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# **An Empirical Analysis of Revenue Deficit of Central Government: Trends, Causes and Consequences**

Dr. Meenu Soni\*

## **ABSTRACT**

The revenue deficit, a fundamental concept in Public Finance, refers to the excess of a government's revenue expenditure over its revenue receipts. It is a critical indicator of a government's fiscal health, reflecting its ability to manage its finances and allocate resources effectively. A persistent revenue deficit can have far-reaching consequences, including arise in Public Debt, inflation and reduce fiscal space for development expenditure. The revenue deficit of the central government is a pressing concern that requires immediate attention. The Government must take a comprehensive and multi-pronged approach to address the revenue deficit and ensure fiscal sustainability. This requires a commitment to fiscal discipline, improved governance, and a willingness to implement difficult but necessary reforms.

## **INTRODUCTION**

The revenue deficit, a fundamental concept in Public Finance, refers to the excess of a government's revenue expenditure over its revenue receipts. It is a critical indicator of a government's fiscal health, reflecting its ability to manage its finances and allocate resources effectively. A persistent revenue deficit can have far-reaching consequences, including arise in Public Debt, inflation and reduce fiscal space for development expenditure. In the context of a country, the revenue deficit has emerged as a persistent concern, with significant implications for economic stability and growth. The Central Government revenue deficit, has been a subject of debate among policymakers, economists, and researchers. This paper seeks to contribute to this debate by examining the trends, causes and consequences of

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central government's revenue deficit, with a view to identifying policy options for addressing this critical fiscal challenge.

## **OBJECTIVES OF THE PAPER**

- To study the trends and pattern of revenue deficit of the central government over a specific period.
- To identify the underlying causes of revenue deficit of the central government including factor such as tax policies, expenditure pattern and economic conditions.
- To examine the consequences of revenue deficit of the central government including its effect on public debt, inflation, and fiscal sustainability.
- To recommend policy options and strategies for addressing the revenue deficit and promoting fiscal stability.

## **RESEARCH METHODOLOGY**

The present study is based on secondary data only. The main data sources are budget documents of India and State Governments (various years), Handbook of Statistics on Indian Economy, Reserve Bank of India Bulletins and Economic Surveys of various years, Reports of Finance Commission, Plan documents etc. The period of study has been covered from 1990-91 to 2020-21.

## **WHAT IS REVENUE DEFICIT AND ITS CAUSES**

A central government revenue deficit occurs when its total revenue expenditure exceeds its total revenue receipts, meaning its spending on regular operations is greater than its income from taxes and other sources.

Formula for Calculating Revenue Deficit

The effective revenue deficit formula is as follows:

Revenue Deficit = Total Revenue Expenditure – Total Revenue Receipts

Here's a more detailed explanation of the causes of a revenue deficit:

### **Increased Expenditure**

Rising Social Welfare Spending: Increased spending on social programs, subsidies, and unemployment benefits can strain government finances.

**Salaries and Wages:** Higher salaries for government employees and increased pension payments can contribute to higher revenue expenditure.

**Interest Payments on Debt:** A large national debt means higher interest payments, which are a recurring revenue expenditure.

**Increased Capital Expenditure:** Spending on infrastructure, public buildings, and other developmental projects can also lead to a revenue deficit if not offset by increased revenue.

**Unexpected Events:** Natural disasters, economic crises, or wars can lead to unforeseen and large increases in government spending.

## REDUCED REVENUE

**Economic Slowdown:** During economic downturns, tax revenues (like income tax and corporate tax) tend to fall as economic activity declines.

**Tax Evasion and Avoidance:** If tax collection is weak or there are loopholes that allow tax evasion, government revenue can be lower than expected.

**Falling Tax Rates:** Reducing tax rates, even if intended to stimulate the economy, can lead to a short-term revenue deficit if spending isn't adjusted accordingly.

**Declining Economic Growth:** If the economy is not growing at a sufficient rate, the tax base may not expand, leading to lower tax revenues.

**Global Economic Conditions:** External factors like changes in global commodity prices or trade wars can negatively impact a country's export revenues and tax collection.

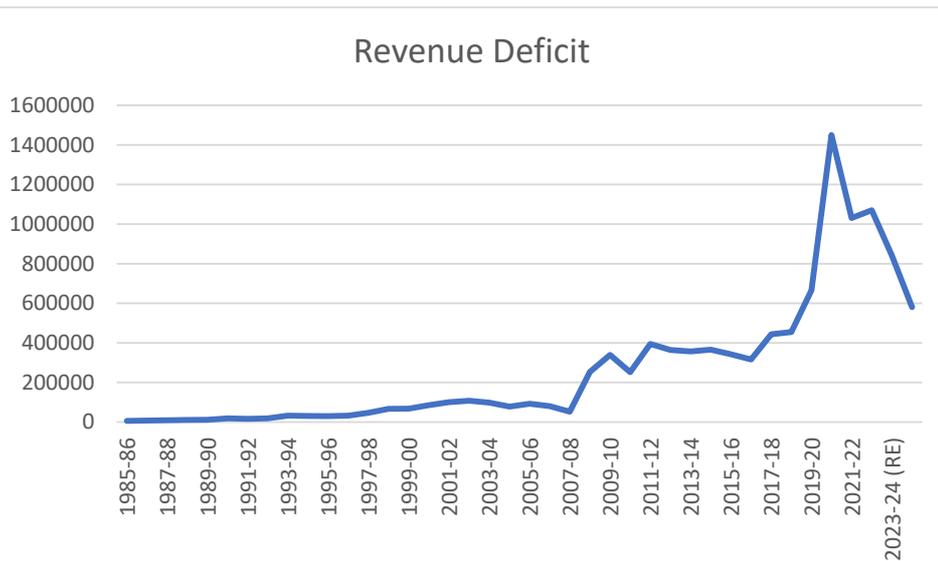
**Table1: Revenue Deficit of the Central Government (Rupees crores)**

Year	Revenue Deficit
1985-86	5889
1986-87	7777
1987-88	9137
1988-89	10515
1989-90	11914
1990-91	18562
1991-92	16261
1992-93	18574
1993-94	32716

<b>Year</b>	<b>Revenue Deficit</b>
1994-95	31029
1995-96	29731
1996-97	32654
1997-98	46449
1998-99	66976
1999-00	67596
2000-01	85234
2001-02	100162
2002-03	107879
2003-04	98261
2004-05	78338
2005-06	92300
2006-07	80222
2007-08	52569
2008-09	253539
2009-10	338998
2010-11	252252
2011-12	394348
2012-13	364282
2013-14	357048
2014-15	365519
2015-16	342736
2016-17	316381
2017-18	443600
2018-19	454483
2019-20	666545
2020-21	1449599
2021-22	1031021
2022-23	1069926
2023-24 (RE)	840527
2024-25(BE)	580201

Source: Handbook on Statistics of Indian Economy, 2023-24, Reserve Bank of India

## Graphical representation of revenue deficit of Central Government.



The revenue deficit of the Central Government is a crucial indicator of fiscal health, representing the gap between revenue expenditure and revenue receipts. Analysing the data from 1985-86 to 2024-25 reveals several significant insights into the trends, causes, and consequences of this deficit.

### TRENDS IN REVENUE DEFICIT (1985-2025)

The data shows a sharp rise in revenue deficit over the years. From ₹5,889 crore in 1985-86, it surged to a staggering ₹14,49,599 crore in 2020-21, reflecting the growing fiscal imbalance. Key observations include:

- **1985-2000:** A steady increase from ₹5,889 crore in 1985-86 to ₹67,596 crore in 1999-2000, driven by rising social expenditure and economic reforms.
- **2000-2010:** A dramatic rise, reaching ₹3,38,998 crore in 2009-10 due to post-global financial crisis stimulus measures.
- **2010-2020:** Fluctuations with a peak of ₹6,66,545 crore in 2019-20, reflecting rising subsidies and revenue shortfalls.
- **Pandemic Impact (2020-21):** The COVID-19 crisis led to an unprecedented deficit of ₹14,49,599 crore, driven by revenue collapse and emergency spending.

- **Post-pandemic Recovery:** Revised estimates (RE) and budget estimates (BE) show a decline to ₹5,80,201 crore by 2024-25, indicating fiscal consolidation efforts.

## CONSEQUENCES OF REVENUE DEFICIT OF CENTRAL GOVERNMENT

Here are some potential consequences of the revenue deficit of the central government.

- **Increased Public Debt:** A persistent revenue deficit can lead to an increase in public debt, as government may borrow more to finance its expenditure.
- **Inflation:** Excessive borrowing to finance the revenue deficit can lead to an increase in money supply, causing inflation.
- **Reduce Fiscal Space:** A high revenue deficit can reduce the government's fiscal space, making it difficult to allocate resources for development expenditure.
- **Crowing out Private Investment:** High government borrowing to finance the revenue deficit can crowd out private investment as interest rate may rise.
- **Reduce Credit Rating:** A persistent revenue deficit can lead to a reduction in the government's credit rating, making it more expensive to borrow.
- **Increased dependence on borrowing:** A revenue deficit can lead to an increased dependence on borrowing making the government vulnerable to changes in interest rate.
- **Reduced ability to respond to Economic Shocks:** A high revenue deficit can reduce the government's ability to respond to economic shocks such as recession.
- **Inequitable distribution of resources:**

A revenue deficit can lead to an inequitable distribution of resources, as the government may prioritize expenditure on certain sectors or groups over others.

## RECOMMENDATIONS TO CORRECT REVENUE DEFICIT OF THE CENTRAL GOVERNMENT

Some of the potential recommendations to correct the revenue deficit of the central government are:

1. Review and rationalize tax exemptions to increase tax revenue.
2. Strengthen tax administration and improve tax compliance to reduce tax evasion.

3. Consider increasing tax rates, especially for high income individuals and companies.
4. Broaden the tax base by bringing more people and businesses under the tax net.
5. Reduce subsidies especially those who are not targeted or are inefficient.
6. Review and rationalise expenditure to eliminate waste and inefficiency.
7. Prioritize expenditure on essential sectors such as education, healthcare and infrastructure.
8. Improve public financial management by strengthening budgeting, accounting and auditing systems.
9. Consider disinvestment of public sector enterprises to raise revenue.
10. Encourage public-private partnership to finance infrastructural projects.

By implementing these recommendations, the central government can reduce fiscal deficit and achieve fiscal sustainability.

## CONCLUSION

The revenue deficit of the central government is a pressing concern that requires immediate attention. The Government must take a comprehensive and multi-pronged approach to address the revenue deficit and ensure fiscal sustainability. This requires a commitment to fiscal discipline, improved governance, and a willingness to implement difficult but necessary reforms.

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# Status of Migration: A Case of Darbhanga District

Radha Jha\*

## ABSTRACT

The transformation of Darbhanga through migration is also evident in the changes it has wrought on local economies. The inflow of remittances from urban centres has become a vital source of income for many rural households, fostering entrepreneurial ventures and stimulating local markets (Rodgers et al., 2013). These economic shifts have the potential to drive long-term development and social change. Yet, the benefits of such growth are unevenly distributed. While some segments of the population experience improved living standards, others remain trapped in cycles of poverty and marginalization (World Bank, 2016). This disparity underscores the need for targeted interventions that not only promote economic growth but also address the deep-seated inequities that underlie the migratory process. The transformation of Darbhanga through migration is also evident in the changes it has wrought on local economies. The inflow of remittances from urban centres has become a vital source of income for many rural households, fostering entrepreneurial ventures and stimulating local markets

**Keywords:** Migration, Transformation, Darbhanga, Market, Marginalization

## INTRODUCTION

Migration has been a defining phenomenon in India's socio-economic and political landscape for decades (Yang, 1979; De Haan, 1999). In regions like Darbhanga District, located in the northern part of Bihar, the movement of labour is not only a matter of economic survival but also a significant factor that shapes local political dynamics (Rodgers et al., 2013). This chapter delves into the status of migration by examining its historical roots, current trends, and socio-economic underpinnings (Stark & Bloom, 1985).

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At the same time, it discusses how these migration patterns intersect with the political inclusion of migrant labour—a central theme of this thesis (Datta, 2016a). The chapter argues the background of migration in India and the specific context of Darbhanga District. It then moves on to describe the evolution of migration patterns from historical times to the present day (Ravenstein, 1885). By exploring the socio-economic drivers and policy frameworks that influence migration (Prasad et al., 1988; MGNREGA, 2006), the chapter seeks to provide a holistic view of how and why people migrate. Finally, it examines the impact of these migratory movements on political participation, highlighting both challenges and opportunities for migrant communities seeking inclusion in local governance structures (Rodgers & Rodgers, 2011).

#### Movements and Migration: Focusisng Darbhanga District

To fully understand the phenomenon of migration in Darbhanga and its broader implications, it is essential to consider the long and complex history of population movements in India (De Haan, 2002). From ancient times to the modern era, migration has been both a natural process of human settlement and a response to specific economic and political pressures (Yang, 1979). In the early centuries, movements were largely determined by the search for arable land, water resources, or trade opportunities (Lewis, 1954). Villages and small settlements were established in fertile river basins, and these early migratory flows laid the foundations for the complex social and economic networks that exist today (Ravenstein, 1885). As kingdoms rose and fell, the political boundaries of regions like Bihar were redrawn repeatedly, and with each change came new patterns of movement (De Haan, 1999). These shifts were often marked by periods of stability interspersed with times of rapid change, where large groups of people migrated either voluntarily or as a result of conflict or environmental change (Stark & Bloom, 1985).

The colonial period brought even more dramatic shifts. Under British rule, traditional agrarian structures were transformed through the introduction of new revenue systems and the exploitation of natural resources (Prasad et al., 1988). The colonial administration's policies, aimed at maximizing extraction and restructuring local economies, forced many rural inhabitants into migratory patterns that had long-lasting consequences (De Haan, 2002). Railways and modern transport networks, introduced during this era, further facilitated the movement of labour from the countryside to burgeoning urban centres (Rodgers & Rodgers, 2011). Darbhanga,

with its rich cultural heritage and historical significance, became intertwined with these broader national and international trends (Datta, 2016a). The economic opportunities presented in urban centres, however, were not distributed equally. Instead, they often came with significant challenges—such as limited job security and exploitative working conditions—that have continued to affect migrant labour long after independence (Roy, 2016).

Following independence, India embarked on an ambitious journey of nation-building and industrialization (Todaro, 1969). The post-independence period was characterized by the quest to transform a predominantly agrarian society into a modern, industrialized nation (Harris & Todaro, 1970).

Although various government initiatives were launched to promote rural development, many regions like Darbhanga continued to experience significant challenges (Prasad, 1989). Agricultural productivity in these areas remained low due to factors such as outdated farming techniques, land fragmentation, and recurrent environmental stresses (Prasad et al., 1988). Faced with limited opportunities at home, many families began to view migration as a viable strategy for economic improvement (Stark & Bloom, 1985). This transition was not sudden but evolved over decades, as successive generations adapted to a new economic reality where rural livelihoods could no longer sustain the rapidly growing population (Datta, 2016b).

In contemporary times, migration from Darbhanga has taken on new dimensions. While historical patterns were often characterized by seasonal or temporary movements, today there is a growing trend toward more permanent relocation (Roy, 2016). This change is driven by a combination of factors, including the allure of better educational facilities, improved healthcare, and the promise of a modern lifestyle in urban centres (World Bank, 2016). The youth, in particular, are increasingly drawn to cities where they perceive greater opportunities for personal and professional growth (Hugo, 2016). This shift has profound implications not only for the economic fabric of Darbhanga but also for its social and political life. As a significant portion of the working-age population migrates to urban areas, the district experiences both the loss of human capital and the creation of new networks that span vast geographic distances (Rodgers & Rodgers, 2011).

The socio-economic drivers of migration in Darbhanga are complex and multifaceted. Economic hardship remains one of the most compelling factors pushing individuals to leave their ancestral homes (Nayyar & Kim, 2018). For many families, traditional agriculture has become less viable due to a combination of environmental

degradation, fluctuating market prices, and limited access to modern agricultural inputs (Prasad et al., 1988).

Consequently, the promise of steady wage employment in urban centres becomes irresistible (Stark & Lucas, 1988). Yet, migration is not merely an economic transaction; it is also a deeply social process. Social networks and family ties play a critical role in facilitating the movement of people (Massey, 1990). When one family member finds employment in a distant city, it often creates a ripple effect, enabling other relatives to follow suit (Rodgers & Rodgers, 2011). These networks not only provide practical assistance—such as help with housing and job placement—but also offer emotional support during the challenging transition from rural to urban life (Datta, 2016b).

Furthermore, the cultural dynamics in Darbhanga add another layer of complexity to the migratory experience. Traditional norms and values have historically shaped the way communities respond to change (Appadurai, 2004). In many cases, migration is seen not only as an economic necessity but also as a rite of passage—a means of achieving social mobility and modernity (Punch, 2007). For younger generations, the decision to migrate is intertwined with aspirations for a better future, one where they can escape the limitations imposed by traditional rural life (Datta, 2016a).

Yet, this drive for change is accompanied by a sense of ambivalence. Migrants often grapple with the loss of cultural continuity and the challenge of reconciling their rural identities with urban realities (Boccagni & Baldassar, 2015). The negotiation of these dual identities can be both enriching and disorienting, as migrants seek to forge new paths while remaining connected to their roots (Mitra, 2010).

Policy frameworks at the national and state levels have played a pivotal role in shaping migration trends in India (GOI, 2002). Over the years, various initiatives have been implemented with the aim of mitigating the adverse effects of migration and supporting rural development (MGNREGA, 2006). Programs such as the Mahatma Gandhi National Rural Employment Guarantee Act were designed to provide a safety net for rural populations, yet their impact has been uneven (Deshingkar & Grimm, 2005). While such policies have provided temporary relief in some areas, they have not always addressed the underlying structural issues that drive migration (Himanshu et al., 2011). In many cases, bureaucratic inefficiencies and resource constraints have hindered the effective implementation of these initiatives (Rodgers et al., 2013).

