auxiliary services like midday meals, medical aid, digital classrooms, and emotional counselling**.

Service/Facility	State Schools	Central Schools
Midday Meal	Irregular (Subhash: only Super 100)	Universal and regular
Smart Class	Available	Well-integrated and used daily
Counselling	Basic in CM Rise/Subhash	Professionally staffed
Yoga	Weekly (CM Rise), daily (others)	Daily routine activity
Medical Staff	Basic access	On-campus medical staff

Interpretation:

State schools show partial implementation of welfare schemes, often limiting services to targeted groups (e.g., “Super 100” for gifted students).

In contrast, **Central schools implement NEP 2020-aligned holistic education**, with universal coverage in support services, reflecting better scheme absorption and administrative accountability.

4.6.5 Institutional Culture and Policy Responsiveness

The less tangible but deeply impactful aspect of **institutional culture** — including **leadership quality, administrative responsiveness, and student-teacher interaction** — was captured through informal interviews and observations.

Aspect	State Schools	Central Schools
Leadership Structure	Dependent on state-level decisions	Decentralized but guided by central norms
Response to Maintenance Requests	Delayed, often bureaucratic	Streamlined and quick
Teacher Accountability	Varies significantly	Uniform and performance-based
Innovation in Curriculum Delivery	Moderate (some smart classes)	High (LMS integration, ATL, labs)

Interpretation:

Central schools function with **greater institutional autonomy and accountability mechanisms**, allowing for efficient adaptation and problem-solving.

State schools, though often staffed by committed teachers, suffer from **top-down decision making and limited scope for innovation**, particularly in budgeting and curriculum adaptation.

4.6.6 Summary Comparative Table

Dimension	State Schools	Central Schools
Enrolment Growth	High in CM Rise, stagnating in Subhash	Steady and stable in KV and JNV
Dropout Rate	High (>20%)	Low (<6%)
Gender Sensitivity	Limited in sanitation and counselling	Integrated across facilities and policy
CWSN Inclusion	Minimal, lacks systematic support	Structured inclusion (KV No.3 leads)
Digital Infrastructure	Basic; labs and smart classes underused	Robust; high LMS and ICT usage
Maintenance of	Irregular, often reactive	Proactive, well-supervised

Dimension	State Schools	Central Schools
Facilities		
Extracurricular Activities	Available but inconsistent	Structured programs in sports and arts
Scheme Implementation	Partial; gaps in midday meals and health services	Comprehensive and universally applied

Conclusion

The comparative insights drawn from this research emphasize the **structural and operational advantages enjoyed by Central Government schools**, which manifest in better infrastructure, enrolment stability, gender equity, and holistic education delivery. State schools, particularly CM Rise, show potential and initiative but remain hampered by inconsistent implementation, infrastructural deficits, and administrative inertia.

To close this gap, **a multipronged reform strategy** is essential — one that includes **increased financial allocation, stricter infrastructure norms, improved school leadership, and decentralization of decision-making power** at the state level. Only then can the ideal of **equitable, quality public education** be realized across both arms of India's dual government schooling system.

4.6.7 Summary Table: Key Findings at a Glance

Domain	State Schools (CM Rise, Subhash)	Central Schools (JNV, KV)
Enrolment Growth	High in CM Rise; Stagnant in Subhash	Steady and consistent
Attendance	75–77%	91–92%
Dropout Rate	>20%	<6%
Gender Parity	Near parity with slightly more girls	Perfect parity (especially in KV No. 3)
CWSN Inclusion	Very limited	Advanced support systems (esp. in KV No. 3)
Classroom Facilities	Often overcrowded or	Adequate and well-

Domain	State Schools (CM Rise, Subhash)	Central Schools (JNV, KV)
	under-resourced	maintained
Digital Infrastructure	Low to moderate (few LMS; low ICT use)	High (Smart Class + LMS + full labs)
Library Resources	CM Rise: Weak; Subhash: Moderate	JNV: Strongest; KV: Robust
Sports and Extracurriculars	Limited to basic games	Wide variety + structured activities
Scheme Implementation	Patchy (e.g., meals only for select students)	Universal and institutionalized
Sanitation Facilities	Poor in CM Rise; decent in Subhash	Clean, accessible, well-monitored
Administrative Responsiveness	Delayed or ad hoc	Efficient and centrally monitored

The data analysis yields several key findings that underscore the comparative landscape of secondary education in Bhopal:

- **Enrolment:** CM Rise, a State Government school, demonstrated the highest enrolment growth over the three-year period, while Central Government schools maintained steady, albeit more moderate, enrolment levels.
- **Gender Balance:** KV No.3 achieved near-perfect gender parity in its 2024 enrolment, with CM Rise and Subhash Excellence also reporting slightly higher female enrolment.
- **Infrastructure:** KV No.3 consistently emerged as the best-equipped school across digital, classroom, and safety parameters.
- **CWSN Support:** KV No.3 reported the highest inclusion of Children With Special Needs, indicating more robust inclusive practices.
- **Library Resources:** JNV Ratibad possessed the largest number of books in its library, indicating a strong emphasis on traditional learning resources.
- **Extracurriculars:** Central Government schools (KV No.3 and JNV Ratibad) consistently outperformed State Government schools in offering diverse and structured extracurricular and sports programs.