As a result, despite government efforts, the economic disparities between rural and urban areas persist, continuing to fuel the cycle of migration (World Bank, 2016). The political dimensions of migration add yet another critical aspect to this discussion. In many parts of India, migrant labourers find themselves politically marginalized despite their significant contributions to the economy (Bhagat, 2011). Their transient status, coupled with administrative hurdles such as voter registration challenges and residency requirements, often excludes them from the political process (Massey, 1990). In Darbhanga, this exclusion has broader implications for local governance and democratic participation (Rodgers & Rodgers, 2011).

When large segments of the population are unable to exercise their political rights, the democratic process is weakened, and the voices of the most vulnerable remain unheard (Castles, 2017). This dynamic poses a significant challenge for policymakers, who must balance the economic imperatives of migration with the need for political inclusion and representation (Nayyar & Kim, 2018).

In recent years, there has been a growing recognition of the need to address these issues holistically. Researchers, policymakers, and civil society organizations are increasingly advocating for reforms that integrate economic development with social justice (Deshingkar et al., 2006). Initiatives aimed at simplifying voter registration processes, enhancing social security measures, and promoting inclusive governance are seen as essential steps toward empowering migrant communities (Roy, 2016). These efforts underscore the importance of recognizing migration not merely as a temporary phenomenon but as a permanent feature of the socio-political landscape (Stark & Bloom, 1985). The challenge, then, is to develop policy frameworks that are responsive to the needs of a mobile population, ensuring that migrant labourers are not only economically secure but also politically empowered (Bhagat, 2011).

The interplay between economic necessity and political marginalization creates a complex web of challenges that require nuanced solutions. For instance, while the economic benefits of migration—such as remittances and increased household incomes—are undeniable, these gains often come at the cost of social dislocation and political disenfranchisement (Rodgers & Rodgers, 2011). Migrants who leave their home districts in search of better opportunities frequently find themselves caught between two worlds: the traditional, agrarian society they left behind and the fast-paced, often impersonal urban environments they enter (Massey, 1990). This liminal existence can lead to feelings of alienation and a lack of belonging,

which in turn affect their willingness and ability to engage in local political processes (Datta, 2016b).

Moreover, the cultural transformations that accompany migration are profound. As migrants integrate into urban societies, they bring with them rich traditions and cultural practices that can enrich the social fabric of their new communities (Boccagni & Baldassar, 2015). However, these contributions are not always recognized or valued by the mainstream (Appadurai, 2004).

Instead, migrant cultures are often seen as peripheral or transient, further marginalizing those who already face significant social and economic challenges (Punch, 2007). The tension between preserving cultural heritage and adapting to new social norms is a recurring theme in the narratives of migrant communities. It is this very tension that highlights the need for inclusive policies that honor the diversity of experiences and identities within the migratory landscape (Mitra, 2010).

The transformation of Darbhanga through migration is also evident in the changes it has wrought on local economies. The inflow of remittances from urban centres has become a vital source of income for many rural households, fostering entrepreneurial ventures and stimulating local markets (Rodgers et al., 2013). These economic shifts have the potential to drive long-term development and social change. Yet, the benefits of such growth are unevenly distributed. While some segments of the population experience improved living standards, others remain trapped in cycles of poverty and marginalization (World Bank, 2016). This disparity underscores the need for targeted interventions that not only promote economic growth but also address the deep-seated inequities that underlie the migratory process (Deshingkar & Grimm, 2005).

## CONCLUSION

Technological advancements have further transformed the migratory experience in Darbhanga. The advent of mobile technology and digital communication has made it easier for migrants to stay connected with their home communities, access information, and navigate the complexities of urban life (Hugo, 2016). Social media platforms have emerged as powerful tools for networking, advocacy, and community mobilization (Datta, 2016a). They provide migrants with a virtual space where they can share experiences, seek support, and organize collective actions aimed at improving their working and living conditions.

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# Environment, Social and Governance Matters for Business – A Study on Environmental Stewardship of Prime Indian Companies

Dr. Pooja Bhagwan\*

## ABSTRACT

Sustainability has become the keystone of corporate growth and invention, as companies globally target to poise productivity with environmental responsibility. In India, sustainability has transformed from a buzzword to a core strategy, with leading organizations supporting eco-friendly initiatives, social programs, and resource efficacy. Green finance and digital finance are keystones of sustainable evolution. The use of multiple green financing initiatives, results in a considerable decrease in commercial CO<sub>2</sub>, which encompasses environmental defense and approves the green economic recovery. FinTech development helps in reduction of CO<sub>2</sub> emissions, making a favourable contribution. Various corporate organisations have become world leaders in green finance strategy implementation, and authorities must speed up the growth of green recapture and strengthen banking institutions' capacity to provide green loans. FinTech and green finance, have a noteworthy influence on green economic development.

**Keywords:** Environment, Corporate, Governance, Social, sustainable goals

## INTRODUCTION

Green finance and digital finance are keystones of sustainable evolution. The use of multiple green financing initiatives, results in a considerable decrease in commercial CO<sub>2</sub>, which encompasses environmental defense and approves the green economic recovery. FinTech development helps in reduction of CO<sub>2</sub> emissions, making a favourable contribution. Various corporate organisations have become world leaders in green finance strategy implementation, and authorities must speed up the growth of green recapture and strengthen banking institutions' capacity to

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provide green loans. FinTech and green finance, have a noteworthy influence on green economic development.

Sustainability has become the keystone of corporate growth and invention, as companies globally target to poise productivity with environmental responsibility. In India, sustainability has transformed from a buzzword to a core strategy, with leading organizations supporting eco-friendly initiatives, social programs, and resource efficacy.

## **LITERATURE REVIEW**

Merton (1987) points out in his study that when a large group of investors ignore certain stocks, say low ESG stocks, they can become undervalued. While this implies initial low returns, subsequently those stocks will have high returns relative to high ESG stocks. Even if the undervaluation is permanent, then a low stock price implies a high dividend/price ratio, hence higher returns.

Heinkel, Kraus and Zechner (2001) analyze such a situation in a theoretical model. If firms can obtain a lower cost-of-capital by attracting more ESG-conscious investors by changing their behavior, then the effect on the cost-of-capital, hence on expected returns, is alleviated. Such actions could include making more environmentally friendly investments or improving employees' working conditions.

Grossman and Stiglitz, (1980) analysed that ESG investing might not be sufficiently widespread to affect prices. Alternatively, arbitrageurs could offset any effect of ESG investors by trading in the opposite direction. Still, with costly arbitrage fully offsetting effect should not be expected as arbitrageurs need to be compensated for their efforts

Borgers, Derwall, Koedijk and ter Horst (2013) show that the ESG outperformance disappears after the initial sample period in Kempf and Osthoff. Also, they show evidence that the high returns in the initial sample period were due to market underreaction.

## **OBJECTIVE**

The objective of this paper is to provide information related to top Indian companies that are setting benchmarks for ESG concern. The data is based on reliable sources of secondary information available for applied social researchers, feasible studies, etc. The data are from a wide range of sources: censuses, information collected by government departments, organizational records, databases maintained by

universities and other research institutions, surveys conducted by universities and research institutions, and so forth. Using secondary data for research projects has now become popular with the availability of nation-wide survey data from reliable sources.

## **SUSTAINABILITY MATTERS FOR BUSINESSES**

In the current scenario the worth of businesses is not only measured solely by their revenue and growth but also by their impact on the planet and society. Sustainability initiatives are essential for:

- Reducing carbon footprints and handling climate change.
- Enhancing resource efficacy and waste management.
- Building trust with environmentally-conscious customers and investors.
- Safeguarding long-term business flexibility and innovation.

### **Impact of Sustainable Practices on Business Growth**

Sustainability is no longer an expense; it is an investment that drives business growth and resilience. Sustainable Indian Companies focusing on sustainability enjoy several benefits:

- **Operational Efficiency:** Adopting green technologies and processes lowers energy and resource costs.
- **Customer Loyalty:** Environmentally conscious customers prefer businesses with strong ESG commitments.
- **Investor Confidence:** Sustainability attracts investors looking for long-term, ethical growth opportunities.
- **Regulatory Compliance:** Proactively adopting eco-friendly practices ensures companies stay ahead of evolving regulations.

Sustainable Indian Companies are leveraging these benefits to create a competitive edge in the global market. Sustainable Indian Companies in 2025 that are setting benchmarks for environmental stewardship and long-term elasticity.

## **TATA STEEL**

Tata Steel endures to lead India's sustainability journey by investing heavily in green steel production and reducing carbon emissions. Its initiatives include transitioning to renewable energy sources, reducing water consumption, and

implementing circular economy practices. Tata Steel's focus on decarbonization has positioned it as a pioneer in sustainable manufacturing.

## ESG parameters

The report 2023-24 on ESG parameters is prepared in accordance with the Integrated Reporting framework of the International Integrated Reporting Council (IIRC). It discloses performance against Key Performance Indicators (KPIs) relevant to Tata Steel, which are aligned with:

- World Steel Association
- The Greenhouse Gas Protocol
- Global Reporting Initiative (GRI)
- Business Responsibility & Sustainability Reporting issued by SEBI
- The United Nations Sustainable Development Goals

<b>Social and Relationship Capital</b>	<b>Units/ Numbers/ kg</b>
Customer satisfaction index	86.1/100
Suppliers assessed based on safety	1923
Business associates trained on TCoC	1358
Supply chain partners assessed on Responsible Supply Chain Policy	216
Lives impacted through CSR initiatives	13770
Natural Capital	4.4 million
CO2 emission intensity	2.43tcs
Stack Dust emission intensity	0.35 kg
Solid waste utilisation	7 %
Effluent discharge intensity	0.32 tcs
NOx emission intensity	0,87
SOx emission intensity	1.63 kg
Total sites covered under biodiversity management plans	17

(Source: Annual Report)

## **ITC LIMITED**

ITC is an outstanding example of sustainability, with initiatives spanning carbon-neutral operations, water stewardship, and renewable energy adoption. The company's extensive afforestation programs and eco-friendly supply chain practices highlights its assurance of being a zero-waste organization.

- Kisaan Diwas, is celebrated, the true strength of Indian farmers. For decades, they have shared dreams, built trust, and grown together, forging a bond rooted in mutual progress. Let's take a moment to thank farmers and promise to support their strength that drives India's growth.
- On World Soil Day, ITC celebrates the foundation of life- soil. Healthy soil is the foundation of robust agriculture, with prospering communities, and a sustainable planet.

### **ITCMAARS App is advancing the mission:**

- Measure: Providing soil testing services through agri-tech startups such as AgroNxt Service Pvt Ltd, Krishitantra, and Ekosight, ensuring actionable insights for farmers.
- Monitor: Equipping farmers with tools like soil health reports and digital solutions on the ITCMAARS App.
- Manage: Promoting sustainable practices such as zero tillage, Direct Seeded Rice (DSR), and integrated nutrient management to maintain soil health.

Marking a noteworthy landmark in its enduring commitment to redefine sustainable packaging solutions, ITC Paperboards & Packaging Business' innovative FiloTub, FiloServe, and FiloBev products have received the prestigious DIN CERTCO Industrial Recyclable certification. These products are designed to replace single-use plastics and LDPE-coated paperboards and the certification is a testament to the business' efforts to set new benchmarks for the industry while paving the way for a greener future.

## **INFOSYS**

Global IT giant, Infosys has achieved carbon neutrality ahead of its peers. By integrating renewable energy, sustainable campuses, and energy-efficient solutions, Infosys continues to be a role model for companies seeking to reduce their environmental impact.

Running a sustainable business means striking a balance between the expectations of stakeholders with its company goals. Clients, employees, investors, partners, academia and local communities want different things, Infosys enables to balance these through their sustainability strategy and robust engagement methodology. It is through continuous, constructive and responsible engagement that ensures a sustainable future for stakeholders.

<b>Attributes</b>	<b>Description</b>
Carbon Neutral	4 Years
Climate Leadership	7 Years
Iso 27001:2103	Information Security Management Standard Certified
Rainwater Storage Capacity	39 Lakes, Holding 426 Million Litres Of Rain Water
Green Certified Space	28.9 Mn Sq. Ft
World Most Ethical Company	Ethisphere Recognition
ISO 27001:2019	Privacy Information Management Standard Certified
Hiring Graduate's World Globally	50,000 Fresh Graduates

Source: Annual Reports

Infosys is declared carbon neutral for the fourth consecutive year, their journey to net zero, or driving digital reskilling to impact 8.5 million lives, Infosys have been navigating in terms of creating a hopeful, progressive shared future.

## **WIPRO**

Wipro's leadership in sustainability is reflected in its extensive environmental, social, and governance (ESG) initiatives. From reducing greenhouse gas emissions to sustainable waste management, Wipro ensures that its operations align with global sustainability standards.

Wipro believes it must try to, and can make (some) lasting impact, towards creating a just, equitable, humane and sustainable society. The values of 'Spirit of Wipro' guide all our actions. Our values 'Being passionate about clients' success', 'Being global and responsible', 'Treating each person with respect', and 'Unyielding integrity in everything we do' are the primary drivers of being a responsible business.

### Sustainability Disclosures at WIPRO

- Carbon Reduction Plan
- CSR Programs and plans
- Wipro Recognized as Pega Global Elite Partner
- Wipro Recognized as Pega Global Elite Partner
- Wipro Switzerland Certified as a Great Place to Work® Second Year in a Row
- Wipro selected as a member of Dow Jones Sustainability Index (world)

35% of Indian office electricity is from renewable sources 41% of water is recycled avoiding 9,775 Mn liters over last 10 years. 3 campus biodiversity projects completed Butterfly and wetland park in Bengaluru with 106 species of plants and multispecies garden in Pune campus with 300+ native species 18 Green Buildings. 206 million units of Energy savings over last 10 years. 574,110 tons of GHG emissions avoided over last 10 years. Only 3% of solid waste is sent to landfill.

Environmental factors	Valuation	Contribution (%)
GHG Emissions	62	20%
Air Pollution	210	67%
Water Consumption	7.7	2%
Water & Land Pollution	3	1%
Land use Change	27	9%
Waste Generation	1.9	1%
Total	310	100%

Source: Annual Report

### Awards

- Wipro EC campus is first in IT service sector to receive Greenco Silver Rating award by CIIGBC (Green Business Center)
- Recognized as member of Dow Jones Sustainability Index (DJSI), World for the tenth time in a row. Wipro is also a member of the DJSI Emerging Markets Index
- Wipro selected as a member Vigeo Eiris Emerging Market Sustainability Index (the 70 most advanced companies in the Emerging Market Region)

- Featured in the Bloomberg Gender Equality Index 2020
- Received CSR Rating of Gold from Ecovadis – Sustainability assessor used by 50+ of Wipro customers.

## **GODREJ CONSUMER PRODUCTS LIMITED**

Godrej Consumer Products has implemented sustainable supply chains and responsible sourcing practices. Its “Good & Green” strategy focuses on reducing waste, promoting renewable energy, and creating eco-friendly products to align business goals with sustainability. ESG risks, especially climate-change related financial and physical risks are now part of ERM (enterprise risk management) and they play a crucial role in company performance and growth. Regular oversight on sustainability is led by sub-committees namely the CSR Committee and the ESG Committee. The Committees meet at least twice a year to review progress against our sustainability strategy, targets and performance.

**Godrej support delivery of all the SDGs by 2030  
Their belief is to make the biggest impact on 7 goals:**

<b>Sr. No</b>	<b>Sustainable Development Goals (SDGs)</b>	<b>Mission</b>
1	SDG 1	No Poverty,
2	SDG 3	Good health and wellbeing
3	SDG 5	Gender Equality
4	SDG 6	Clean water and sanitation
5	SDG 10	Reduced inequalities
6	SDG 12	Responsible consumption and production
7	SDG 13	Climate action.

Task Force on Climate-related Financial Disclosures (TCFD)

- TCFD disclosure provides stakeholders climate-related information and insights how company is mitigating and adapting to climate-related physical and financial risks and opportunities.
- Global Reporting Initiative (GRI)

- The Company reports sustainability parameters in reference to GRI Standards. They have a GRI index of the indicators that have been assured by an independent assurer.
- United Nations Global Compact- Godrej has signed up to the UN Global Compact in 2024 and committed to report their progress against the ten principles of the UN Global Compact. Their fiscal year 2023-2024 sustainability disclosures are assured by KPMG Assurance and Consulting Services LLP.

## **HCL TECHNOLOGIES**

HCL Technologies is known for its energy-efficient data centres, reduced water consumption, and innovative sustainable IT solutions. The company's focus on environmental management and community development ensures a balance between technology and sustainability. HCL are committed to long term value creation for all stakeholders and their philosophy has always been about incorporating the right environmental, social and governance (ESG) practices to ensure a sustainable present and future. Their holistic approach is designed to maximize their contribution towards the UN Sustainable Development Goals (SDGs).

### **Social**

- Human Capital
- Local Hiring
- Diversity, Equity and Inclusion (DEI)
- Talent Attraction and retention
- Work Environment
- Corporate Citizenship

### **Environment**

- Eco-efficiency
- Climate Change

### **Governance**

- Sustainable procurement
- Sustainable Impact on clients
- Governance and ethics
- IT Security, data protection and system availability

## **RELIANCE INDUSTRIES LIMITED**

Reliance has taken significant strides towards sustainability by investing in renewable energy projects like green hydrogen and solar energy. Its emphasis on circular economy practices, such as recycling plastics and reducing industrial waste, has made it a leader in India's sustainable energy transition.

### **Net-Zero Carbon**

Reliance has committed to an ambitious target of achieving Net-Zero Carbon status by 2035. Reliance have already made substantial progress on photosynthetic biological pathways to convert CO<sub>2</sub> emissions at Jamnagar into high-value proteins, nutraceuticals, advanced materials and fuels. Reliance Industries will develop next-gen carbon capture and storage technologies.

Health, Safety & Environment- Reliance's endeavour to create a culture of safety, health and environment. Reliance's HSE Management System has established company-wide safety management objectives and processes for improving operational discipline and evolving inherent safety measures for plant operation. In addition, the Central HSE audit programme — a critical component of the HSE governance process — is designed to ensure that the HSE Management Standards are implemented and best practices are followed and shared across the Reliance Group.

### **Decarbonisation**

Reliance is decarbonising its O2C business using carbon reduction strategies and generating Green Hydrogen from renewable resources. They are maximising the use of biofuels and using bio-pathways to fix CO<sub>2</sub> and facilitate conversion to renewable fuels and materials. A major part of this transition will be to scale up recycling of materials and maximising circularity across value chains and they aim to achieve CO<sub>2</sub> capture, storage, and conversion to useful chemicals and materials at competitive costs.

## **ULTRATECH CEMENT**

Ultratech Cement is revolutionizing the construction industry through its focus on energy-efficient processes and carbon reduction. By adopting alternative fuels, reducing water usage, and promoting green cement, Ultratech is paving

the way for sustainable infrastructure in India. Growing need of sustainable built environment,

- More than 70% of built environment to be constructed in India in coming decades.
- Consumer preference to shift towards sustainable construction.
- Global focus on Net Zero Carbon, Circularity and Nature
- UltraTech to leverage transformational technology for reduction of CO2 emissions in cement manufacturing
- Technology is fully-automated and enables the plant to be real zero discharge with no water and solid waste.
- Elimination of the cost of waste disposal and recycling material generated out of the said process.
- The partial substitution of sand, fly ash, and water makes it a sustainable business proposition

### Global Ranking

Category	Ranking
Construction material category	A
Water Disclosure	B
Climate Disclosure	A
Supplier Engagement	A
Overall ESG Score	2.2

Source: Annual Report

### Key Sustainability Practices These sustainable prime Indian companies follow

The most sustainable Indian companies have adopted strategies and practices that can inspire other businesses:

1. Carbon Neutrality Goals Companies like Infosys and Wipro are achieving carbon neutrality by adopting renewable energy sources and implementing energy-efficient systems.

2. Renewable Energy Adoption Reliance, Tata Steel, and Mahindra & Mahindra are leading the way with solar, wind, and green hydrogen initiatives to reduce dependence on fossil fuels.
3. Water and Waste Management Organizations such as Ultratech Cement and ITC are working towards water-positive operations and waste recycling to reduce their environmental footprint.
4. Sustainable Supply Chains Godrej and Marico emphasize responsible sourcing and eco-friendly packaging, ensuring sustainability across their supply chains.
5. Circular Economy Initiatives Reliance and Tata Steel are embracing circular economy models by recycling materials, reducing waste, and promoting resource efficiency.

## CONCLUSION

India's journey towards sustainability is being molded by forward-thinking organizations dedicated to balance financial growth with environmental responsibility. The prime Sustainable Indian Companies in 2025 are setting innovative standards for eco-friendly practices, signifying that businesses can prosper while safeguarding the planet. The companies will endure to lead the way, inspiring others to adopt sustainable practices for a greener future. By prioritizing sustainability, businesses not only secure their future but also contribute to building a prosperous nation. The future of Indian businesses lies in their ability to integrate sustainability into core strategies. As India moves towards its net-zero emissions goal, Indian Companies must continue to invest in innovation, renewable energy, and green technologies.

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# Education: Objectives, in the Knowledge Era

Dr. Virender Kumar\*

## ABSTRACT

Education plays a vital role in shaping successful people. It gives us the opportunity to become a productive member of a civilized society by acquiring all the necessary skills. We learn how to meet challenges and overcome obstacles. We learn how to become an integrated personality and maintain the perpetuation of our culture. People learn basic norms, rules regulations and values of society through education. Moreover, high quality education enables us to lead a successful life, enhances our intelligence, skills, knowledge, and brings positive changes in our life.

Education lays the foundation stone for our future. An illiterate person can find it very difficult to cope with some aspects of life. Education expands our vision and creates awareness. It helps us develop a disciplined life and provides us with better earning opportunities. It enables us to know the world beyond our own surroundings, education is also a prerequisite of the prosperity and modernization of any country.

Modern education liberal, open and exoteric. It is the premise of progress, in very family and in every society. It teaches people to reason. It is based on the humanism, freedom, equality, democracy, and human rights. The content of education keeps pace with the needs of more society and is mirror of its goals, values, and priorities. The present industrial society has opened up a plenty of occupations which require people with specialized skills and knowledge, So, education is a necessary means of eradicating the unemployment problem. It is able to reduce poverty in a number of ways. But we have to remember that there is a great need for the growth of the vocational education so that every person could pursue a fulfilling career that ensures a satisfied life.

**Keywords:** Meaning, objectives, knowledge era.

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## MEANING OF EDUCATION

Generally speaking, Education is utilized in three senses: Knowledge, Subject and a process. When a person achieves degree up to certain level we do not call it education. As for example if a person has secured Masters degree then we utilize education in a very narrower sense and call that the person has achieved education up to Masters level. In the second sense, education is utilized in a sense of discipline. As for example if a person has secured Masters degree then we utilize education in a very narrower sense and call that the person has achieved education up to Masters Level. In the second sense, education is utilized in a sense of discipline. As for example if a person had taken education as a paper or as a discipline during his study in any institution then we utilize education as a subject. In the third sense, education is utilized as a process. In fact when we talk of education we talk in the third sense i.e. education as a process. Thus, we talk what is education as process? What are their importance etc.? The following debate on education will discuss education in this sense and we will talk education as a process. By going through the text you will be able.

- To know the meaning and concept and concept of education.
- To define the narrower and wider meaning of education
- To explain the analytical meaning of education.
- To know the aims and scope of education.

True education is a process of self development, and this process of self development through physical education, vital education and mental education may be the goal of all ordinary men. But before going for further explanations we must try to know the meaning of the word education. "Education- the English term has been derived from some Latin words, 'Educare' meaning 'drawing out' 'educare' implying the process of nourishing, 'Edu-co', signifying leading forth, and educator synonymous with instruction. Education may be also visualized as a process of self-realization and emancipation. The self realization aspect of education is well emphasized by Gandhi ji. To him education is "an all round drawing of the best in the child and man, body, mind and spirit", for in other words, education means bringing out the inner powers and potentialities and enabling the child to become what he is capable of becoming. The word self realization implies development of individuality in the child. It modifies the behavior of the education. Ross points out education thus consists in modification of natural development which as a result of education, is other than it would have been without it. It is thus a process of sublimation of instincts.

Education is not only guidance and direction but it a continuous process of adjustment. Adjustment means at the attention to some environmental demands in this process of adjustment there are three things the invisible his world and the process of building the two the individual with the world. Here the world refers to the three types of word –physical, social mental cum moral. A child first comes into the universe with the powers dormant in him. He remains very weak in all the aspects of his life. First he meets the physical world-the air, the light, the natural objects surrounding him. A man has to adjust with a more and more complicated world. His struggle for survival is unique itself. A man's intelligence, his rational nature, his ability of expression, his freedom of hands, his creativity put him to a place which is not accessible to other creatures. A man in his process of adjustment can change himself and also the environment where he lives. Man's next adjustment starts when he interacts with the social world, which is the world of men and women, the traditions, customs, the values, the pattern of living, the ways and means to achieve any end. Adjustment with the society comes through a man's living participation in the social-cultural environment./ The social institutions, organizations, religious institutions, agencies, media, vocation, 20 friends and relatives contribute a lot to this adjustment. Thus a man becomes the inheritor of the socio-cultural heritage.

The final and most vital world of human being is the internal world of mind and morality. This mental world and the world of morality and values constitute the most important world with which an individual has to adjust himself. This process of adjustment is only possible when there is a sound development of an individual. Development of an individual is again directly dependent on the nature of education one is receiving. All these adjustment will be possible only when an individual is properly educated from a very childhood stage. It means that a child should be properly guided so that he becomes able to adjust with himself, with the nature and with the society. Hence there is a need of a broader concept of education, which will guide a child and motivate an individual from various angles. This type of guidance is very essential from the very primary stage, because from this stage a child starts to unfold his powers and search new things for satisfaction. Here we should apply more new concepts so that we can fulfill his demands. The process of adjustment is the kernel of education, caused by reconstruction of experiences. According to John dewey, 21 experiences which men gather in course of living are restructured by each individual in accordance with one's physical, mental, social ability and his interest naturally conditioned by one's environment as a whole. 8

So modern educators define education as a continuous growth oriented process leading to the harmonious development of all the powers. These developments are possible through some specially selected and designed social intuition, aiming at adjustment with environmental demands. Education is therefore, a life long, deliberate and dynamic process.

## **OBJECTIVES IN EDUCATION**

Usually an educational objective relates to gaining an ability, a skill, some knowledge, a new attitude etc. rather than having merely completed a given task. Since the achievement of objectives usually takes place during the course and the aims look forward into the student's career and life beyond the course one can expect the aims of a course to be relatively more long term than the objectives of that same course. Sometimes an aim sets a goal for the teacher to achieve in relation to the learners, sometimes course aims explicitly list long term goals for the learner and at other times there is anoint goal for the teacher and learner to achieve together. While the aim may be phrased as a goal for the teacher within the scope of the course it can also imply goals for the learner beyond the duration of the course. In a statement of an aim the third person singular forms of the verb with the subject's course. Programmed or doddle is often used as an impersonal way of referring to the teaching staff and their goals, similar the learner is often referred to in the third person singular even when he or she is the intended reader.

The first and the foremost objective of education is "to complete the socialization process" Though family is a great source of socialization, yet in modern times it leaves much undone in the socialization process. A chorologist explains the failure of the family to develop attitudes of responsibility in children in the following words. The situation has arisen partly because of our shift to urban life and to what the sociologist calls secondary group organization of society, that is society marked by the disappearance of home and garden, the predominance of specialization of occupation, individualization of choice as to friends, religious life and forms of recreation, and a general touch and go impersonal kind of social contact. Life in our cities, as compared to country and village life of a few generations ago, is superficial, we pointed out how modern family has failed to perform the role of a canalizing agency. The school has stepped in the vacated places. Now it is felt that it is the school's business to instill in the child the qualities of honesty, fair play, consideration of others and a sense of right and wrong.

The parents who have lost control of their won adolescents now expect the class room to make up for any deficiencies in home training of manners and morals. Mounting pressure is laid on the school to perform the task of socialization which once was the function of the family. In addition to the socialization of the young the school also devotes much of the time and energy to the themes of cooperation, good citizenship and doing one's duty. The patriotic sentiments are instilled in the students.

## **EDUCATION IN THE KNOWLEDGE ERA**

The era of knowledge advances in a steadfast manner, promising levels of progress that will change radically the life expectancy and above all, life quality over the next decades. Technological convergence foretells the cure for multiple diseases and a permanent monitoring of vital aspects of human beings, in the perspective of expanding their potential in all spheres, strengthening its abilities at the same time that life is prolonged and improving health over all the life cycle. This knowledge society is characterized because the main source of the competitive advantage of nations, organizations and people resides, precisely and as foreseen in knowledge. Information is available and at the reach of all in an ever more massive way, through media such as the world wide web that facilities the distribution of documents as hypertext or interconnected and easily reached hypermedia.

However, Information is not knowledge, as the latter necessarily needs the acquisition of intellectual content. The appropriation of facts or information by a person or team, and that cognitive responses are given to certain questions, are necessary. Under this perspective, it becomes natural to emphasize the importance of human capital training as a nuclear element of development for the nations, as has been shown by Robert burro. The investment in human capital is relevant for the people, who can improve their productivity individually and thus, their income, but additionally, such investment is important for the country which improves its long term growth potential. The development of human capital is a structural determinant of the wealth of nations in the knowledge society. Probably this is one of the causes why there has been the tendency to a massive growth of thither education in order to achieve ever higher levels of human capital.

The role of educational institutions consists in contributing to the development of nations through the training of human capital of arsons with knowledge, skills and abilities to perform efficiently and effectively in the labor market. Thus, for a better training of the people, better will be their productivity and better their remuneration in turen greater will

be the rhythm of growth of the country. However such vision can be domed reductionist and economically oriented as education cares, from the beginning about the formation of persons. The knowledge, skills and abilities, without a solid background in values, reduce the potential of people to simple factors or production means or elements of a process of economic wealth creation. In fact, education is fundamental for the fulfillment of the principles that govern a society. In it are sustained both tradition and progress as its impact does not only reach the economic sphere. Education is the essential source of social innovation and human development. To think about the further of humanity and to delineate it, instead of waiting for the random result of multiple actions, effects and impacts, constitute an essential task in a society that as never before counts with a stock and a fill of information that allow taking every time better.

## CONCLUSION

Education is definitely important in one's life. A gift of knowledge can bring us to the top of our dreams. It leads us to the right path and gives us a chance to have a wonderful life. Education makes people capable of doing new interesting things that can go a long way to improving human living conditions and standards. Our whole life is the process of learning and gaining new useful knowledge. We should alleyways remember that getting a good education is imperative in today's society as it is foundation of our successful future. Our education is really oath investment only if you believe and work hard you can achieve anything decisions. It is appropriate to understand the economic dimension of the effects of education.

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# Indian Legal Framework for Combating Coastal Pollution: An Analysis

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## INTRODUCTION

The oceans are the dominant feature of this planet and considered as treasure of natural resources. It is a source of food, energy, minerals and medicines. As a result of human activities both inland and in the coastal zone itself, coastal and marine eco-systems and resources are rapidly deteriorating in many parts of the world. Urban, industrial, resort and agricultural developments are often poorly planned and regulated. Engineering and developments projects are modifying coastal ecosystems on a very large scale. Coastal zones receive pollution, by direct discharges and via river systems. The rest comes from shipping, dumping, and offshore mining and oil production<sup>1</sup>. It is affected by changes in salinity and sedimentation regimes as a result of damming rivers and situation due to deforestation and other land use changes. In fact, more than three-quarters of marine pollution comes from land-based sources, via rivers, direct discharges, and the atmosphere. Coastal waters are the sinks for nearly all human-generated pollution. And more than 90% of all chemicals refuse and other materials entering coastal waters remain their in sediments, wetlands fringing reefs, and other coastal ecosystems<sup>2</sup>.

The UN Conference on Environment and Development, 1992 recognized the Coastal Zone Management Approach and Chapter 17<sup>3</sup> of Agenda 21 set out the policy for integrated management and sustainable development of coastal areas.

## INDIAN LEGAL PROVISIONS IN CONTEXT OF COASTAL POLLUTION

### The Coastal Regulation Zone Notification, 1991

In exercise of the power conferred by Clause (d) of sub-rule (3) of Rule 5 of the Environment (Protection) Rules, 1986, and all other powers vesting in its

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behalf. The Central Government vide S.O. 114 (E), dated 19-2-1991 declared the coastal stretches of seas, bays, estuaries, creeks, rivers and backwaters which are influenced by tidal action (in the landward side) up to 500 meters from the High Tide Line (HTL) and the land between the Low Tide Line (LTL) and the HTL as Coastal Regulation Zone; and imposed with effect from the date of this Notification, some restrictions on the setting up and expansion of Industries, operations or Processes etc. within the Coastal Regulation Zone (CRZ).

The notification has four sections (General, Prohibited Activities, Regulation of Permissible Activities and Procedure for Monitoring and enforcement and three Annexures (Annexure-I - Coastal Area Classification and Development regulations; Annexure II – Guidelines for Development of Beach Resorts in CRZ-III and Annexure III<sup>63</sup> as List of Petroleum Products permitted for storage in CRZ except in CRZ-I). As far as the objective of the Coastal Regulation Zone Notification 1991 is concerned, in the preamble it is stated that the notification was brought in for declaring coastal stretches as Coastal Regulation Zones and imposing restrictions on setting up and expansion industries, operations and processes etc. in the said CRZ<sup>4</sup>.

## **Coastal Zone Management (CZM) Notification, 2008**

In exercise of the powers conferred by sub-section (1) and clause (v) of sub section 2 of section 3 of the Environment (Protection) Act, 1986 (29 of 1986) read with sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986 and in supersession of the notification published vide S.O.114(E) dated the 19th February, 1991, except as respects things done or omitted to be done before such supersession, the Central Government proposes to issue a notification to be known as the Coastal Management Zone (CMZ) Notification, 2008, for the information of the public likely to be affected thereby and notice is hereby given that the said draft Notification will be taken into consideration by the Central Government on and after the expiry of sixty day<sup>5</sup>.