- **Government Schemes:** Comprehensive implementation of government schemes and support services was predominantly observed in Central Government schools.

4.7 Conclusion

The key findings of this chapter paint a **clear and evidence-backed picture** of the disparities in infrastructure, access, and inclusivity between State and Central Government secondary schools in Bhopal. While all four schools examined serve under public administration and are theoretically governed by national educational standards, the **centralized governance of JNV and KV institutions** has led to significantly **better performance in nearly every educational parameter**.

The most critical insights include:

- **Infrastructure quality is closely correlated with attendance, enrolment consistency, and dropout rates.**
- **Digital inclusion and library resources remain key differentiators** between state and central institutions.
- **Gender-sensitive facilities and support services have a profound impact on female enrolment and retention.**
- **Holistic education requires consistent implementation of auxiliary services**, including smart classrooms, yoga, and midday meals.

These findings set the stage for informed policy recommendations in the following chapter.

5 CHAPTER: Summery, Conclusion and Recommendations

5.1 Introduction

This concluding chapter encapsulates the overall findings, draws nuanced conclusions, and proposes actionable recommendations derived from the study titled **"A Comparative Study of Enrolment and Infrastructure Availability in State Government and Central Government Secondary Schools of Bhopal."** The primary aim is to revisit the research objectives and questions, summarize the key results, offer interpretations based on empirical data, and suggest strategic recommendations for various stakeholders. It also reflects on the study's inherent limitations and suggests promising avenues for future research.

Education remains a pivotal pillar in any nation's socio-economic and cultural development. An effective schooling system relies not only on curriculum and pedagogy but also profoundly on student enrolment, gender parity, and a robust infrastructure that supports equitable access to learning opportunities. The critical need to evaluate and compare these elements between different government-managed educational institutions forms the essence of this research. Education is universally acknowledged as a cornerstone of social and economic development, with schooling infrastructure serving as its foundational pillar. Over the years, India has made substantial progress in expanding access to schooling through both State and Central Government initiatives. However, as this study has shown, a **deep structural divide remains** between different governance models of public secondary education particularly in terms of infrastructure, inclusivity, service delivery, and student outcomes.

It provides a conclusive synthesis of the research, bringing together all strands of the data analysis and interpretations from earlier chapters. It begins with a critical **summary of key findings** that emerged from the comparative study of four secondary schools in Bhopal two managed by the State Government (CM Rise and Subhash Excellence) and two by the Central Government (JNV Ratibad and KV No. 3). These findings are situated within broader educational discourses, including national policy mandates, global development goals (particularly SDG 4), and existing academic literature.

It also articulates **specific conclusions**, drawn from the evidence collected through enrolment records, observational tools, infrastructure audit formats, and stakeholder inputs. These conclusions are not just descriptive; they serve as the basis for **a range of actionable recommendations**, categorized into short-term, medium-term, and long-term strategies for policy and practice.

Additionally, the chapter explores **the alignment (or misalignment) between existing educational theories and real-world institutional practices**, especially as they relate to infrastructure, equity, and governance. It reflects on how Central schools, despite their limited quantity compared to State schools, consistently outperform their State counterparts on nearly every measurable parameter.

5.2 Summary of the Study

The research aimed to systematically examine and compare the enrolment levels and infrastructure availability in State and Central Government secondary schools located in Bhopal. The study included a purposive sample of four schools: two State Government schools (CM Rise and Subhash Excellence) and two Central Government schools (JNV Ratibad and Kendriya Vidyalaya No.3). Data were collected through structured survey schedules, observational checklists, and analysis of school records, complemented by informal interactions with school staff.

The study was framed around the following specific objectives:

- To identify the infrastructure availability in state and central government schools in Bhopal at the secondary level.
- To analyse the infrastructure quality and student enrolment trends of state and central government schools.
- To analyse gender-wise enrolment and its association with available infrastructure.

The methodology adopted was descriptive and comparative in nature, focusing on presenting existing conditions and differences without experimental manipulation. The scope was deliberately limited to these four secondary schools in Bhopal to maintain focus and depth, while acknowledging that this limits the generalizability of the findings to the broader educational landscape.

5.3 Summary of Key Findings

The comprehensive analysis of data from the selected schools yielded several key findings:

- **Enrolment Patterns:** Central Government schools (Kendriya Vidyalayas and Jawahar Navodaya Vidyalayas) generally demonstrated higher and more stable enrolment from Class 9 to Class 12. While State Government schools, particularly CM Rise, showed significant growth, Subhash Excellence's data was less complete.
- **Gender-wise Enrolment:** Central schools, especially KV No.3, exhibited near-perfect gender parity. Interestingly, some State schools like CM Rise and Subhash Excellence showed slightly higher female enrolment, contrasting with broader national disparities.
- **Infrastructure Availability:** Central schools consistently possessed well-maintained and comprehensive facilities, including functional toilets, well-equipped science and computer labs, libraries, playgrounds, and robust security systems. In stark contrast, state schools, particularly Subhash Excellence, showed significant gaps, with many essential infrastructure details marked as "Not Specified" or indicating a lack of functional facilities.
- **Attendance and Dropout:** Central schools reported significantly higher attendance rates (above 90%) and substantially lower dropout rates (below 6%). Conversely, State schools had lower attendance rates (75-77%) and significantly higher dropout rates (over 20%), particularly for girls, often linked to poor sanitation and lack of gender-sensitive facilities.
- **Pupil-Teacher Ratio (PTR):** Central schools maintained a favourable PTR, adhering to national norms (around 17:1), while State schools had a higher PTR (closer to 19:1) with reported teacher shortages.
- **CWSN Support:** Central schools, notably KV No. 3, demonstrated a higher inclusion of Children With Special Needs, indicating more developed inclusive practices.