As far as the Objective of this Notification is protection and sustainable development of the coastal stretches and marine environment through sustainable coastal zone management practices based on sound scientific principles taking into account the vulnerability of the coast to natural hazards, sustainable livelihood security for local communities, and conservation of ecologically and culturally significant coastal

resources<sup>6</sup>. For the purposes of management and regulation, the coastal zone is to be divided into four categories, namely<sup>7</sup>:

1. **Coastal Management Zone – I (CMZ – I)** consisting of areas designated as Ecologically Sensitive Areas (ESA) such as Mangrove, Coral reefs, Sandy beaches and Sand dunes, Turtle nesting grounds, Salt marshes, Nesting ground of birds, etc.
2. **Coastal Management Zone – II (CMZ – II)** consisting of areas other than CMZ – I and coastal waters, identified as “Areas of Particular Concern (APC)” such as economically important areas, high population density areas, and culturally and, or strategically important areas like coastal Municipalities/Corporations, coastal Panchayets with population density more than 400 persons per sq km, Ports and Harbours, notified Tourism areas, Heritage areas, Defence areas/installations, Mining sites. The administrative boundaries of these APCs would be boundaries of CMZ – II.
3. **Coastal Management Zone – III (CMZ – III)** consisting of all other open areas including coastal waters and tidal influenced inland water bodies, that is all areas excluding those classified as CMZ – I, II and IV.
4. **Coastal Management Zone-IV (CMZ-IV)** consisting of island territories of Andaman and Nicobar Lakshadweep, and other off-shore islands.

## **Draft Coastal Zone Regulations, 2010**

The Ministry of Environment and Forests attempts to change the 1991 regulations under the Environment (Protection) Act, 1986, had run into rough weather with both industry and fishing communities oppose to the changes proposed. After reports of two committees and public consultation, the ministry has prepared the draft Coastal Zone Regulation, 2010<sup>8</sup>.

## ***Coastal Regulation Zone Notification, 2011***

Undoubtedly, developmental activities like construction of shopping malls, railways, roads, residential housing schemes and hotels has very serious impact on environment particularly on coastal zones. Therefore a positive attitude of legislature and public is necessary to deal with the issue. Keeping in view the new developments, the Central Government notified new Coastal Regulation Zone Notification, 2011.

The CRZ Notification, 2011, issued under the provisions of the EPA, 1986, supersedes the CRZ Notification of 1991. The CRZ Notification, 2011, was an outcome of detailed deliberation and consultation. The CRZ Notification has specific provisions with respect to protection of marine areas. The CRZ Notification is based on the classification of coastal areas into different categories. It is not a hierarchical classification, but rather a classification based on the geographical locations. One of the stated objectives of the CRZ Notification is to 'conserve and protect coastal stretches, its unique environment and its marine areas.' Further, it is stated that the purpose is to ensure livelihood security to the fisher communities and other local communities in coastal areas<sup>9</sup>. The main objectives of the CRZ Notification, 2011 are<sup>10</sup>:

- To ensure livelihood security to the fishing communities and other local communities living in the coastal areas;
- To conserve and protect coastal stretches; and
- To promote development in a sustainable manner based on scientific principles, taking into account the dangers of natural hazards in the coastal areas and sea level rise due to global warming.

## **Coastal Regulation Zone Notification 2019**

The 2019 notification is the most comprehensive one with about 10 sections and 5 Annexures. The additional annexures other than the 2011 notification given as Annexure I is about Conservation, Protection and Management of Ecologically Sensitive Areas(ESAs), Annexure IV gives detailed guidelines for preparation of Coastal Management Plan apart from Annexure II and III which are similar ones given in Notification of 2011 as updated list Petroleum and chemical products permitted for storage and guidelines for beach resorts and hotels respectively. Annexure V gives how project information details should be provided for clearances of projects give is comprehensives and requires added information from Project proponents<sup>11</sup>.

The objective of notification is "to conserve and protect the unique environment of coastal stretches and marine areas, beside livelihood security to the fisher communities and other local communities in the coastal areas and to promote sustainable development based on scientific principles taking into account the dangers of natural hazards, sea-level rise due to global warming".

**OTHER RELEVANT LEGISLATIONS WITH REGARD TO PROTECTION OF COASTAL ZONES<sup>12</sup>:**

<b>Relevant Act for Coastal Areas</b>	<b>Subject responsibilities and Duties</b>	<b>Enforcing Agencies at Central and State Level</b>
Indian Ports Act 1908 Major Port Trust Act 1963	Enactment relating to ports and port charges. Provides for rules for safety of Shipping and conservation of ports Ministry of Shipping State Departments of Ports	Ministry of Shipping State Departments of Ports, Maritime Boards
Coast Guard Act, 1950	Provides levying of heavy penalties for the pollution of port waters.	State/ Regional Coast Guards
Merchant Shipping Act, 1958	Control of pollution from ships and off shore platforms	Directorate General of Shipping, National Shipping Board
Wild Life Protection Act, 1972	Offers protection to marine biota, conservation of flora and fauna Conservation of coastal and marine biodiversity is done through the designation of marine protected areas (MPAs)	State Forest Departments
Water (Prevention and Control of Pollution) Act 1974	Control of pollution from land based sources includes tidal water has jurisdiction up to 5 km in the sea	Central Pollution Control Board and State Pollution Control Boards
Maritime Zones Act, 1976 Maritime Zones (Regulation) of Fishing by Foreign Vessels) Act, 1981	Describes various zones such as territorial water, EEZ, continental shelf etc.	Coast Guards
Marine fishing Regulation Act, 1978	A model Act, which provided guideline to maritime states to enact laws for protection to marine fisheries by regulating fishing in territorial waters. Coastal States ban fishing during closed season- different closure period for different states	State Fisheries Departments

Forest Conservation Act, 1980	Protection to marine biodiversity legislative basis for mangrove protection	MoEFCC State Forest Department
Maritime Zones (Regulation) of Fishing by Foreign Vessels) Act, 1981	The preservation and protection of marine environment and control of marine pollution and responsibilities for National Oil Spill	Disaster Contingency Plan Coast Guards
EPA, 1986 Environmental Protection Rules 1986	Prescribes different standards for emission or discharge of environmental pollutants for the purpose of protecting and improving the quality of environment specifies the standards for emission or discharge of environmental pollutants from industries, operations and processes.	MoEFCC through various related Department
Hazardous waste management & handling rules 1989, 2003 and Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 and 2016.	Prescribe authorisation requirements form different authorities for management of the hazardous waste in coastal areas and transport by sea routes	MoEFCC, Central Pollution Control Board, State Pollution Control Boards, Port Authorities
Environmental Impact Assessment Notification 1994, 2006	Projects within coastal zone based on the category in the notification require Environmental Clearances alongwith CRZ clearnces	MoEFCC through National EAC and State SEIAA
Biological Diversity Act, 2002	The Act provides for the Conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of the use of biological resources and knowledge associate with it. State Governments to designate, in consultation with local bodies, areas of biodiversity importance as 'biodiversity heritage sites'.	National Biodiversity authority, State Biodiversity Boards
Wetland (Conservation and Management Rules), 2010	Under these Rules, 'wetlands' include coastal wetlands.	Central Wetlands Regulatory Authority State Wetlands Regulatory Authority

## JUDICIAL ENDEAVOURS

So far as the Ministry of Environment and Forest and Indian judiciary in context of coastal regulation zone are concerned, they played very active role.

In the case of *Union Territory of Lakshadweep v. Seashells Beach Resort*<sup>13</sup> Apex Court held that Coastal regulation zone notification 2011 has been enacted for the purpose of protecting the unique environment of Indian islands, which will also extend to protect the marine area of such islands. The CRZ II is effective in promoting the development with the help of sustainable integrated management plan<sup>14</sup>.

In *G. Sundarrajan v. Union of India*<sup>15</sup>, hon'ble Supreme Court held that the CRZ, 1991 has been replaced by CRZ, 2011 and now allows the establishment of atomic Power Station in the first category of CRZ. However, desalinization plant cannot be established in the first category of CRZ<sup>16</sup>.

In *MVPSW. Association v. Visakhapatnam UD Authority*<sup>17</sup>, the issue was that permission to establish an amusement park at the beach line would be contrary to the specific prohibition laid down for construction in CRZ III (Coastal Regulation Zone) for development of beach resorts and hotels and thus would violate coastal zone regulations and Environment (Protection) Act, 1986. According to the conditions laid down in the permit, the licensee shall not excavate any land or carry on any activities prohibited in CRZ Notification<sup>18</sup>. Thus the conditions mentioned in the guidelines for development of beach resorts/hotels in CRZ III had been strictly adhered to and necessary arrangements were made for treatment of effluents as incorporated in the deed of license. Moreover, the first respondent had taken all precautionary measures for protecting and safeguarding the sensitive area in question. No activity that might lead to unscientific or unsustainable or ecological destruction was allowed<sup>19</sup>. No wonder that in the face of all these safeguards the court did not find any reason to interfere.

Public Interest Litigation<sup>20</sup> was filed under Article 32 seeking for the protection of ecology and preservation of irreversible ecological damage to the coastal areas of the country. Court imposes restrictions, prohibitions regarding the construction and setting up of industries or for any other purpose. Court further directed that activities declared as prohibited within Coastal Regulation Zone not to be undertaken by any of States and restrictions imposed by Coastal Areas Classification and Development Regulation shall also be strictly followed by States.

In the case of *Citizen, Consumer and Civic Action Group v. Union of India*<sup>21</sup>, the Madras High court held that both the development and environment shall co-exist

and go hand-in-hand. The court emphasizes that if the construction of multi-storied building is 500 meters away from the HTL from CRZ and is on the landward side of the road, there is no reason why it should be stopped. In this connection the Madras High Court emphasized the courts social accountability in having facilities of buildings in developing industrial area and in maintaining balance between environment and development. The court further observed that<sup>22</sup>:

‘There can be no dispute that the society has to prosper, but it shall not be at the expense of environment. In the like vein, the environment shall have to be protected, but not at the cost of the development of the society, both the development and environment shall co-exist and go hand-in-hand’.

In the case of *M. Nizamudeen v. Chemplast Sanmar Limited and Others*<sup>23</sup>, there was handling of hazardous waste/material in Coastal Regulation Zone (CRZ), which is prohibited according to para 2(ii) of Noti. Dt. 19-2-1991 issued by Ministry of Environment and Forests (MoEF). Environment clearance granted by MoEF to project for manufacturing Polyvinyl Chloride (PVC).then, Chemplast made an application to the Executive Engineer, PWD, Vellar Basin Division, WRO, Vridhachalam seeking permission for carrying seawater and raw materials through pipelines laid 3.50 meters below the riverbed. The Executive Engineer granted permission on 27-2-2008 subject to conditions set out therein. But in less than a month on 19-3-2008, the Executive Engineer cancelled the aforesaid permission observing that VCM may cause pollution a health hazard to the public.

The order cancelling permission was challenged by Chemplast by filing writ petition before the High Court of Judicature at Madras. The High Court allowed the writ petition on 18-7-2008 and set aside the order of the Executive Engineer passed on 19-3-2008 revoking the permission granted on 27-2-2008<sup>24</sup>.

Against the order of Madras High Court, petitioner M. Nizamudeen filed a writ petition under Article 32 of the Constitution. Petitioner challenged the permission granted to the project on ground that point where pipelines passed in Uppanar River and its banks fell in CRZ III where handling of hazardous substance (VCM) was prohibited, for which environmental clearance had not been obtained. After hearing above facts, Supreme Court held that sustainable development held that Coastal Zone Management Plan prepared by State Coastal Management Authority and duly approved by MoEF is the relevant plan for identification and classification of CRZ areas. The court further held that 1996 plan for the purposes of demarcation and classification of CRZ area in the State of Tamil Nadu treated as final and

conclusive<sup>25</sup>. Moreover, Uppanar River and its banks where the pipelines were laid by Chemplast pass do not fall under CRZ III area. No environment clearance needed for such pipelines. No infirmity in permission granted by MoEF or Executive Engineer. The Court further observed that project concerned had been established by huge investment of approx. Rs. 600 crores, commissioned after obtaining necessary approvals, therefore, interference was justified neither in interest of justice nor in Public Interest.

## CONCLUSION

Tony George Puthuchheriil rightly alleged that<sup>26</sup> “Oceans play a crucial role in sustaining life, regardless of whether we live near the coast. However, due to irresponsible human activities, many harmful effects are now visible on coastal ecosystems. These include unsustainable coastal development, urbanization, damaging tourism practices, and intensive, destructive aquaculture and fishing. Additionally, land-based sources of marine pollution, improper waste disposal, untreated sewage, coastal landfills, and river runoff from industrial, agricultural, and aquaculture operations all contribute to the degradation of marine environments. Municipal wastewater, atmospheric deposition, dumping, dredging, and accidents like oil spills from shipping and offshore installations further exacerbate the impact on coastal and marine ecosystems and habitats”. In the nutshell, I must say that legal endeavours for the preservation of coastal life are undoubtedly good. However, the above mentioned human activities indicate a lack of proper implementation and enforcement of laws. Hence strict actions for the prevention of coastal pollution are need of the hour.

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# पाणिनिव्याकरणस्य विशेषतासु शोधपत्रम्

Arvind Kumar Singh\*

## सारः

पाणिनिः (पञ्चमः शताब्दीयः पूर्वम्) संस्कृतभाषायाः व्यवस्थापनं वैज्ञानिकं च करणाय "अष्टाध्यायी" नामकं ग्रन्थं रचयामास। तस्य रचना केवलं संस्कृतस्य न, अपितु सर्वेषां भाषाणां व्याकरणशास्त्राय आधाररूपेण स्थितम्। अस्मिन् शोधपत्रे पाणिनिव्याकरणस्य मुख्यविशेषताः परामृश्यन्ते।

## भूमिका

पाणिनेर् "अष्टाध्यायी" इत्ययं ग्रन्थः संस्कृतभाषायाः सर्वप्राचीनः व्यवस्थापकश्च ग्रन्थः अस्ति। अष्टसु अध्यायेषु चतुर्षु सहस्रेषु सूत्रेषु च, सम्पूर्णा संस्कृतभाषा व्यवस्थितरूपेण निरूपिता।

## १. सूत्रशैलीवैशिष्ट्यम्

पाणिनिव्याकरणस्य प्राधान्यं सूत्रशैलीविषये अस्ति। सूत्राणि लघूनि, स्पष्टानि, अर्थपूर्णानि च। यथा - "अङ्ण्" इति सूत्रं स्वरवर्णानां सङ्क्षेपेण निरूपणं करोति। एषा शैली भाषायाः जटिलतां बोधयितुं साहाय्यकरं भवति।

## २. प्रत्याहारप्रणाली

पाणिनिः प्रत्याहारनामकं प्रणालीं प्रकल्प्य वर्णानां वर्गीकरणं व्यवस्थापनं च अकारयत्। एषा प्रणाली वैज्ञानिकदृष्ट्या ध्वनिशास्त्रस्य अध्ययनं बोधयति।

## ३. सार्वभौमिकत्वं च नियमसंगति

पाणिनिव्याकरणं सार्वभौमिकदृष्ट्या रचितम्। तस्य नियमाः केवलं संस्कृतभाषायाः न, अपितु अन्यभाषाणामपि विश्लेषणाय उपयुक्ताः।

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## ४. अनुवृत्तिक्रमश्च

अष्टाध्याय्यां अनुवृत्तिः उपयुज्यते, यस्या कृते एकवारं उक्तं नियमं पुनः पुनः न लिखितुं आवश्यकम्। एषा प्रणालीं ग्रन्थं लघुं सुबोधं च करोति।

## ५. रूपपरिवर्तनप्रक्रिया

पाणिनिव्याकरणे धातु, उपसर्ग, प्रत्ययादीनां संयोजनद्वारा नूतनशब्दरचनां स्पष्टीकृतं। एषा प्रक्रिया भाषायाः विकासाय, शब्दनिर्माणाय च अत्युत्तमा।

## ६. भाषाशास्त्रीयदृष्टि

पाणिनिः ध्वन्यः, शब्दाः, वाक्यानि च केवलं भाषा उपकरणरूपेण न अवलोकयत्, अपितु तान् वैज्ञानिकं दार्शनिकं च दृष्ट्या पर्यालोचयत्।

## ७. लघुता सटीकता च

पाणिनिव्याकरणं लघुं सटीकं च। सूत्रेषु भाषायाः जटिलता लघुरूपेण निरूप्यते।

## ८. व्याकरणस्य व्यावहारिकोपयोग

पाणिनिव्याकरणं केवलं संस्कृताध्ययनाय उपयोगी न, अपितु भाषा शुद्धं प्रयोगे, सञ्चारे च सहायकरूपम्।

## उपसंहारः

पाणिनिव्याकरणं भाषाविज्ञानक्षेत्रे एकं मीलस्तम्भः अस्ति। तस्य वैज्ञानिकदृष्टिः, लघुत्वं, व्याप्तिदृष्टिः च आधुनिको भाषाशास्त्रे महानं योगदानं ददाति।

## सन्दर्भाः

१. अष्टाध्यायी - पाणिनिः
२. भारतीयव्याकरणपरम्परा: परिचयः च विश्लेषणम्
३. भाषाशास्त्रे पाणिनेर् योगदानम्

# Effect of Child Labour on Right to Education Legal Research and Writing

Nitin Kumar Lal\* and Dr. Shakuntla Sangam\*\*

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\*\*Assistant Professor of Law, Dr. RML National Law University, Lucknow.

2. *Maneka Gandhi v. Union of India*
3. *Francis Coralie v. Union Territory of Delhi*
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### ABSTRACT

This research work deals with the laws which is insufficient in itself till it is not supported by another law and in such situations it is more important to see the extent of both laws. Where the right to education is for betterment of child life but they are deprived from such opportunities as this law cannot attain its objective without other law such as child labour which protects children from child labour but it never offers for betterment of life. So we can understand the various laws are interlinked to do development and provide better life with human dignity by providing equal opportunity by help educating children as they are future of our country. The researcher would try to critically analyze the right to education and child labour law and draw a relation between them.

## INTRODUCTION

### Statement of the Problem

The problem to be addressed by the researcher is that bigger goals in the society cannot be achieved by means of a single law. In some cases the effective implementation of one law is contingent upon another law. If one law falls short on some grounds the other one fills in the gap. The researcher would try to trace out the related nature of Child Labour Act, 1986 and the Right to Education Act 2009. Both of the laws are interrelated in nature and in order to attain the objectives of these Acts there has to be parallel enforcement of laws.