5.4 Discussion of Findings in Relation to Literature

The findings of this study largely align with and corroborate existing literature and government reports on educational disparities in India. The consistent observation that Central Government schools consistently outperform state-run institutions in terms of infrastructure and enrolment stability resonates with previous research. Studies by the National Institute of Educational Planning and Administration (NIEPA) and the World Bank have consistently underscored that adequate infrastructure is positively correlated with both student enrolment and retention. This study's findings reinforce this established academic consensus: adequate and gender-sensitive infrastructure is not a luxury but a fundamental prerequisite for equitable educational access and retention, particularly for girls and marginalized groups in developing contexts like India.

The specific findings regarding gender-sensitive infrastructure, such as the impact of clean and private toilets on female enrolment and attendance, are strongly substantiated by prior research by Jha and Kelleher (2006) and UNICEF (2020). The higher absenteeism among girls in State schools due to a lack of such facilities, as observed in this study, directly supports these earlier findings. This indicates that the persistence of gender disparities in education, particularly in state schools, is not solely a cultural issue but is deeply intertwined with the tangible lack of gender-sensitive infrastructure, which directly impacts girl's safety, dignity and ultimately, their access and retention in schooling.

The disparities highlighted in this study are not merely institutional but systemic. Central schools benefit from more consistent funding, standardized operating procedures, and central oversight, which allows them to maintain better facilities and attract more stable enrolment. State schools, on the other hand, frequently suffer from budget delays, insufficient maintenance grants and administrative neglect, leading to their infrastructural and enrolment challenges. The study's findings therefore reinforce that achieving educational equity in India requires not just policy formulation but a fundamental shift in governance structures and funding mechanisms to ensure consistent, quality infrastructure across all public schools, especially at the state level.

5.5 Conclusions

Based on the comprehensive analysis of enrolment trends and infrastructure availability in State and Central Government secondary schools in Bhopal, the following conclusions are drawn:

1. **Conducive Learning Environments:** Central Government secondary schools, exemplified by JNV Ratibad and KV No. 3, consistently provide a more conducive and resource-rich learning environment compared to their State Government counterparts. This is evident in their superior infrastructure, better maintenance, and comprehensive support services.
2. **Infrastructural Lag in State Schools:** State Government schools, particularly Subhash Excellence, significantly lag behind in essential infrastructure and often exhibit inconsistent or non-functional facilities. This infrastructural neglect, coupled with uneven policy implementation, directly contributes to their challenges in enrolment and retention.
3. **Impact on Gender Disparities:** Gender disparities in enrolment and attendance in State schools are strongly linked to inadequate sanitation and safety provisions. The lack of gender-sensitive infrastructure, such as functional and clean toilets, disproportionately affects girls' participation and contributes to higher dropout rates among them.
4. **Importance of Quality Inputs:** The availability of well-trained teachers, adequate classroom resources, and supportive learning environments are essential for sustained student engagement and reduced dropout rates. Central schools' better performance is partly attributable to these factors.
5. **Critical Role of Infrastructure:** Infrastructure plays a critical and undeniable role in determining the academic and social success of secondary school students. It is not merely a physical space but a foundational element that influences access, attendance, retention and the overall quality of the educational experience.
6. **Systemic Disparities:** The stark differences observed between State and Central Government schools highlight a systemic inequality within the public education sector. This disparity stems from varying governance structures, financial support mechanisms, and operational oversight, leading to a two-tiered system of public education delivery.

5.6 Recommendations for Policy and Practice

To address the identified disparities and foster equitable and quality secondary education across all government schools in India, a multi-faceted approach involving short-term, medium-term, and long-term interventions is recommended:

5.6.1 Short-term Recommendations:

1. **Immediate Infrastructure Repair and Maintenance:** Prioritize immediate repair and maintenance of critical infrastructure, especially functional toilets and safe classroom environments, in State Government schools. This is crucial for improving daily attendance and creating a basic conducive learning space.
2. **Deployment of Female Staff:** Increase the deployment of female staff, including teachers and support personnel, particularly in girls' sections of State schools. This can enhance safety, comfort and provide role models, thereby encouraging girls' enrolment and retention.
3. **Procurement of Essential Materials:** Ensure the immediate procurement and distribution of essential laboratory equipment, library books and basic learning materials to address immediate resource gaps in under-resourced State schools.[1]
4. **Addressing these immediate infrastructural deficits in state schools** is a critical first step. However, without systemic changes in funding and accountability, these short-term fixes risk becoming temporary bandages rather than sustainable solutions.
5. **Establishment of School Management Committees (SMCs) with Oversight:** Strengthen or establish active School Management Committees (SMCs) with clear mandates for infrastructure maintenance oversight and community accountability. These committees should include parent and community representatives to ensure local ownership and transparency.
6. **Introduction of Digital Learning Tools and Smart Classrooms:** Implement digital learning tools and smart classrooms across all government schools, particularly in State schools, to bridge the digital divide. This requires investment in reliable internet connectivity and digital resources, even if basic, to prepare students for 21st-century skills.
7. **Gender Sensitization Workshops:** Conduct regular gender sensitization workshops for all teachers and staff in government schools. These workshops should focus on creating a gender-inclusive environment, addressing biases,

and understanding the specific needs of girls and CWSN students.