### Significance of the Problem

Right to Education is a fundamental right enshrined in the Constitution.<sup>1</sup> It is the duty of the State to provide for the free and compulsory education to children in whatever manner it deems fit. However this right is not available to the children at large as many of them work instead of going to school. Primary education in India is not compulsory, nor is child labor illegal. As a result of which less than half of the

children in India are not in school.<sup>2</sup> The research would focus on the relationship and the correlation between the Child Labour Law and Right to Education.

## **Purpose**

The aim of the research work is to find out how Child Labour Law and Right to Education go hand in hand. The object is to see how these laws are in conformity with the provisions of the Constitution.

## **Hypothesis**

Whether the abolishment of Child Labour be helpful in effective implementation of Right to Education Act?

## **Assumption**

The Right to Education Act is meaningless without the implementation of law against Child Labour.

## **REVIEW OF RELATED MATERIAL**

For definitions of terms used:

**(a) World Labour Report**

**(b) New Encyclopedia Britannica**

To know about caused of Child Labour in India

**(a) Unicef and Indian Government Websites.**

**(b) Articles relating to Child labor in newspaper, magazine and Internet.**

**(c) Books referred addressing the respective problem**

To study about the problem and their impact on each other

**(a) Baretext- Constitution of India (Articles and commentaries on 86th amendment)**

**(b) Bareact- Right to free and compulsory education Act, 2009; Child Labor Act,**

**(c) Articles from newspaper**

Present Status in India:

**(a) National Commission Reports**

**(b) Legislation passed by Parliament relating to education for children**

(c) **Baretext- Constitution of India (Commentaries on Articles- 24, Art. 45)**

(d) **Case Laws-**

- **M.C. Mehta v. State of Tamil Nadu, AIR 1991 SC 417**
- **Goodricke Group Ltd v Center of West Bengal, 1995 (50) ECC 138**
- **In Unni Krishnan J.P. v State of Andhra Pradesh**
- **Mohini Jain v. Union of India, (1992) 3 SCC 666**
- **Maneka Gandhi v. UOI, AIR 1981 SC 746**
- **Francis Coralie v. Union Territory of Delhi, AIR 1978 SC 597**
- **Society for Un-aided Private Schools of Rajasthan v. Union of India and Another.**

## **DESIGN OF STUDY**

- **Description of Research Design and Procedure Used**

The researcher has used the critical analysis approach for the purpose of researching. Essentially a doctrinal research was conducted in which books, articles, case laws have been referred.

- **Sources of Data**

Secondary sources of data have been used in order to complete the research. Books, Articles, Newspaper, Websites, Bare Acts and Case Laws have been referred in order to complete in research.

- **Methods of Data Gathering**

Data was collected by means of doctrinal method. Firstly books on the subject were referred which were supplemented by articles. Then the provisions of the Constitution, Child Labour Act and Right to Education were referred along with case laws available on the subject.

## **ANALYSIS OF DATA**

### **Meaning Of Child Labour**

Though The Indian Labour legislation concerned with welfare of the children have defined the term “child” but it is difficult to find the precise definition of the term child labour in any of its enactment.

According to **World Labour Report**, the term “Child labour” implies something different, where young people are being exploited or overlooked or deprived off their rights to help for education of just to childhood<sup>3</sup>.

But according to the **New Encyclopedia Britannica, Micropedia**,<sup>4</sup> ‘Child labour’ means an employment of children under a specified legal age.

## **Causes Of Child Labour In India**

The reasons of child labour are clubbed with many factors. Some of them are enumerated below:

### *Unemployment*

Often children are forced to work in order to meet the needs of their family members. This is because adult wage earners are either unemployed or are engaged in meager jobs that cannot fulfill their needs.

### *Poverty*

Poverty is the root causes for child labour India. Being a developing country, poverty forces the parent to send their children to seek employment. This is done because the earning power of the parents is low.

### *Child Labour is a cheap commodity*

Children can be engaged for more hours of work in return to fewer wages. They do not possess the bargaining power, nor do they have the right to form trade unions to fight for their right. Hence the employers exploit the child labour by making them work from dawn to dusk, without any fear of retaliation. Thus child labour is very cheap labour in comparison to that of adults. In fact it ensures more margin of profit over fewer investments. Children are easily available and willing to work in the manner demanded by their employers. They can be convinced to adjust in any sort of working conditions even if they have serious health implications.

### *illiteracy and ignorance of parents*

The major portion of the population are usually illiterate specially the lower socio-economic groups. Their conditions never permit them to think of future, as their present life itself is miserable. The parents are illiterate and do not realize the significance of education. It is a long term investment which cannot be afforded by people with a weak financial status.

No importance is given to education as for the parents earning for a living supersedes the right of a child to be educated.

## CORRELATION BETWEEN CHILD LABOR LAW AND RIGHT TO EDUCATION

Education is significant for economic and social development. It is also important for building human capabilities and for opening opportunities.

Child Labour Law and Right to Education go hand in hand. They can be said to be supplementary to each other as both offer protection to children in the age group of six to fourteen. Both of these laws are instrumental in providing for a better future and promoting the welfare of children.

The child labour law is in direct disharmony with the Fundamental Right to Education after (86th Amendment to the Constitution, 2002) and the Right of Children to Free and Compulsory Education Act (RTE) passed in 2009. All children had the right to education but how could children be at school and at work at the same time.<sup>5</sup>

This means any attempt to give them education will be second rate parallel to non formal education.

***Child Labour is the denial of a child's right to education.*** The Right to Education ensures education for the children between the age group of six to fourteen leaving out a large proportion of working children.

In order to provide education to all, ***child labour must be first abolished since child labour and compulsory education are interlinked.*** Under the Child Labour Law, the employment of children in hazardous activities is a cognizable offence.<sup>6</sup> Hazardous activities have been categorized broadly and many activities which come under the ambit of child labour have not been listed by the Act. The extent of protection prima facie appears to be wide by use of the term hazardous activities but this term does not provide for an exhaustive list and lacks in covering a number of areas. Many children are still employed in non-hazardous occupations like agriculture and household work. Hence a vast majority of them remain out of school even though the Right to Education Act envisages education for each and every child.

***In order to address this contradiction between these two laws, Child Labour Act should either be repealed or amended.*** Child labour is prevalent since a long time in the society and there should be some positive step in pulling out these children from the employment they have undertaken. ***Once the child is taken out of working conditions he would have a willingness to go to school.*** The focus of attention must be to actively integrate and retain all 'out of school' children into

formal education systems.<sup>7</sup> ***The Right to Education Act is meaningless without the implementation of law against Child Labour.***

## CONSTITUTIONAL PERSPECTIVE

From the time the Constitution came into force, an emphasis has been laid on providing free and compulsory education to all children.

***Article 24<sup>8</sup> of the Constitution also bars the employment of children in any dangerous work. This provision is further supplemented by Article 45<sup>9</sup> for if the child is not to be employed below the age of 14 years he must be kept occupied in some educational institution.*** Under Article 21A the State is bound to provide free and compulsory education, rules should also be made in order to ensure compliance of the provision. The same could be achieved by conferring a duty on the employer of the child to give him reasonable opportunity for education which the State would be providing for free. For the State this would mean that, now it would be able to ensure that its obligations under Article 21A are met, by means of penal sanctions on the employer<sup>10</sup>. Regulations can be made regarding duty hours which might be compatible with the timings of the nearest possible State funded school.

***Studies show that children either drop out or never join school because they are poor and the survival of their family depends upon the earnings of the children.***<sup>11</sup> Poverty is often quoted as a reason for child labour and the resulting exclusion of children from school. ***If the parents of such children were able to earn above a subsistence level of income, the children would not have to go to work.*** Rules could also be made casting a duty upon the employer to provide all the resources for education to child labour and give him regular wages. This would be beneficial for the child labour as he would provide for the needs of the family and simultaneously go to school.

In ***M.C. Mehta v. State of Tamil Nadu***<sup>12</sup> The Supreme Court intended for non employment of children in hazardous jobs in factories for manufacture of match boxes and fireworks and held that some positive steps should be taken for the welfare of such children as well as for improving the quality of their life.

In ***Goodricke Group Ltd v Center of West Bengal***<sup>13</sup> the Court held that it would be for the Centre and State/Union Territories to raise necessary resources to achieve the goal of providing free education. Article 21A has been inserted in

the India Act, 2002 which provides that the state shall provide free and compulsory education to all children of the age of six to fourteen years in such manner as the state may, by law, determine.

***In Unni Krishnan J.P. v State of Andhra Pradesh***<sup>14</sup> The Supreme Court held that right to basic education was implied by the fundamental right to life when read with article 41 of directive principle on education. As per article 45 of the constitution, the state is to provide free and compulsory education for all children below the age of 14 years and there is no fundamental right to education for a professional degree that flows from article 21. Several states have passed legislation making primary education compulsory and there is no central legislation to make elementary education compulsory.

## **LAWS IN CONFORMITY WITH RIGHT TO EQUALITY AND RIGHT TO LIFE**

Every enacted law derives validity from the Constitution. One of the goals after the commencement of the Constitution was to provide free and compulsory education for all children up to 14 years within 10 years as enunciated in Article 45 of the Directive Principles.

However the promise remained a dream for half-a-century. The Supreme Court declared in ***Mohini Jain v. Union of India***<sup>15</sup> that right to education is a part of Right to life<sup>16</sup>. It was observed that Right to life is the compendious expression for all those rights which the courts must enforce because they are basic to the dignified enjoyment of life. The right to education flows directly from right to life. The right to life under Article 21 and the dignity of an individual cannot be assured unless it is accompanied by the right to education. The State Government is under an obligation to make endeavor to provide educational facility at all levels to its citizens.

The Supreme Court gave a new dimension to Right to Life in ***Maneka Gandhi v. Union of India***<sup>17</sup> wherein it was held that right to life is not merely confined to physical existence but it includes within its ambit the right to live with human dignity.

Therefore when a child works in factories indulging himself in hazardous activities, his right under Article 21 is violated. Often he is not given a healthy working environment and thus the right to living a dignified life is taken away. So

the Child Labour Act aims at protecting the right to life of a child by regulating the working conditions and employment of the child.

The views on right to life were further elaborated in the case of **Francis Coralie v. Union Territory of Delhi**<sup>18</sup> where it was held that right to life is not restricted to mere animal existence. It also includes the right to live with human dignity and all that goes along with it, namely, the bare necessities of life such as, adequate nutrition, clothing and shelter and the facilities for reading, writing and expressing ourselves in diverse forms.

So every child should enjoy all these facilities for leading a dignified life and he should be taken out from the working conditions which are detrimental to his life. A child should not be made to work for a prolonged time as the right to life does not mean only existence. It means that every child should have the liberty to lead his own life. There is a violation of Article 21 when a child is made to work beyond his capacity and is provided with minimum wages.

Article 14 embodied in the Constitution guarantees the right to equality. It guarantees equality before the law or equal protection of laws within the territory of India. The equality clause also means that there should be equality among equals. Equality could be achieved through education. Once a child of a low socio economic family is educated, he would have equal access to all the opportunities available to the children regularly going to school.

With a view of providing equal opportunities, Section 12<sup>19</sup> of the Right of Children to Free and Compulsory Education Act 2009 has made it compulsory for every private unaided school to admit at least 25% of its entry level class from children belonging to weaker and disadvantaged groups. For this category of students the state government shall reimburse schools an amount equal to either the fees charged by the school or the per child expenditure in state schools, whichever is lower.

The Supreme Court has tried to bridge the gap between the financially weaker groups and the urban children by upholding the validity of Section 12 of the Act in **Society for Un-aided Private Schools of Rajasthan v. Union of India and Another**.<sup>20</sup> The Court said that 25 percent reservation for students from weaker sections of society would apply uniformly to all government and unaided private schools except unaided private minority schools and boarding schools.

## CONCLUSION

The problem of Child Labour directly impacts the Right to Education. Both these laws are not in conformity with each other. There have been efforts to resolve the same as discussed earlier. The present problem lies with the implementation of these laws wherein the non compliance of one law adversely affects the second law. There has not been any effort to protect the child from non hazardous activities as some domestic activities which are of dangerous nature have not been covered in the Act. Although the proposed amendment in Child Labour Act addresses this issue, but the concern is that what remedy is available to the children until the amendment to the Act comes into force.

A child labour should be first provided with the basic necessities for livelihood so that he does not have to earn for his family. In doing this parents of the child could be given better employment facilities or incentives so that they do not have to send their children to school.

A child could get educated without any obstacle and with free mind and from his family and financial problem only when there are some law which are made for promoting education like providing food to every child, providing clean and healthy environment to live rather than dirty places or slums area, educational allowances to families so that they are able to educate the child. There is a need for an effective machinery and public awareness in the social problem like child labour and uneducated group of children.

There is need of an effective law with strict implementation and clear intention of govt to achieve such objective and goal like abolition of child labour which is going to be done by the proposed amendment.

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# कातंत्रव्याकरणस्य शर्ववर्मविरचितचतुष्कव्यवहारस्य एकमध्ययनम्

प्रियंका मीना\*

भगवान् पतञ्जलिर्व्याकरणं “शब्दानुशासनम्” इति व्यवहरति, “अथ शब्दानुशासनम् केषां शब्दानाम् लौकिकानां वैदिकानाञ्च” इति महाभाष्ये कथनात्। एतच्छब्दशास्त्रमधिकृत्य व्याकरणमिति नाम बहुत्र प्रयुक्तं दृश्यते। तद्यथा रामायणे –

नूनं व्याकरणं कृत्स्नमनेन बहुधा श्रुतम् ।  
बहु व्याहरतानेन न किञ्चिदपभाषितम् ॥ इति ।<sup>2</sup>  
अनेन ज्ञायते यत् - त्रेतायुगेऽपि व्याकरणस्य  
स्थितिरासीदिति । महाभारतेऽपि  
सर्वार्थानां व्याकरणाद्वैयाकरण उच्यते ।  
तन्मुलतो व्याकरणं व्याकरोतीति तत्तथा ॥ इति ।<sup>3</sup>  
एवं वायुपुराणेऽपि शब्दशास्त्रविषये कश्चित् श्लोक  
उपलभ्यते । यथा –  
तत्रभिमानी भगवान्वायुष्टातिक्रियात्मकः ।  
वातारणिः समाख्यातः शब्दशास्त्रविशारदः ॥ इति ।<sup>4</sup>

व्याकरणस्य पठनपाठनपद्धतिः बहोः कालात्पूर्वमेवावर्ततेति भगवान्पतञ्जलिरप्याह –  
“पुराकल्पे एतदासीत्, संस्कारोत्तरं ब्राह्मणा व्याकरणं

स्माधीयते इति ।<sup>5</sup> व्याकरणशब्दः यस्माद्धातोर्निष्पद्यते तद्धातोः प्रयोगः यजुर्वेदे दरीदृश्यते ।<sup>6</sup>  
यथा – दृष्ट्वा रूपे व्याकरोत्सत्यानुते प्रजापतिः । इति ।

तथैव मैत्रयणीयसंहितायाम् - “तस्मात्पडिवभक्तयः”<sup>7</sup> इति । एवं “सप्तधा वै बागभवत्”<sup>8</sup>  
इति ऐतरेयन्ब्राह्मणे दृश्यते । “सप्तधा” इत्यस्य सप्तविभक्तय इति भट्टभास्करैर्व्याख्यातम् ।<sup>9</sup>  
स्वयमृगवेदेऽपि “सुदेवो असि वरुण । यस्य ते सप्त सिन्धवः”<sup>10</sup> इति मन्त्रो दृश्यते । तन्मन्त्रं स्वीकृत्य  
व्याख्यां कुर्वाणाः पतञ्जलिमहर्षयः “सप्तसिन्धव” इति पदस्य सप्तविभक्तय इत्यर्थमकार्षुः ।  
सर्वेषां नामशब्दानां निष्पत्तिप्रदर्शक शाकटायनव्याकरणमपि यास्कात्त्वप्रागेव रचितमासीत् ।

शोधार्थी (व्याकरण विभाग), ज.रा.रा.स.वि.वि. जयपुर (राज.)।

तदुक्तं निरुक्ते – “न सर्वाणीति गार्यो वैयाकरणानां चेत्येके। तत्र नामाख्यातजानीति शाकटायनो नैरुक्तसमयष्टा” इति।<sup>11</sup> एतैः प्रमाणैर्व्याकरणस्य प्राचीनतमत्वं सिध्यति। एवं च व्याकरणं समस्तद्वैपायनपरम्परार्षवैदिकवाङ्मयादपि प्राचीनमिति युधिष्ठिरमीमांसकानां<sup>12</sup> मतं युक्तं प्रतिभाति।

यथा व्याकरणस्य प्राचीनत्वं सिद्धं तद्वत्प्रकरणगतसंज्ञाप्रत्ययादीनामपि प्राचीनत्वं गोपथब्राह्मण ावलोकनेन साध्यते। तत्र हि – “ओङ्कारं पृच्छामः को धातुः? किं प्रातिपादिकम्? किं नामाख्यातम्? किं लिङ्गम्? किं वचनम्? का विभक्तिः? कः प्रत्ययः? कः स्वरः? को विकारी? कति मात्राः? कति वर्णाः? कत्यक्षराणि? कः संयोगः? किं स्थाननादानुप्रदानानुकरणम्? इति<sup>13</sup> प्रश्नः समुद्धतः।

“एकः शब्दः सम्यग्ज्ञातः शास्त्रान्वितः स्वर्गे लोके कामधुग्भवति” इत्युभियुक्तवाक्येन<sup>14</sup> साधुशब्दज्ञानोपयोगितया व्याकरणस्मृतेः मन्वादिमृतीनामिव प्रामाण्यं सिध्यति। “साधुभिर्भाषितव्यं, नासाधुभिः” “नानृतं वदेत्” इत्यादि विधिनिषेधपराणि वचनानि साधुशब्दज्ञानाद् धर्माख्यं प्रयोजनं प्रतिपादयन्ति। तत्रापि वैदिके कर्मण्यसाधुशब्दप्रयोगो नैव कार्य इति महाभाष्यात्प्रतीयते। यथा – “याज्ञे पुनः कर्मणि नापभाषन्ते”<sup>15</sup> इति। तथैव “आहिताग्निरपशब्दं प्रयुज्य प्रायष्टितीयां सारस्वतीमिष्टिं निर्वपेत्” इति<sup>16</sup> वाक्यं प्रायष्टित्तमपि विधत्ते। लोके साधूनामसाधूनां च शब्दानां प्रयोगेऽर्थबोधो जायत एव। तथाऽपि साधुशब्दप्रयोगाद्धर्मो वर्धत इत्यास्तिकानां विश्वासः। यथोक्तं भाष्यकारेण “समायामर्थावगतौ शब्दैश्चापशब्दैश्च शब्द एव प्रयोक्तव्यो नापशब्द” इति।<sup>17</sup> अपशब्दप्रयोगे प्रयोक्तृभिमतोऽर्थः स्पष्टं न प्रतीयेत। अर्थान्तरं च भासेत्। तथा चाहादिकविः –

दुःखेन बुबुधे सीतां हनूमाननलङ्कृताम् ।  
संस्कारेण यथा हीनां वाचमर्थान्तरं गताम् ।। इति ।<sup>18</sup>

वाचसंस्कारकं व्याकरणम्। अशोकवनिकायां रामवियुक्तां सीतामुद्दिश्य वचनमिदम्। अत एव आलङ्कारिकाः। व्याकरणविरुद्धप्रयोगेषु “च्युतसंस्कृति” रूपं दोषं प्रदर्शयन्ति।<sup>19</sup> अतो लौकिकवैदिकसाधारणस्य शब्दस्य ज्ञानं सर्वेषामत्यावश्यकम्। तच्च व्याकरणाधीनम्। अत एव मीमांसकाः साधुशब्दप्रयुक्त्यधिकरणे व्याकरणस्मृतेः प्रामाण्यं महता प्रबन्धेन व्यवातिष्ठिपन्। तथा च न्यायभाष्ये वात्स्यायनेनोक्तम् “समयपालनार्थं चेदं पदलक्षणया बाचोऽन्वाख्यानं व्याकरणम्” इति।<sup>20</sup> एवं पराशापुराणेऽपि –

**पाणिनीयं महाशास्त्रं पदसाधुत्वलक्षणम् ।  
सर्वोपकारकं ग्राह्यं कृत्वं त्याज्यं न किञ्चन ।। इत्युक्तम् ।<sup>21</sup>**

### व्याकरणप्रयोजनानि

च अथ शब्दानुशासनमिति<sup>22</sup> भाष्यकारवचनानुसारेण शब्दाननुशास्तीदं शास्त्रमिति कारणात् शब्दानुशासनमेव व्याकरणस्य प्रधानं प्रयोजनं भवति । प्रकृतिप्रत्ययविभागकल्पनया सामान्यविशेषवता लक्षणेन शब्दानामनुशासनमित्यर्थः । भगवान्पतञ्जलिः वेदाङ्गत्वेन व्याकरणस्य पञ्च मुख्यप्रयोजनानि, त्रयोदश गौणप्रयोजनानि च प्रत्यपीपदत् । तानि च “रक्षोहागमलघ्वसन्देहाः प्रयोजनम्”<sup>23</sup> इत्युपक्रम्य वर्णितानि । यथा —

१. **रक्षा:** सतोऽप्यर्थस्यापायराहित्यं रक्षा । लोपागमवर्णविकारज्ञो हि सम्यग्वेदान्परिपालयिष्यति । विद्यमानस्य वर्णस्यादर्शनं लोपः । यथा ‘अदुह्व’ इत्यत्र दुर्लङ्घि झस्यादादेशे “लोपस्त आत्मनेपदेषु” (७-१-४१) है । इति तस्य लोपः । आगमश्चाविद्यमानस्य वर्णस्योपस्थितिः । यथा सौभाग्यमस्यै दत्वाय इत्यत्र “क्त्वो यक्” (७-१-४७) इति यगागमः । वर्णविकारश्चाविद्यमानस्य वर्णस्य वर्णान्तरपरिणतिः । यथा “उद्वाभं च निग्राभं च ब्रह्मदेवा अवीवृधन्”<sup>25</sup> इति मन्त्रे उद्वाहनिग्राहशब्दयोः हकारस्य स्थाने भकारः परिलक्ष्यते । नह्यवैयाकरण इमानंशानध्यवस्यति ।
२. **ऊहः** आश्रयलिङ्गवचनभेदेन भवत्यूहः । न सर्वैर्लिङ्गेर्न च सर्वाभिर्विभक्तिभिर्वेदे मन्त्रा निगदिताः । ते चावश्यं यजगतेन यथार्थं विपरिणमयितव्याः । यथा — “अग्रये जुष्टं निर्वपामि” इति प्रकृतियागे । सूर्योद्देश्यके यागे “सूर्याय जुष्टं निर्वपामि” इति विपरिणामः । न शक्येत्यवैयाकरणः यथायथं विपरिणमयितुम् । तस्माद्व्याकरणमध्येयम् ।
३. **आगमः** पारम्पर्येणागतः श्रुतिलक्षण उपदेशः आगमशब्देनोच्यते । यथा — “ब्राह्मणेन निष्कारणो धर्मः षडङ्गो बेदोऽध्येयो ज्ञेयष्टा” । पदपदार्थावगमस्य व्याकरणनिमित्तत्वाद् वाक्यवाक्यार्थावमायस्य च तन्मूलत्वात् पट्स्वङ्गेषु व्याकरणं प्रधानमित्युच्यते च कृती यवः फलवान् भवति । तस्मादध्येयं व्याकरणम् ।
४. **लघुः** अचिरकालसम्प्रतिपत्तिर्माधवम् । लघुना उपायेन शब्दा ज्ञेयाः । उपायश्चा कार्यनिवृत्तिं प्रति कारणानां विन्यासविशेषः । अध्यापनं हि ब्राह्मणस्य वृत्तिः । तेनावश्यं शब्दा ज्ञेयाः ।

शब्दज्ञानं प्रति व्याकरणमेव लघुपायः । एवञ्च सकलसाधुशब्दज्ञानहेतुभूतप्रक्रियारूप लघुभूतोपायज्ञानार्थं व्याकरणमध्येयम् ।

५. **असन्देहः** सन्देहरहितत्वेन स्वरादीनां ज्ञानम् । स्वरभेदादर्थभेदो भवति । यान्निकाः पठन्ति” स्थूलपृषतीमग्निवारुणीमनद्वाहीमालभेत” इति । यद्यत्र पूर्वपदप्रकृतिस्वरत्वं तर्हि स्थूलानि पृषन्ति यस्याः सा इति बहुव्रीहिः । अथान्तोदात्तत्वं तदा स्थूला चासी पृषती चेति तत्पुरुषः । न हि वैयाकरणस्य सन्देहो भवति । तस्मात्सन्देहप्रागभावपरिपालनायाध्येयं व्याकरणम् । एतानि प्रधानप्रयोजनानि । आनुषङ्गिकरूपेण त्रयोदश प्रयोजनानि प्रतिपादितानि” इमानि च भूयः प्रयोजनानी” त्यादिना<sup>26</sup> । म्लेच्छतानिवारणं व्याकरणस्य प्रयोजनम् । म्लेच्छोऽपशब्दः । म्लेच्छतानिवारणाय व्याकरणमध्येयम् । अंत एवोक्तम्

**यद्यपि बहु नाधीये तथाऽपि पठ पुत्र व्याकरणम् ।**

**स्वजनः श्वजनो मा भूत्सकालं शकलं सकृच्छकृत् ।। इति ।<sup>27</sup>**

वेदाङ्गेषु प्रधानमिदं व्याकरणं योऽधीते स एवेतराणि शास्त्रण्यधिगन्तुं ममर्थो भवति । तदुक्तम् —

**यो वेद वेदवदनं सदनं हिं सम्यक्  
ब्राह्मयाः स वेदमपि वेद किमन्यशाखम् ।  
यस्मादतः प्रथममेतदधीत्य धीमान्  
शास्त्रन्तरेषु भवति श्रवणेऽधिकारी ।। इति ।<sup>28</sup>**

यश्चाधीतव्याकरणः स एवं स्वीयया वाक्चातुर्या सभा रञ्जयति । अनधीतव्याकरणस्तु —

**नाङ्गीकृतव्याकरणौषधानामपाटवं वाचि सुगाढमास्ते ।  
कस्मिंश्चिदुक्ते तु पदे कथंचित्स्वैरं वपुः स्वियपि वेपते च ।।**

इत्युक्तरीत्या<sup>29</sup>

साधुशब्दज्ञानाभावात् कम्पमानो वाक्यं ब्रवीति । अत एवोच्यते नीतिज्ञैः — शब्दशास्त्रमनधीत्य यः पुमान् वक्तुमिच्छति वचः सभान्तरे । बन्धुमिच्छति वने मदोत्कटं हस्तिनं कमलनालतन्तुना ।। इति । <sup>30</sup> शब्दशास्त्रमविज्ञाय सभायां वाक्चातुरीप्रदर्शनं दुःसाहसमेव । एवञ्चाधीतव्याकरण एव शब्दैः सह निभृतं क्रीडितुं शक्नोति येन स परां सिद्धिमवाप्नोतीति साधुशब्दज्ञानमेव व्याकरणस्य मुख्यं प्रयोजनम् ।

न हि व्याकरणस्य काचित्सीमाऽस्ति । पारेपरार्धं स्थितानपि शब्दाननुशास्तीदं शास्त्रम् । किञ्च शास्त्रान्तरेष्वपि व्याकरणस्य महती उपयोगिता विद्यत एव ।

सामान्यतः छान्दसं, लौकिकं चेति व्याकरणं द्विधा विभक्तुं शक्यते तत्र छान्दसं प्रातिशाख्यादि । लौकिकं पाणिन्यादि व्याकरणम् । प्रातिशाख्यं वेदानां प्रतिशाखासम्बद्धम् । वेदस्य यावत्यः शाखाः सन्ति तावन्ति प्रातिशाख्यानि बर्तेरन् । परमद्यत्वे पडेव प्रातिशाख्यान्युपलभ्यन्ते । लौकिकव्याकरणं द्विधा विभज्यते सच्छान्दसं, लौकिकमात्रं चेति । सच्छान्दसं, पाणिनीयं, लौकिकमात्रं कातन्त्रादि लौकिकव्याकरणस्य बहवो भेदा विद्यन्ते । सम्प्रत्यपि अष्टादशाधिका व्याकरणपरम्परा प्रवर्तिता दृश्यते । तेष्वपि अष्टी वा नवसंख्याका वा प्राधान्येन् गृहीताः सन्ति । तथा हि—

ब्राह्ममैशानमैन्द्रं च झाजापत्यं बृहस्पतिम् ।  
त्वाष्ट्रमापिशलं चेति पाणिनीयमथाष्टकम् ॥ इति ।<sup>31</sup>

अष्टी व्याकरणानि प्रसिद्धानि दृश्यन्ते । तत्राष्टानां व्याकरणानां प्रणेतृणां विषये मतभेदोऽवलोक्यते । यथा —

यस्मिन्व्याकरणान्यष्टौ निरूप्यन्ते महान्ति च ।  
तत्रद्यं ब्राह्ममुदितं द्वितीयं चान्द्रमुच्यते ॥  
तृतीयं याम्यमाख्यातं चतुर्थं रौद्रमुच्यते ।  
वायव्यं पंचमं झोक्तं षष्ठं वारुणमुच्यते ॥  
सप्तमं सौम्यमाख्यातमष्टमं वैष्णवं तथा ॥ इति ।<sup>32</sup>

परं बोपदेवस्तु अन्यर्थवाह —

इन्द्रश्चान्द्रः काशकृत्स्रापिशली शाकटायनः ।  
पाणिन्यमरजैनेन्द्रा जयन्त्यष्टौ हि शाब्दिकाः ॥ इतिः<sup>33</sup>

रामायणे तावत् “सोऽयं नवव्याकरणार्थचेत्ता”<sup>34</sup> इति वचनेन व्याकरणस्य नवविधत्वमुच्यते । सत्यप्येवं मतभेदे सम्प्रदायप्रवर्तका आचार्या अष्टावेवेति इतिहासप्रणेतृणां लोकमणिदाहालमहाशयानामाशयः । तद्रीत्या —

ऐन्द्रं चान्द्रं काशकृत्वं कौमारं शाकटायनम् ।  
सारस्वतं चापिशलं शाकल्यं पाणिनीयकम् ॥<sup>35</sup>

इत्यष्टौ व्याकरणप्रवर्तकाः ॥

भारतीयैतिह्येषु सर्वासामपि विद्यानां प्रथमप्रवक्ता ब्रह्मा । स्थिते चौवं व्याकरणादीनां शास्त्राणामपि ब्रह्ममूलकत्वं समायातम् । यथोच्यते यथाऽचार्या ऊचुर्ब्रह्मा बृहस्पतये प्रोवाच बृहस्पतिरिन्द्रायेन्द्रो भरद्वाजाय भरद्वाजो ऋषिभ्य ऋषयो ब्राह्मणेभ्यस्तं खल्विममक्षरसमाम्नायम् इत्याक्षते<sup>36</sup> इति । परं प्रथमः शब्दसंस्कर्त्ता क इत्यत्र विद्वत्सु मतभेदोऽवलोक्यते । केचिदिन्द्रं प्रथमवैयाकरणं मन्यन्ते । तत्र हि यजुर्वेदीयतैत्तिरीय संहितान्तर्गतं मन्त्रं प्रमाणत्वेन दर्शयन्ति । तद्यथा – “वाग्वै पराच्यव्याकृताऽवदत् । ते देवा इन्द्रमब्रुवन्निमान्नो वाचं व्याकुर्विति । तामिन्द्रो मध्यतोऽवक्रम्य व्याकरोत्तस्मादियं व्याकृता वागुच्यते”<sup>37</sup> इति । मन्त्रस्यैतस्य व्याख्यां विदधानः सायणाचार्यः “तामखण्डां वाचं मध्ये विच्छिद्य

प्रकृतिप्रत्ययविभागं सर्वत्राकरोदि” त्याह ।<sup>38</sup> अन्ये केचिन्महेश्वरं प्रथमवैयाकरणममन्यन्त । ते तु –

**समुद्ववद् व्याकरणं महेश्वरे तदर्धकुम्भोद्धरणं बृहस्पती ।  
तद्भागभागाच्च शतं पुरन्दरे कुशाग्रबिन्दूत्पतितं हि पाणिनौ ।।<sup>39</sup>**

इति सारस्वतं भाष्यं प्रमाणत्वेन निर्दिशन्ति । एतद्रीत्या चिन्त्यमाने महेश्वरः प्रथमवैयाकरणः, ततः परं बृहस्पतिः, इन्द्रः, पाणिनिः इत्येवं क्रमोऽवगम्यते । अयं महेश्वरः साक्षाद्भगवान् शङ्कर एवेति ते विदुः । तथैव नन्दिकेश्वरकाशिकायामुक्तम् –

**नृत्तावसाने नटराजराजो ननाद ढक्कां नव पंच बारम् ।**

**उद्धर्तुकामः सनकादिसिद्धानेतद्विमर्श शिवसूत्रजालम् ।। इति<sup>40</sup> ।**

श्लोकोऽयं पूर्वोक्तं विचारमुपोद्वलयति । युधिष्ठिरमीमांसकाः,<sup>41</sup> लोकमणिदाहालप्रभृतयः<sup>42</sup> इतिहासकारा अपि मतमिदमङ्गीकुर्वते ।

बृहस्पतिस्तावत् द्वितीयवैयाकरणस्थानमधितिष्ठति । सुराचार्योऽयं ब्रह्मणः सकाशात् व्याकरणमधीत्य माहेश्वरव्याकरणं सञ्चिक्षेपेति श्रूयते । महाभाष्ये पतञ्जलिनोक्तमम् – “बृहस्पतिरिन्द्राय दिव्यं वर्षसहस्रं प्रतिपदोक्तानां शब्दपारायणं प्रोवाच नान्तं जगाम” इति । अनेनास्य वैयाकरणत्वं सर्वसम्मतम् । एवं रीत्या अनेके आचार्याः वैयाकरणत्वेन संस्मर्यन्ते ऐतिहासिकैः महेश्वरः, बृहस्पतिः, इन्द्रः, वायुः, भरद्वाजः, भागुरिः, पौष्करसादिः, चारायणः, काशकृत्वः, वैयाघ्रपद्यः, माध्यन्दिनिः, रोडिः, शौनकिः, गौतमः, व्याडिरिति । एते चाचार्याः पाणिनिना अष्टाध्याय्यां किमर्थं नोल्लिखिता इति विषये न किमपि ज्ञायते । अन्ततो गत्वा

इदं वक्तुं शक्यते — यैः स भणामित्र मतभेदोऽवर्तत तैपामुल्लेवस्तु पाणिनिना मूतः, परं यैः मह नः कोऽपि मतभेदः तेऽभानुल्लिखिता” इति ।