5.6.2 Long-term Recommendations:

1. **Common Quality Framework for Public Schools:** Develop and implement a common quality framework for both State and Central Government schools. This framework should define standardized norms for infrastructure, teacher quality, and student support services, ensuring a baseline of quality across all public institutions.
2. **Centralized Funding and Monitoring for Critical Infrastructure:** Explore models for more centralized funding and monitoring mechanisms for critical infrastructure development and maintenance across all public schools. This could help mitigate the impact of state-level budget delays and ensure equitable resource allocation. A common quality framework and centralized funding/monitoring for infrastructure across all public schools are crucial long-term policy recommendations to truly bridge the systemic disparities, moving beyond the current bifurcated system towards genuine educational equity.
3. **Mandatory Infrastructure Audits:** Institute mandatory, regular, and transparent infrastructure audits at the start of each academic session for all government schools. The results of these audits should be publicly accessible and linked to performance-based funding and accountability mechanisms.
4. **Integration of Infrastructure Goals into Policy:** Educational planners should integrate explicit infrastructure goals into state education policies, ensuring that physical learning environments are recognized as fundamental to achieving broader educational objectives, including those outlined in NEP 2020 and SDG-4.

5.7 Community Involvement:

- **Engagement with Local Bodies and NGOs:** Foster stronger partnerships and engagement with local government bodies, community organizations, and Non-Governmental Organizations (NGOs) for resource mobilization, infrastructure development, and maintenance support.
- **Inclusion of Parent Representatives:** Actively involve parent representatives in school management and decision-making forums. Their direct feedback can provide valuable insights into ground realities and enhance accountability.

5.8 Technology Integration:

- **Digital Attendance Systems:** Implement digital attendance systems in all government schools to improve efficiency and provide real-time data on student presence, aiding in early identification of dropout risks.
- **Online Portals for Reporting Issues:** Establish user-friendly online portals for school staff and community members to report infrastructure issues, facilitating quicker response and maintenance.

As Nelson Mandela famously stated, "Education is the most powerful weapon which you can use to change the world". And as George Washington Carver put it, "Education is the key to unlock the golden door of freedom". These recommendations, if implemented thoughtfully, can help unlock that potential for every child in India.

5.9 Recommendations for Future Research

To build upon the findings of this study and further deepen the understanding of educational dynamics in India, the following avenues for future research are recommended:

- **Longitudinal Study on Infrastructure and Learning Outcomes:** Conduct a longitudinal study to track the long-term effects of improved infrastructure on student learning outcomes, academic performance, and overall well-being. This would provide causal evidence beyond the correlations observed in descriptive studies.
- **Psychological Impact of Facilities:** Explore the psychological impact of poor or inadequate facilities on student motivation, engagement and academic performance. Qualitative methods, such as in-depth interviews with students, could provide rich insights into their experiences.
- **Comparative Studies with Private and Aided Institutions:** Expand comparative studies to include private, aided, and unaided institutions. This would offer a more holistic understanding of the entire educational ecosystem and the choices parents make across different school types.
- **Region-Specific Urban-Rural Disparities:** Conduct more granular, region-specific studies to explore urban-rural disparities in school infrastructure and enrolment, particularly in diverse geographical and socio-economic contexts across India.

- **Impact of Administrative Structures on Resource Utilization:** Research the specific administrative and financial mechanisms in State Government schools that lead to delays in grants and maintenance, and identify best practices for overcoming these systemic bottlenecks.

5.10 Limitations of the Study

Despite its contributions, the present study was subject to several limitations that warrant consideration when interpreting its findings:

- **Small Sample Size and Regional Focus:** The study was limited to a small sample of four schools (two State and two Central Government schools) located exclusively in Bhopal city. This regional and limited sample size significantly restricts the generalizability of the findings to the broader population of schools in Bhopal, other urban centres, or the national context. The results provide valuable insights into these specific cases but cannot be statistically inferred to all similar schools.
- **Data Dependence and Subjectivity:** The study relied on a combination of school records, observations, and informal interactions. While efforts were made to cross-verify data, the assessment of infrastructure quality was partly subjective, based on observational judgment. This introduces a potential for researcher bias in qualitative assessments.
- **Implications of Missing Data:** A critical limitation was the consistent presence of "Not Specified" or incomplete data for Subhash Excellence across multiple infrastructure and support service categories. This missing data impacts the completeness and accuracy of the comparative analysis for this specific school. The absence of verifiable data for key infrastructural elements and services for a significant portion of the State school sample means that the study's ability to draw definitive conclusions about Subhash Excellence, and by extension, the overall picture of state schools, is constrained. This data gap may reflect systemic administrative oversight or a lack of standardized reporting, potentially understating the true extent of infrastructural challenges in some state government schools.
- **Cross-sectional Nature:** The study was limited to data from the academic year 2023–24, providing a cross-sectional snapshot. This design does not allow for the analysis of dynamic changes or long-term trends in enrolment or

infrastructure over extended periods.

- **Limited Scope:** The study exclusively focused on enrolment and infrastructure, consciously excluding other vital aspects of educational quality such as student academic performance, teacher pedagogy, curriculum effectiveness, or the broader socio-economic factors influencing educational outcomes beyond the immediate school environment.

These limitations highlight areas for future research and underscore that the findings, while valuable for specific comparative insights, should be interpreted within the acknowledged boundaries of the methodology.

5.11 Implications of the Study

The findings of this comparative study carry significant implications for various stakeholders involved in educational planning and delivery in India:

- **For Policymakers:** The study underscores the urgent need for uniform infrastructure norms and greater allocation of resources for school maintenance and upgrades across all government schools, particularly at the state level. It highlights that current policy formulations, despite their ambitious goals, need to be matched with more robust implementation and equitable resource distribution to truly bridge the gap between Central and State institutions.
- **For School Administrators:** The research emphasizes the importance of regular infrastructure audits and the establishment of transparent community feedback mechanisms. It calls for a renewed emphasis on cleanliness, safety, and overall student well-being within school premises, recognizing their direct impact on enrolment and retention.
- **For Educational Planners:** The study advocates for the explicit integration of infrastructure goals into state education policy frameworks. It stresses the promotion of equitable access through gender-sensitive planning, ensuring that the unique needs of girls and marginalized groups are addressed in infrastructural development.

5.12 Final Reflections

This study brings into sharp focus the deep infrastructural and systemic gaps that persist between State and Central Government secondary schools in Bhopal. While both operate under public frameworks, their outcomes differ markedly due to variations in governance structures, financial support mechanisms, and operational oversight. The evidence confirms that infrastructure plays a defining role in ensuring equitable and quality education. While Central Government schools largely meet policy expectations, State Government schools frequently lag behind due to fragmented implementation and weak monitoring. This disparity is not merely an observational difference but a consequence of the inherent structural duality of India's education system, where decentralized implementation can lead to unequal opportunities.

The study underscores that achieving educational equity in India requires not just policy formulation but a fundamental shift in governance structures and funding mechanisms to ensure consistent, quality infrastructure across all public schools, especially at the state level. This understanding moves beyond a simple comparison of performance to a deeper appreciation of the systemic factors that shape educational realities. Educational equity remains a fundamental goal of Indian policy, yet its achievement is demonstrably hampered by infrastructure deficits and uneven implementation. As researchers and educators, the commitment should be to bridge these gaps by advocating for strong, actionable, and community-supported interventions that can uplift the quality of public education for every student, regardless of their school affiliation.

5.13 Concluding Thoughts

This dissertation embarked on a focused inquiry into school enrolment and infrastructure, and in doing so, evolved into a nuanced exploration of the strengths and fault lines within India's public education system. The research process, involving direct observation and data collection, illuminated the complexity of on-ground realities that quantitative data alone might obscure. Instances of infrastructural inadequacies evoked a strong sense of urgency, reinforcing the critical need for systemic reform.

5.14 Reaffirming the Research Objectives

The study was meticulously designed to achieve its overarching goals: to examine enrolment trends, evaluate infrastructure facilities, explore gender-wise disparities, analyse the correlation between infrastructure and student retention/attendance, and propose actionable recommendations. Each objective was systematically addressed through empirical data collection, school-level observations, and stakeholder interaction, culminating in a comparative framework that vividly highlights institutional inequities and operational disparities.

5.15 Consolidated Key Findings

The findings consistently affirm that Central Government schools significantly outperform their state counterparts in terms of both enrolment consistency and infrastructure adequacy. Central schools benefit from standardized funding models, better teacher-student ratios, and well-maintained infrastructure, leading to lower dropout rates and higher gender parity. Conversely, State schools struggle with poor sanitation, uneven classroom-teacher ratios, inadequate learning materials, frequent absenteeism and administrative inefficiencies.

5.15.1 Contribution to Knowledge and Practice

This research makes a valuable contribution to existing educational literature by offering a grounded, school-level comparative analysis that highlights the profound impact of infrastructure on student engagement and equity. It further emphasizes the critical role of gender-sensitive planning in educational retention, particularly for girls. In practice, the research encourages education departments, NGOs, and school administrators to adopt more structured and responsive approaches to infrastructure planning and enrolment monitoring, providing a practical framework for guiding future interventions.

5.16 Relevance to Educational Reforms in India

The study's findings directly support several key initiatives of Indian educational reform, including the Samagra Shiksha Abhiyan’s focus on equitable access, the National Education Policy (NEP) 2020’s emphasis on holistic infrastructure and digital integration, and the Swachh Bharat Abhiyan’s focus on hygiene and school sanitation. However, the study also cautions against the limitations of one-size-fits-all models and strongly advocates for localized planning and monitoring mechanisms to ensure

effective implementation.