व्याकरणवाचये कातन्त्रव्याकरणस्य स्थानमतिमहत्त्वपूर्णमस्ति । कलापककोमारञ्चास्यैव नामान्तरम् । अर्वाचीनाः वैयाकरणाः कलाप शब्देनाप्यस्य अपहारं कुर्वन्ति । व्याकरणमिदं काशकृ त्खतन्त्रस्य संक्षिप्तं रूपमस्ति । व्याकरणेस्मिन् द्वी भागौ स्तः — आख्यातान्त-कृदन्तभेदात् ।

कातन्त्रव्याकरणस्य रचनाकालोऽतिविवादास्पदो दृश्यते, किन्तु श्रीद्विष्टिरमीमांसकमहोदयेन स्वकीये संस्कृतव्याकरण शास्त्र का इतिहास इत्यभिधेये ग्रन्थे साधकबाधकयुक्तिभिः कातन्त्रव्याकरणस्य रचनाकालः वैक्रमाब्दात् द्विसहस्रवर्षप्राचीनः साधितः ।

कातन्त्रव्याकरणस्य कर्तृत्वविषयेऽपि विवाद एव । कातन्त्रव्याकरणस्य कथासरित्सागरकातन्त्रवृत्तिटीकाप्रभृतिग्रन्थानुसारं आख्यातान्तभागस्य कर्ताशर्ववर्माऽस्ति । कृदन्तभागस्य कर्ता कात्यायनोऽस्तीति कातन्त्रवृत्तिकारेण श्रीदुर्गसिंहेन सूचितम् । किन्तु तेनेदं न सूचितम् कोऽसौ कात्यायनः, यः कातन्त्रस्य कृदन्तभागस्य कर्ता । कातन्त्रे कृदन्तभागसमावेशानन्तरमपि तत्रावशिष्टान्येनेकानि नैन्यून्यानि दूरीकर्तुं श्रीपतिदत्तः कातन्त्रपरिशिष्टं प्रणिनाय । कातन्त्रव्याकरणस्य वैशिष्ट्यवर्धनाय श्रीविजयानन्दः कातन्त्रोत्तरग्रन्थं रचयामास ।

अनेन स्पष्टं भवति यत् शर्ववर्ममहोदयेन कातन्त्रव्याकरणोपरि एकः सरलव्याख्याग्रन्थः विरचितः

## विषय प्रवेश

प्रणीताः । कातन्त्रव्याकरणस्योपर्यनेकैर्विद्विभष्टीकाः विशिष्टटीकाकाराः शर्ववर्म — दुर्गसिंह वररुचि जिनप्रभसूरि जगद्धरभट्टादयः तेषु तेषु मन्ति । कातन्त्रव्याकरणस्योपरि शर्ववर्ममहोदयेन एका टीका प्रणीता ।

## सम्बद्धसाहित्यस्य विवरणम्

कातन्त्रव्याकरणस्योपर्यनेकैर्विद्विभष्टीकाः प्रणीताः ।

१. विजयानन्देन — कातन्त्रोत्तरग्रन्थः ।
२. शर्ववर्मणा — बृहदवृत्तिः
३. दुर्गसिंहेन — दुर्गवृत्तिः ।
४. वररुचिना — चौवकूटीवृत्तिः ।

५. जिनप्रभसूरिणा कातन्त्रविश्वमनाश्री टीका ।
  ६. श्रीजगद्धरभट्टेन बालबोधिनी नाम्नी टीका ।
- इतोऽपि बहवः टीकाकाराः परमत्र विस्तरभयात् विरम्यते ।

## शोधविषयस्य औचित्यमुपादेयता च

व्याकरणाध्ययनं यदाऽनिवार्यं नानेन विना संस्कृतसाहित्ये प्रवेशस्यापि सम्भवः, अस्यामवस्थायां कातन्त्रव्याकरणाध्ययनस्य कश्चन सरलोपायः स्यात् इति विचारे समुत्पन्ने शर्ववर्महोदयेन चतुष्कव्यवहारः इति वृत्तिग्रन्थः लिखितः । तत्र विद्यमानज्ञानम् अद्यावधि तमसि वर्तते, बहुखेदोऽयं विषयः अस्माकं भारतीयानां कृते इति अस्पृष्टम्, अनुद्धाटितम्, अप्रकाशितञ्च इमं ग्रन्थं ज्ञात्वा मया अयं ग्रन्थः समीक्षात्मकसम्पादनाय स्वीकृतः ।

## शोधोद्देश्यानि

१. संस्कृतभाषायाः संरक्षणं संवर्धनम् ।
२. संस्कृतव्याकरणशास्त्रस्य ज्ञानाभिवर्द्धनम् ।
३. संस्कृतव्याकरणे नूतनज्ञानसम्पादनम् ।
४. कातन्त्रव्याकरणस्य ज्ञानाभिवर्द्धनम् ।

## कार्ययोजना

अब मया शर्ववर्महोदयेन विरचितचतुष्कव्यवहारस्य सम्पादनं तथा अस्य ग्रन्थस्य समीक्षणं क्रियते ।

## ग्रन्थस्य सामान्यतः परिचयः महत्त्वञ्च

पदच्छेदः पदार्थोक्तिः विग्रहो वाक्ययोजना । आक्षेपोऽथ समाधानं व्याख्यानं षड्विधं स्मृतम् । ।  
लोकेनानेन स्पष्टं यत् सूत्रग्रन्थानां व्याख्यानेषु पदच्छेद पदार्थ समासविग्रहाऽनुवृत्तिवाक्ययोजना (सूत्रेऽदृष्टपूर्वप्रकरणस्थ पदानुवृत्तिः)

**उदाहरण** - प्रत्युदाहरण पूर्वपक्षसमाधानानां प्रायः समावेशो भवति स्म । इमं विधिमाश्रित्य शर्ववर्महोदयेन कातन्त्रव्याकरणस्य चतुष्कव्यवहारनाश्री टीका लिखिता । वृत्तिरियमतीव विस्तृताऽस्ति । अत्र कातन्त्रव्याकरणक्रमेण सर्वेषो सूत्राणां वृत्तिः लिखिता ग्रन्थकारेण । अत्र

प्रथमं तु मङ्गलाचरणस्य व्याख्या कृता ग्रत्वकारेण । मङ्गलाचरणव्याख्यावसरे आख्यातव्याख्या विधीयते । आख्यातसूत्रव्याख्यानन्तरं कृदन्तसूत्राणां व्याख्या कृता । ग्रन्थस्यास्य परिशीलनेनेयं ज्ञायते यत् छात्रान् मनसि निधाय वृत्तिरियं लिखितेति । अत्यन्तं सरला उदाहरणप्रत्युदाहरणभूयिष्ठता च वृत्तिरियमवश्यं विदुषां मोदाय भवतीत्यत्र नास्ति संशीतिः ।

### ग्रन्थकर्तुः परिचयः

भारतीयकवीनां समग्रनिर्धारणमतिकष्टसाध्यं कार्यम्, यतस्तैः स्वविषये किमपि न लिखितम् । अस्यां स्थितौ अन्यकृतैरुल्लेखैः अनुमानेन च प्राचां कवीनां समयो व्यवस्थापनीयो भवति । अस्मादेव हेतोः काशीनाथमहाशयानां समयसम्बन्धेऽपि मतभेदा वर्तन्ते । तथापि ग्रन्थस्यान्ते पुष्पिकासन्दर्शनेन संस्कृतव्याकरणशास्त्रेतिहासविमर्शसन्दर्शनेन ज्ञायते यत् अस्य ग्रन्थस्य कालः विक्रमसंवत् 1562 इति भवितुं शक्नोति ।

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# Effectiveness of Concept Attainment Model for Teaching Difficult Concept of Geometry

Dr. Sadhana Makde\*

## INTRODUCTION

Mathematics is a field of study that discovers and organizes methods, theories and theorems that are developed and proved for the needs of empirical sciences and mathematics itself. There are many areas of mathematics which include number theories, algebra, geometry analysis and set theory.

## ROLE OF GEOMETRY IN MATHEMATICS

Geometry is the science of space and extent. It deals with the position, shape and size of bodies but has nothing to do with their material or physical properties.

### *Demonstrative Geometry*

It deals with the position, shape, size and position of figures by pure reasoning based on definitions, self-evident truths, assumptions and other established geometrical truths. Euclid, a celebrated Greek mathematician (323-285 B.C) was the father of demonstrative geometry.

He devised many methods for handling its problems. His methods are intuitional, observation, inventional, constructive, informal, creative, experimental etc.

### *Practical Geometry*

It covers the construction work of the subject of course, most of this work is also directly or indirectly based on demonstrative geometry.

### *Difficult concept of Geometry*

There are some basic concepts which have to be made clear to the students. Their conception is to precede their definitions.

Definitions should be given only after the concepts have been thoroughly understood for example.

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Line segment line, Angles, Parallel Lines, Trapezium, Circle etc.

The term angle is defined by using terms like inclination, direction, rotation etc. whose meanings either convey mechanical notions or they are not clear then the very term that is being defined.

Explanation can be done by an angle as rotation by using a material contrivance that actually shows the rotation of a line.

e.g. :- A pair of compasses or the opening of the door, the opening of the book, a pair of scissors or hands of a toy watch etc.

## TEACHING LEARNING PROCESS

Robert Gange (1965) believes that learning can not be explained comprehensively with the help of learning theories alone. He argues that learning theories are the generalization of experiential learning conditions based on the observations which are not based on measurement and most of the experiments on learning have been conducted on animals (rats, cats, dogs, etc.). Thus learning conditions are basic to understand the concept of teaching.

Teaching means arranging the conditions of learning that are external to the learner. These conditions need to be constructed in a stage-by-stage, each stage is the just acquired capabilities of the learner, the requirement for retention for these capabilities.

The variety of learning are as follows :

1. Signal learning
2. Stimulus response learning
3. Chain learning
4. Verbal association
5. Discrimination learning
6. Concept learning
7. Rule learning problem.

Teaching or learning signals involve simple tactics.

1. Establishing contiguity in stimulus and response (close proximity)
2. Constant practice and rehearsal of stimulus and response condition.
3. Reinforcing the correct response by its confirmation and wrong response is ignored.

Till now in B.Ed. Herbard Panchapadi were used in teaching but nowadays many teaching techniques are developed. This Herbard Panchapadi is the traditional method of teaching.

### ***Definition of Model of Teaching***

The model is a pattern of something to be made or reproduced and means of transferring a relationship or process from its actual setting to one in which it can be more conveniently studied.

A model of teaching is a plan or pattern that can be used to shape curricula, to design instruction in the classroom and other settings.

The most important aim of any model of teaching is to improve the instructional effectiveness in an interactive atmosphere and to improve or shape the curriculum.

There are different families of models of teaching but selected the information processing family of models of teaching. As there are many models of teaching, I have selected the concept attainment model for my research work.

### ***Concept Attainment Model***

J. Burner has developed this teaching model. It enables the students to describe similarities and relationships among things of the environment.

Focus – Burner, Good now and Austin orient their work for the description of a process by which learners discriminate the attribute of things, persons, events and place them into categories. Thus the main focus is to develop inductive reasoning.

Syntax – There are four phases of this model. The first phase presents data before the students to speculate about the concept. In signify phase students analyse their strategies for attaining concepts in phase one. Phase third provides unorganized data. The fourth phase gives an opportunity to practice concept formation.

Social system – The teaching situation is moderately structured. The teacher has to control all actions but freedom is given for discussion within different phases of teaching. The teacher has to motivate the students to participate in the task of different phases. The teacher has to motivate the students to be clear about their task of the first phase.

Support system – The nature of data should be such that students may understand and identify the concept. The lessons require concepts which can be arranged so that concepts may be drawn from the material. The material should be presented in discrete units : positive or negative. The students should know the sources of data or material.

Classroom Application – It is more useful in the classroom for language-teaching. The language-learner attains the linguistic structure, grammar or the syntactic structure of every language. The basic concepts of mathematics can be effectively taught. The concept attainment model can be used to establish the fundamental

ideas which are at the root of the difficulty. It can function as a model for television teaching.

## **BACKGROUND OF RESEARCH TOPIC**

The importance of aim in education has been emphasized by all scholars, philosophers and educators through all ages.

In our routine life for the transaction we need to take the support of mathematics every moment from the morning to the night every individual needs to take help of mathematics.

The aim of education is to ensure the all round growth of the child.

With the help of education we not only want to give the information but also want to improve the behaviour of the child in every class with the help of every element. Some goals, objectives should be fulfilled. An uninteresting subject like mathematics many addresses and concepts based on them higher education is possible. There are some concepts which are not easily understood by the students as a result of this the objectives which are decided are not fulfilled. Hence in mathematics the concept should be made clear.

Generally, it is noticed that learning and memorizing the definitions in geometry is a major problem faced normally by all the groups of students.

As India is a country where different languages are used in different scripts by the people, geometry plays a very important role in India as a subject like mathematics used by the people from official to academic fields. As many students find it very difficult and since take very less interest in this subject.

So focusing the fulfilment of such a great need and knowledge of Geometry begins from the early education level.

Hence in this research, an attempt would be made to seek and find out the fact that how far or to what extent the concept attainment model is effective to enrich the students Geometry concept.

## **NEED AND IMPORTANCE OF THE TOPIC**

Till now in B.Ed. Herbart Panchapadi were used in teaching but nowadays many teaching techniques are developed. In those models of teaching is a new concept and models of teaching are the developed teaching techniques.

Teaching models help in Making the concepts easier for the teacher. Hence concept attainment model by J.M.Bruner is helpful in the teaching. As there are

many new models in all those new models I have selected a concept attainment model.

## **STATEMENT OF THE TOPIC**

Effectiveness of Concept Attainment Model for Teaching Difficult Concept in Geometry.

## **RESEARCH OBJECTIVES**

1. To find out the difficult concepts in geometry or IX Std.
2. To prepare the concept attainment model for difficult concepts in Geometry.
3. To study the effectiveness of concept attainment models.

## **HYPOTHESIS**

There is no significance difference in teaching of the difficult concepts in geometry of IX Std. by concept attainment model.

## **1.8 ASSUMPTION**

1. Learning mathematics is a major problem for the students of every age and class group.
2. To understand the geometry concept in comparison with algebra is more difficult.
3. Improving the learning abilities of geometry will be solved by teaching with new techniques.

## **FUNCTIONAL DEFINITION RELATED TO THE TOPIC**

1. Concept Attainment Model :  
Concept Attainment Model was given by Jerom Bruner in 1956. It is used for teaching concepts to the students. Which enables us to fully understand the similarities and relationships among various things present around the environment.
2. Difficult concept in geometry :  
Those concepts which are difficult to understand are the difficult concepts in geometry of IX Std.

## SCOPE AND LIMITATIONS

### Scope

Scope of this topic is very vast as it will be applicable to all the IX Std. students in Maharashtra.

### Limitations

- (a) The research work is limited to the geometry subject of mathematics only.
- (b) The research is limited to IX Std. of S.B.C.E. school.
- (c) The study is limited only for the research objectives.
- (d) The research is limited to Nagpur city school only.
- (e) The research is limited to English medium school only.
- (f) The finding of the research will be limited only for the IX class students.

## RESEARCH METHOD

Experimental Methods would be applied for the proposed study. The researcher has used the single-group design experimental procedure for the research.

## POPULATION & SAMPLING

60 students of 9th Std. will be selected as sample by simple random methods which will represent the whole population of the students.

## VARIABLE

Dependent variable – difficult concept of geometry.

Independent variable – concept attainment model

## TOOLS

There are different types of tools and techniques available for data collection but I have used questionnaires for pre-test and post-test.

## TEST

Single group of designs of experimental methods had been used by the researcher. The researcher had prepared the objective test of 20 questions carrying 20 marks for

testing the knowledge of difficult concepts of geometry. The test consisting different kinds of questions like

1. Classify each angle as acute, obtuse, right or straight.
2. Name the relationship : complimentary, linear pair, vertical or adjacent.
3. Find the missing vertical angles.
4. Find the corresponding angles.
5. Measure the angle to the nearest degree.

The researcher had given the instruction to the students, before solving the papers. Most importantly experimentation was done in the form of pre test and post test.

Pre test was taken on the basis of students previous knowledge to test their previous knowledge of geometrical shapes. Then after organising the effective test the same questions were asked in the form of the pre and post test to testify the achievements of the number of students and at last, the scores were sorted out and conclusions were made on the basis of results. Self made questionnaire is used.

## **DATA COLLECTION AND RESEARCH PROCEDURE**

Using the research test questionnaire the research carried out by the data collection after successful completion of the pilot study.

In order to testify to the research title “Effectiveness of Concept Attainment Model for the Teaching of Difficult Concept in Geometry”, a practical experiment was conducted to a group of 60 students of class 9th standard. The experiment had two phases in which a group of class 9th standard were experimented with and without the concept attainment model and then evaluated based on their performance.

Under this experiment there were some quite new concepts of Geometry introduced to a group of 60 students of class 9th standard through the traditional method. Students of the class learnt those concepts of Geometry well and after that a pre-test was conducted to evaluate their level of understanding of Geometry. So all the students were asked to classify the angles according to their roll numbers and all were given marks on the basis of their performance out of 20.

After completion of pre-test, the same bunch of classification of angles was introduced through concept attainment model to a group of student of the same merits as of phase before and this time it was the high inclination of students in the

participation of measure angle as well as classification of angles and they felt more fun and enjoyed without any strain in learning the difficult concepts of geometry. Hence they learnt the Geometry concepts in lesser time and strain.

In order to measure their level of understanding and knowledge a pre-test had been conducted and once again they were evaluated out of 20 and were given marks based on their performance observed during the post-test.