5.17 Final Call to Action

Education is a fundamental right, not a privilege. Ensuring equitable access to quality secondary education demands not just the formulation of progressive policies but also rigorous, accountable implementation at every level. It

has demonstrated that infrastructure is not merely a background variable but a determinant of equity and quality in public education. The contrasts between State and Central schools are stark, but not insurmountable. With targeted investment, inclusive planning, and decentralized governance, the public school system can be made more equitable and efficient.

This study adds to the growing body of evidence that school infrastructure, when coupled with effective policy implementation, transforms educational outcomes. It is hoped that the findings and recommendations offered here contribute meaningfully to ongoing educational reforms at both state and national levels.

This research issues a clear call to action for policymakers, educational planners, school leaders, and civil society to collaborate effectively:

- **Standardize basic infrastructure norms** across all government schools, ensuring a baseline of quality regardless of administrative affiliation.
- **Prioritize gender inclusivity** in all planning and execution of school development projects, recognizing the unique needs of girls.
- **Encourage participatory school governance** that actively involves community members and parents, fostering local ownership and accountability.
- **Allocate and utilize funds with transparency and urgency**, addressing the systemic financial bottlenecks that hinder infrastructural development in state schools.

The path toward equitable education in India lies in a deep commitment to removing structural barriers and championing student dignity and opportunity across all government institutions.

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Annexure-I

Urban Secondary and Sr. Secondary Schools of Bhopal, Madhya Pradesh State Govt management 2024-25					
S. No.	Block Name	UDISE CODE	School Name	Class from to	School Management
1	BERASIA	23320129258	HSS BOYS, BERASIA CLASS 6 TO 12	6-12	1 - Department of Education
2	BERASIA	23320129259	HSS GIRLS, SAROJINI NAIDU BERASIA	1-12	1 - Department of Education
3	PHANDA	23320203608	HSS SARDAR VALLBH BHAI PATEL BHONRI	9-12	1 - Department of Education
4	PHANDA	23320213705	HSS BARRAI	1-12	1 - Department of Education
5	PHANDA URBAN NEW	23320300142	HSS MAHATMA GANDHI, GANDHI NAGAR	1-12	1 - Department of Education
6	PHANDA URBAN NEW	23320300233	HS NAVAL SHAHA NAYAPURA, LALGHATI	1-10	1 - Department of Education
7	PHANDA URBAN NEW	23320300422	HSS (6-12) MODEL GANDHI NAGAR, PHANDA	6-12	1 - Department of Education
8	PHANDA	2332030	HSS BOYS, BAIRAGARH	1-12	1 - Department of

	URBAN NEW	**0423**			**Education**
9	**PHANDA URBAN NEW**	**2332030 0424**	**HSS GIRLS, BAIRAGARH**	**9-12**	**1 - Department of Education**
10	**PHANDA URBAN NEW**	**2332030 0712**	**HSS GIRLS, KASTURBA**	**1-12**	**1 - Department of Education**
11	**PHANDA URBAN NEW**	**2332030 0807**	**HS BARKHEDI KHURD**	**1-10**	**1 - Department of Education**
12	**PHANDA URBAN NEW**	**2332030 0824**	**HS 25TH BATALIAN BHADBHADA**	**1-10**	**1 - Department of Education**
13	**PHANDA URBAN NEW**	**2332030 0828**	**HSS SURAJ NAGAR, BHADBHADA**	**6-12**	**1 - Department of Education**
14	**PHANDA URBAN NEW**	**2332030 1018**	**HS GIRLS, NEHRU NAGAR (GIRLS)**	**1-10**	**1 - Department of Education**
15	**PHANDA URBAN NEW**	**2332030 1019**	**HSS (9-12), KOTRA SULTANABAD**	**9-12**	**1 - Department of Education**
16	**PHANDA URBAN NEW**	**2332030 1115**	**HSS CHUNA BHATTI**	**1-12**	**1 - Department of Education**
17	**PHANDA URBAN NEW**	**2332030 1202**	**HS SARDAR PATEL**	**1-10**	**1 - Department of Education**

18	**PHANDA URBAN NEW**	**2332030 1219**	**HSS GIRLS, NAVEEN TULSI NAGAR**	**1-12**	**1 - Department of Education**
19	**PHANDA URBAN NEW**	**2332030 1328**	**HSS GIRLS, KAMLA NEHRU, TIN SHED**	**1-12**	**1 - Department of Education**
20	**PHANDA URBAN NEW**	**2332030 1331**	**HSS (6-12) GIRLS RESIDENCAL SANSHKRIT VIDHAYALAY T.T. NAGAR**	**6-12**	**1 - Department of Education**
21	**PHANDA URBAN NEW**	**2332030 1419**	**HSS BOYS, NUTAN SUBHASH**	**1-12**	**1 - Department of Education**
22	**PHANDA URBAN NEW**	**2332030 1711**	**HSS EXCELLENCE, SUBHASH, SHIVAJI NAGAR**	**9-12**	**1 - Department of Education**
23	**PHANDA URBAN NEW**	**2332030 1712**	**HSS GIRLS, SAROJINI NAIDU, SHIVAJI NAGGR**	**1-12**	**1 - Department of Education**
24	**PHANDA URBAN NEW**	**2332030 1807**	**HS MACHNA COLONY (1464)**	**1-10**	**1 - Department of Education**
25	**PHANDA URBAN NEW**	**2332030 1902**	**HS ASHOK NAGAR**	**1-10**	**1 - Department of Education**
26	**PHANDA URBAN NEW**	**2332030 2007**	**HSS ARERA COLONY NAVEEN (OLD CAMPION)**	**1-12**	**1 - Department of Education**
27	**PHANDA**	**2332030**	**HSS RAJA BHOJ (1100 QR.)**	**1-12**	**1 - Department of**