Finally it was found that the performance of the group of students as the participation in the measure angle as well as classification of angles were much better than the pre-test conducted before.

## STATISTICAL PROCEDURE

The collected data was organised, classified and tabulated. Researchers collected the data with the help of questionnaires and organized pre-test and post-test was tabulated. For this the researcher used the following statistical measures for analysing the data interpretation and drawing inferences and conclusions.

1. Mean
2. Standard Deviation
3. 't' value.

### Objective No. 1

1) Find out the difficult concepts in geometry of IX Std.

In order to check the previous level knowledge about the difficult concepts in geometry of the 60 students, they were asked some questions like to classify each angle as acute, obtuse, right or straight in pre-test and thus their performance was measured out of 20.

On the basis of their secured marks, Mean, Standard Deviation and Percentage were calculated.

Table No.1

Test No. of Students Mean S.D. Percentage

Pre-test 60 7.5 2.13 37.5

### Observation

In the present research conducted for 60 students. It is observed that in pre-test the mean calculated is 7.5, S.D. 2.13 and percentage 37.5%.

## Interpretation

According to the above mentioned observation it seems that the performance of students in classifying each angle is 37.5%.

This interprets that the knowledge level of difficult concepts in Geometry is on very poor stage and in order to develop and improve the level, it needs some effective steps to be raised.

The mean 7.5 shows that each student of the group secured the marks between 7 to 8 that is very poor and in order to bring improvement of this level, there should be some effective steps to be raised.

The mean 7.5 shows that each student of the group secured the marks between 7 to 8 that is very poor and in order to bring improvement of this level, there should be some effective use of the concept attainment model.

## Objective No. 2

2) Prepare the concept attainment model for difficult concepts in Geometry.

In order to measure the level of improvement after the introduction of concept attainment mode model there has been conducted a post-test in the class.

On the basis of marks secured by the students, the Mean, Standard Deviation and % were calculated.

Table No.2

Test No. of Students Mean S.D. Percentage

Pre-test 60 15.16 2.97 75.8

## Observation

In the present research conducted for 60 students. It is observed that in pre-test the mean calculated is 15.16, S.D. 2.97 and 75.8%.

## Interpretation

From the above observation, it seems that the students' performance level of difficult concepts in Geometry is 75.8%.

It shows that their understanding and knowledge of difficult concepts in Geometry have improved after the adoption of effective teaching through concept attainment models.

Mean 15.16 shows that each student of the class has secured marks between 15 to 17 that shows a highly drastic improvement in their level of understanding and

grasping of foreign words. Hence some effective language games. Had an effective impact on their level of performance.

### Objective No. 3

3) To study the effectiveness of concept attainment models.

Test No. of students Mean S.D. Df 't' Percentage Comp. of effectively.

Pre-test 60 7.5 2.13 58 16.24 37.5 38.3%

Post-test 60 15.16 2.97 58 16.24 75.8 (75.8-37.5)

### Observation

It has been observed that the score percentage of teaching through traditional methods of difficult concepts in Geometry in pre-test is 37.5% and it went high up to 75.8% in post-test conducted after teaching of difficult concepts in Geometry through concept attainment model. The difference calculated between post-test and pre-test is 38.3% and calculated its value is 16.24.

### Testing of Hypothesis

There is no significant difference in teaching of the difficult concepts in geometry of IX Std. by concept attainment model.

Table No.4

Test No.of Students Mean S.D. Df 't' value Level 't' value at level 't' value Null Hypothesis

Pre-test 60 7.5 2.13 58 16.24 0.05 2.00 Significant Rejected

Post-test 60 15.16 2.97 58 16.24 0.01 2.66 Significant Rejected

### Observation

In the present research in order to test the hypothesis the calculated value is 16.24 is 58 and in the table the value at 0.05 level is 2.00 and at 0.01 level is 2.66 which means the calculated 't' value is very high in comparison with table value at 0.05 and 0.01 level.

Hence, the calculated 't' value is significant. Therefore we have to reject the 'Null Hypothesis'.

## Interpretation

It was clear from the above mentioned observation that the concept attainment model is helpful and has an effective effect on the enrichment of difficult concepts in Geometry of students in comparison to the traditional method of teaching Geometry.

## OBJECTIVES WISE CONCLUSION

1. It has been found that the traditional method of teaching is not effective in order to develop the difficult concepts in Geometry of the students. As it was observed 37.5%.
2. This research reveals that the teaching of vocabulary through concept attainment models has a satisfactory effect on the performance level of students as the percentage of their performance was noticed 75.8%.
3. It was observed that using concept attainment models in teaching the difficult concepts in Geometry had an effective impact on enrichment of Geometry concepts. The difference between pre-test and post-test is 38.3% and calculated 't' value was 16.24.

## HYPOTHESIS WISE CONCLUSION

By testing of the hypothesis, the calculated 't' value at 0.05 and 0.01 levels is significant and hence hypothesis was rejected. Therefore, teaching difficult concept in Geometry through concept attainment models was more effective.

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# Harnessing Technology: Empowering E-Learning

Mr. Sushil Kumar\*

## ABSTRACT

E-learning has emerged as a key strategy for educational institutions to address challenges that necessitate addressing digital equity, ensuring quality online instruction, and providing comprehensive support for both students and faculty. By embracing technology and innovative teaching methods, e-learning programs can provide students with quality education that prepares them for success in the digital era. Through a shift in pedagogical approaches, cultivating an engaging learning environment where interactive content and multimedia elements cater to the diverse needs and learning styles of students, it is necessary to cultivate updated curricula, refine teaching methodologies, and prioritize tutor professional development focusing on information technology literacy. In this paper, we provide an overview of the use of interactive multimedia and social media in university higher education.

**Keywords:** E-Learning, Technology Integration.

## INTRODUCTION TO E-LEARNING AND TECHNOLOGY INTEGRATION

E-learning has emerged as a transformative force in education, fundamentally altering traditional pedagogical approaches and expanding access to knowledge (Faloye & Faniran, 2023). Technology integration in education necessitates a shift in pedagogical approaches, cultivating an engaging learning environment where interactive content and multimedia elements cater to the diverse needs and learning styles of students. This involves more than just introducing new technologies; it requires educators to adapt their teaching methods to effectively use these emerging tools.

The widespread adoption of mobile devices and wireless technologies has transformed many aspects of modern life, including education. While e-learning platforms offer numerous tools to enhance teaching and learning, it's essential to ensure that both teachers and students are proficient in their effective use. Integrating

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technology into education has demonstrably improved students' academic literacies and fostered engaging learning communities.

E-learning is rapidly transforming education by offering unique benefits for both students and educators. It embraces technology to cater to diverse learning preferences and cultivates critical thinking, preparing students for the 21st-century workforce. Integrating technology effectively is crucial for improving teaching and learning outcomes. The digital transformation in education provides access to resources beyond traditional textbooks while creating a fairer learning environment, empowering students from various backgrounds to achieve their educational goals.

## **THE ROLE OF TECHNOLOGY IN E-LEARNING PLATFORMS**

E-learning platforms have emerged as vital infrastructure (Meng et al., 2023) in modern education, democratizing access to knowledge and extending learning opportunities to students, educators, and stakeholders regardless of location or circumstance. These platforms provide various tools and features that facilitate online learning, including content management systems, video conferencing, discussion forums, and assessment tools (Alharbi, 2023). E-learning platforms transcend the limitations of traditional classrooms, offering students immersive virtual environments where they can seamlessly access multimedia-rich course materials, participate in engaging discussions (Monika et al., 2023), and receive personalized feedback that supports their individual learning journeys.

Educational institutions must prioritize the selection of e-learning platforms that are reliable, user-friendly, and aligned with their specific pedagogical goals. E-learning systems have become increasingly prevalent in higher education, driven by their potential to transform learning and reach a broader audience (Abbad, 2021). This expansion is supported by readily available advanced technology systems and the escalating population of tech-savvy students (McColgan, 2012). The incorporation of technology in educational practices necessitates a shift in educators' roles, emphasizing facilitation and guidance rather than traditional lecturing. E-learning can offer various benefits for students with disabilities, such as providing them with assistive technologies and flexible learning options that cater to their specific needs. Beyond delivering content, e-learning platforms empower educators to assess student performance, diagnose learning gaps, and deliver customized interventions, ensuring that instruction is tailored to meet individual needs and promote optimal

learning outcomes. By carefully considering factors such as accessibility, scalability, and integration capabilities, educational institutions can select e-learning platforms that effectively support their teaching and learning goals.

By offering synchronous and asynchronous teaching modes, e-learning platforms enable educators to effectively engage with students, creating a well-being society and facilitating collaborative learning. These platforms also serve as a central repository for course materials, assignments, and student records, streamlining the educational process.

## **ENHANCING ENGAGEMENT AND INTERACTIVITY**

Effective learning should empower learners to take control of their own study, while also incorporating their feedback to improve the overall learning experience. By strategically incorporating gamification, simulations, and virtual reality, educators can create engaging immersive learning environments that lead to increased student motivation. This strategy cultivates a more vibrant and effective educational setting. Instead of passively receiving information, students actively participate, experiment, and apply knowledge in realistic or game-like scenarios, promoting better retention and critical thinking.

The incorporation of technology into e-learning has extended its reach beyond traditional academic subjects, encompassing vocational training, professional development, and lifelong learning opportunities. By integrating videos, animations, and interactive simulations—key multimedia elements—e-learning content becomes more captivating, which leads to improved knowledge retention. E-learning programs incorporating these interactive and varied multimedia elements are more effective in captivating students and fostering a deeper understanding of the material. By catering to diverse learning styles through visual and auditory stimuli, multimedia enhances content delivery and promotes active participation. This dynamic approach breaks up text-heavy content, making learning more interesting and memorable.

Multimedia elements make content more engaging and accessible to learners by delivering educational content in diverse formats. Platforms like Genially, Kahoot! Nearpod and Acadefi can enhance interactivity.

## **LEVERAGING DIGITAL TOOLS FOR CONTENT DELIVERY**

E-learning is enriched through multimedia resources, catering to diverse learning styles and enhancing comprehension. The use of multimedia, including animation videos, can significantly enhance students' imagination and visualization skills. Freely

accessible educational materials can be integrated into e-learning platforms to enrich content offerings. Creating visually appealing and interactive content is essential for maintaining student interest and motivation in e-learning. By strategically employing learning analytics, educators can individualize instruction, monitor progress, and provide tailored support, which ensures that learners remain actively engaged. Digital tools have expanded opportunities for individuals from diverse backgrounds to pursue their academic and professional goals by making education more accessible and affordable. E-learning has evolved to include a variety of delivery methods, from traditional online courses to mobile learning, microlearning, and blended learning approaches.

E-assessment strategies are crucial in e-learning for evaluating student performance and ensuring learning objectives are met. The implementation of e-learning necessitates careful consideration of infrastructure requirements, including reliable internet access, hardware, and software. E-learning is not confined to the delivery of instruction but extends to the provision of learning solutions that surpass traditional training paradigms. The development of information communication technologies has allowed for e-assessment to be applied to teaching practices and educational studies.

## **ENHANCING ACCESSIBILITY AND INCLUSIVITY**

E-learning's capacity to transcend geographical constraints offers educational opportunities to individuals in remote or underserved regions. A crucial consideration is ensuring e-learning platforms are accessible to students with disabilities. To accommodate students with visual or auditory impairments, e-learning platforms should be compatible with screen readers and voice recognition software. Accessibility must be a core design principle, guaranteeing that all students, regardless of their abilities, can effectively use the platform. Furthermore, e-learning must address the digital divide by expanding learning opportunities for continuous education and ensuring equal access to technology and support. Equipping tutors with information technology literacy through new curricula, teaching methods, and professional development is necessary for them to effectively implement new tools and technologies in education. The e-learning environment goes beyond the structure of a Learning Management System to include social networks and video hosting sites.

E-learning has emerged as a key strategy for educational institutions to address challenges posed by unforeseen circumstances. This transformation has allowed institutions to maintain continuity of instruction and provide students with educational opportunities, even during periods of disruption.

E-learning platforms can be customized to meet the needs of students, including those with different learning styles & strategies, cultural backgrounds, and language proficiencies. E-learning resources can be translated into multiple languages to cater to students from different linguistic backgrounds. E-learning platforms can be designed to promote inclusivity by incorporating diverse perspectives and experiences into course content.

## **FOSTERING INTERACTIVE EXPERIENCES**

E-learning should integrate communication and collaboration features, such as discussion boards and virtual study groups, to foster a sense of community and active learning. E-learning empowers students to engage with materials at their own pace, reinforcing learning and completing assignments according to individual schedules. This self-paced learning is especially beneficial for students balancing education with other commitments, allowing them to review content as needed without the pressures of a live classroom.

E-learning platforms are being increasingly utilized to support learning communities, which provide students with opportunities to connect with peers, share resources, and collaborate on projects. E-learning modules can be designed to incorporate gamified elements, such as points, badges, and leaderboards, to motivate students and make learning more enjoyable.

Virtual reality environments can provide students with realistic simulations of real-world scenarios, such as medical procedures or engineering designs. Through the utilization of digital tools, e-learning has the capacity to enhance content delivery, affording students access to superior learning resources and tailored educational encounters (al-Zyoud, 2020).

## **ADDRESSING CHALLENGES AND ENSURING QUALITY**

To maximize the impact of e-learning programs, it's essential to ensure their quality and effectiveness. E-learning programs can be assessed through various lenses, including student satisfaction levels, academic achievements, and course completion metrics.

The rapid expansion of e-learning has introduced challenges that necessitate addressing digital equity, ensuring quality online instruction, and providing comprehensive support for both students and faculty. E-learning should incorporate

effective pedagogical frameworks to ensure that learning content is delivered effectively (Karcher et al., 2023). E-learning is becoming more diverse and sophisticated and provides new opportunities and possibilities.

Effective e-learning necessitates careful strategic development, thoughtful design, and thorough implementation to ensure it effectively addresses student needs and achieves specific learning objectives.

## **ENHANCING ACCESSIBILITY AND INCLUSIVITY**

E-learning must overcome the digital divide by providing learning chances for continuous education. To effectively integrate new tools and technologies in education, it's essential to cultivate updated curricula, refine teaching methodologies, and prioritize tutor professional development focusing on information technology literacy. By strategically prioritizing these areas, educational institutions can move beyond mere technology adoption to ensure that technology serves as a catalyst for transforming teaching and enriching the overall learning experience.

E-learning's effectiveness needs more attention to ensure it is utilized to the maximum extent. The convergence of technology and pedagogy is essential for creating effective and engaging e-learning experiences, ensuring that technology serves as a tool to enhance teaching and learning, rather than simply replacing traditional methods. By addressing challenges and ensuring quality, e-learning programs can provide students with quality education that prepares them for success in the digital age. To effectively use technology in the classroom, educators must be prepared to adapt their teaching methods to accommodate emerging technologies (Judge et al., 2004).

## **PROMOTING ENGAGING CONTENT DELIVERY**

To cultivate student engagement and optimize learning outcomes in e-learning, the strategic delivery of content is paramount. Rather than relying solely on traditional methods, consider enriching content with multimedia elements like videos, animations, and interactive simulations to captivate students and promote deeper understanding. Storytelling, microlearning, and fostering collaboration can also create a more memorable and effective learning experience.

E-learning programs that incorporate interactive elements and multimedia content are more effective at engaging students and promoting learning (Livingstone et

al., 2022). By creating engaging and interactive learning experiences, e-learning programs can motivate students to actively participate in their education and achieve their academic goals. E-learning platforms should provide instructors with tools to create and deliver engaging content, such as video editing software, animation tools, and interactive assessment tools. By offering flexibility and accessibility, e-learning broadens educational access and optimizes connections between learners and resources. The integration of educational videos, electronic textbooks and content digitalization are integral to automating the learning procedure.

## **ENHANCING IMAGINATION AND VISUALIZATION THROUGH MULTIMEDIA**

Multimedia has the potential to create a multisensory environment that supports learning. Multimedia platforms provide access to online databases, digital libraries, and educational websites with up-to-date resources. Multimedia elements make content more engaging and accessible to learners by delivering educational content in diverse formats.

Multimedia, including animation, enhances e-learning by sparking imagination and improving visualization. Integrating diverse elements boosts engagement, comprehension, and retention. By creating accessible, multi-sensory learning experiences, e-learning can rival traditional classroom performance. It's crucial to align multimedia elements with learning objectives to ensure they contribute directly to achieving the course's intended outcomes.

## **CONCLUSION**

E-learning represents a significant shift in education, offering numerous advantages and opportunities for learners and educators alike. By embracing technology and innovative teaching methods, e-learning has the potential to revolutionize education and equip students for success in the digital era. This shift optimizes management models and enables a more accurate grasp of development data, making decisions more scientific. E-learning is very effective because learners can access information from anywhere at any time. Further advancements in technology and pedagogy will continue to shape the future of e-learning, providing even more opportunities for personalized, engaging, and effective education.

E-learning is very effective because learners can access information from anywhere at any time. Further advancements in technology and pedagogy will continue to shape the future of e-learning, providing even more opportunities for personalized, engaging, and effective education. E-learning leverages computers and digital devices to facilitate teaching and learning, expanding educational access and the reach of digital platforms. By optimizing the connection between smartphones and individuals, e-learning enhances accessibility and provides learners with anytime, anywhere access to information. This highlights e-learning's potential to democratize education and offer flexible learning opportunities.

This highlights the potential of e-learning to enhance imagination and visualization through multimedia elements. By incorporating interactive multimedia and social media, and focusing on critical thinking, e-learning can meet the needs of today's learners and prepare them for the challenges of the future. The effective utilization of technology in education requires careful consideration of pedagogical approaches, content delivery methods, and assessment strategies.

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