	URBAN NEW	2110			Education
28	PHANDA URBAN NEW	2332030 2432	HSS MISROD	1-12	1 - Department of Education
29	PHANDA URBAN NEW	2332030 2442	HSS BAWADIYA KALA	1-12	1 - Department of Education
30	PHANDA URBAN NEW	2332030 2539	HSS BAGH SEVANIA	1-12	1 - Department of Education
31	PHANDA URBAN NEW	2332030 2602	HS BARKHEDA PATHANI	1-10	1 - Department of Education
32	PHANDA URBAN NEW	2332030 2709	HS HABIBGANJ	1-10	1 - Department of Education
33	PHANDA URBAN NEW	2332030 2913	HSS GIRLS, GOVINDPURA, BHEL	1-12	1 - Department of Education
34	PHANDA URBAN NEW	2332030 3020	HSS GIRLS, BARKHEDA, BHEL	1-12	1 - Department of Education
35	PHANDA URBAN NEW	2332030 3021	HSS MAHATMA GANDHI BHEL	1-12	1 - Department of Education
36	PHANDA URBAN NEW	2332030 3134	HSS (9-12) KHAJURI KALAN	9-12	1 - Department of Education

37	**PHANDA URBAN NEW**	**23320303319**	**HSS ANAND NAGAR**	**1-12**	**1 - Department of Education**
38	**PHANDA URBAN NEW**	**23320303428**	**HSS NARELA SHANKARI**	**1-12**	**1 - Department of Education**
39	**PHANDA URBAN NEW**	**23320303905**	**HSS DR. SHYAMA PRASAD MUKHARJEE KOLAR AKBARPUR**	**6-12**	**1 - Department of Education**
40	**PHANDA URBAN NEW**	**23320304305**	**HS BAIRAGARH CHHICHLI**	**1-10**	**1 - Department of Education**
41	**PHANDA URBAN OLD**	**23320400117**	**HSS AHAMDABAD**	**1-12**	**1 - Department of Education**
42	**PHANDA URBAN OLD**	**23320400254**	**HS UBEDIYA**	**1-10**	**1 - Department of Education**
43	**PHANDA URBAN OLD**	**23320400255**	**HSS GIRLS, HAMIDIA NO. 1**	**1-12**	**1 - Department of Education**
44	**PHANDA URBAN OLD**	**23320400256**	**HSS GIRLS, HAMIDIA NO. 2**	**1-12**	**1 - Department of Education**
45	**PHANDA URBAN OLD**	**23320400337**	**HS BAGH MUFTI**	**1-10**	**1 - Department of Education**
46	**PHANDA**	**2332040**	**HS RAFIQUIA URDU**	**1-10**	**1 - Department of**

	URBAN OLD	**0421**			**Education**
47	**PHANDA URBAN OLD**	**2332040 0515**	**HSS BOYS, MODEL SHAHJAHANABAD**	**1-12**	**1 - Department of Education**
48	**PHANDA URBAN OLD**	**2332040 0516**	**HSS GIRLS, SULTANIA**	**1-12**	**1 - Department of Education**
49	**PHANDA URBAN OLD**	**2332040 0636**	**HSS NISHATPURA**	**1-12**	**1 - Department of Education**
50	**PHANDA URBAN OLD**	**2332040 0743**	**HS PUTLIGHAR**	**1-12**	**1 - Department of Education**
51	**PHANDA URBAN OLD**	**2332040 0826**	**HS ARIF NAGAR**	**1-10**	**1 - Department of Education**
52	**PHANDA URBAN OLD**	**2332040 0827**	**HSS CHHOLA**	**1-12**	**1 - Department of Education**
53	**PHANDA URBAN OLD**	**2332040 0937**	**HS KAJI CAMP**	**1-10**	**1 - Department of Education**
54	**PHANDA URBAN OLD**	**2332040 1127**	**HSS BOYS, STATION AREA**	**1-12**	**1 - Department of Education**
55	**PHANDA URBAN OLD**	**2332040 1314**	**HSS JAHANGIRIA**	**1-12**	**1 - Department of Education**

56	**PHANDA URBAN OLD**	**2332040 1429**	**HSS HAMIDIA BOYS SCHOOL (CLASS NURSERY TO 12) GINNORI**	**1-12**	**1 - Department of Education**
57	**PHANDA URBAN OLD**	**2332040 1610**	**HSS SCHOOL, VIDHYA VIHAR**	**1-12**	**1 - Department of Education**
58	**PHANDA URBAN OLD**	**2332040 1811**	**HS TATYA TOPE**	**1-10**	**1 - Department of Education**
59	**PHANDA URBAN OLD**	**2332040 1926**	**HSS GIRLS, BARKHEDI, JAHANGIRABAD**	**1-12**	**1 - Department of Education**
60	**PHANDA URBAN OLD**	**2332040 1927**	**HSS GIRLS, JAHANGIRABAD**	**1-12**	**1 - Department of Education**
61	**PHANDA URBAN OLD**	**2332040 1928**	**HSS BOYS, MAHARANA PRATAP**	**9-12**	**1 - Department of Education**
62	**PHANDA URBAN OLD**	**2332040 2032**	**HSS GIRLS, STATION AREA**	**1-12**	**1 - Department of Education**
63	**PHANDA URBAN OLD**	**2332040 2135**	**HSS SEMRA KALAN**	**1-12**	**1 - Department of Education**
64	**PHANDA URBAN OLD**	**2332040 2136**	**HSS CHANDBAD**	**1-12**	**1 - Department of Education**
65	**PHANDA**	**2332040**	**HS BAG UMRAO DULHA**	**1-10**	**1 - Department of**

	URBAN OLD	2295			Education
66	PHANDA URBAN OLD	23320402629	HSS LAXMI MANDI	1-12	1 - Department of Education
67	PHANDA URBAN OLD	23320402861	HS BHANPUR	1-10	1 - Department of Education
68	PHANDA URBAN OLD	23320402922	HSS MALIKHEDI	9-12	1 - Department of Education
69	PHANDA URBAN OLD	23320403010	HS NAI JAIL	1-10	1 - Department of Education
70	PHANDA URBAN OLD	23320403172	HSS PALASI CLASSS 1 TO 12	1-12	1 - Department of Education
71	PHANDA URBAN OLD	23320403275	HSS KAROND (SARDAR VALLABH BHAI)	1-12	1 - Department of Education
72	PHANDA URBAN NEW	23320302540	GYANODAYA VIDHYALAYA (RES) SC HSS, KATARA HILL	6-12	2 - Tribal Welfare Department
73	PHANDA URBAN NEW	23320302552	HSS EKLAVYA ADARSH AWASIYA VIDHYALAYA (GURUKULAM) BAWADIYA KALAN	6-12	2 - Tribal Welfare Department
74	PHANDA URBAN OLD	23320400257	HSS (SW) DEAF, PARI BAZAR	1-12	90 - Social welfare Department

Annexure-II

DATA COLLECTION TOOL

(Questionnaire and checklists)

Title: *A Comparative Study of Enrolment and Infrastructure Availability in Central and State Government Secondary Schools of Bhopal.*

Section 1: Basic Details

Name of the School: _____

Type of School: Central/State

Year of Establishment: _____

Total Student Enrolment: _____

Total Teaching Staff: _____

Total Non-Teaching Staff: _____

Section 2: Enrolment Data (To be-filled based on school records)

Total number of students enrolled in the last three academic years:

Year 2024 (____): Boys ____ Girls ____

Class 9 Boys ____ Girls ____	Class 11 Boys ____ Girls ____
Class 10 Boys ____ Girls ____	Class 12 Boys ____ Girls ____

Year 2023 (____): Boys ____ Girls ___

Class 9 Boys ____ Girls ____	Class 11 Boys ____ Girls ____
Class 10 Boys ____ Girls ____	Class 12 Boys ____ Girls ____

Year 2022 (____): Boys ____ Girls ____

Class 9 Boys ____ Girls ____	Class 11 Boys ____ Girls ____
Class 10 Boys ____ Girls ____	Class 12 Boys ____ Girls ____

Number of CWSN (Children with special needs) ( ) : Boys Girls

Section 2: Infrastructure Resources (Observation checklist)

Classrooms:

Total number of classrooms: ____

Condition: Good / Average / Poor

Sanitation Facilities:

Separate toilets for boys and girls: Yes / No

Number of toilets: Boys ____ Girls ____

Availability of running water: Yes / No

Handwashing facilities: Yes / No

Availability of drinking water: Yes / No

Library and Learning Resources:

Library available: Yes / No

Number of books: _____

Availability of relevant books and magazines: _____

Digital learning resources available: Yes / No

Library Management system _____

Laboratory Facilities:

Science labs available: _____

Language labs available: _____

Atal Tinkering lab available: _____

Computer labs available: _____

Periods assigned for lab: _____

Number of computers in working condition: _____

Playground and Extracurricular Facilities:

Playground available: Yes / No

Sports equipment available: Yes / No

Periods assigned for game: _____

Name of available Indoor sports _____

Name of available outdoor sports _____

Electricity and Internet Access:

Continuous electricity supply: Yes / No

Internet access: Yes / No

Fire safety equipment

Availability of CCTV _____

Govt. Scheme (For Government Schools):

Meal provided regularly: Yes / No

Quality of food: Good / Average / Poor

Smart Classroom: Yes / No

Guidance and counselling

Career guidance sessions

Time to time counselling Session

Adolescence Education

Pariksha Pei Charcha

Medical facilities

Yoga classes _____

Cleanliness drive _____

Availability of medical staff _____