



THE  
PROGRESS  
JOURNALS

**The Progress Journals**  
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# ABOUT THE PROGRESS JOURNALS

‘The Progress Journals’ is a flagship initiative of The Progress, which belongs to one of the verticals of Sri Aurobindo Yoga & Knowledge Foundation with a mission of Sustainable & Holistic Development. Begun in 2023, the vision behind this publication is to create an international, cross-disciplinary, peer-reviewed and open-access journal that deals with issues of social, cultural, economic and ecological importance. This bilingual journal (with papers in English and Hindi) seeks to provide a platform for people engaged in innovative studies on subjects related to sustainability and sustainable development.

The journal also aims to highlight the significance of the Sustainable Development Goals (SDGs), also known as the Global Goals, which were set up by the United Nations in 2015. These goals were designed to be a "blueprint to achieve a better and more sustainable future for all." They comprise a universal call to action to promote individual and social well-being on a global scale. The 17 SDGs are (1) No Poverty, (2) Zero Hunger, (3) Good Health and Well-being, (4) Quality Education, (5) Gender Equality, (6) Clean Water and Sanitation, (7) Affordable and Clean Energy, (8) Decent Work and Economic Growth, (9) Industry, Innovation and Infrastructure, (10) Reducing Inequality, (11) Sustainable Cities and Communities, (12) Responsible Consumption and Production, (13) Climate Action, (14) Life Below Water, (15) Life On Land, (16) Peace, Justice, and Strong Institutions, (17) Partnerships for the Goals.

This journal, which shall be published quarterly, will allow researchers from various backgrounds to share their opinions and findings on topics related to these goals. Through this exchange of knowledge, we hope to better understand how to implement these principles for the development of our communities, our nation and the world.

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Volume I, Issue II

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YOGA AND KNOWLEDGE FOUNDATION

*An Initiative of The Progress*

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# EDITOR'S NOTE

THE PROGRESS, established in 2020, is one of four recent initiatives of Sri Aurobindo Yoga and Knowledge Foundation. The core objective of our organization is the transformation of consciousness in higher education. The inspiration for this goal is the philosophy of Sri Aurobindo and the Mother, especially the principles of Integral Yoga. We believe that true progress requires consciousness of one's role in one's family, community, nation and the world. We seek to create this distinctive awareness, especially among students, professors, researchers and other key stakeholders in the field of education. At present, we are associated with more than 28 higher education institutions, including IIT Delhi.

In Integral Yoga, it is written that there are five layers of the mind: Physical, Vital, Mental, Psychic, and Spiritual. In higher education institutes today, the teaching-learning process is such that it functions till the Vital layer. There is no formal curriculum for anything beyond that. That kind of learning only comes through community, social and spiritual initiatives. Most higher education institutions have already started different types of developmental projects, social work, etc. Our objective is to create an organization that can connect all these other institutions and then collectively, we can be a force for universal transformation. To the broad vision of progress, we each bring our own unique perspective. Together, we can refine our approach and make a difference globally, while being rooted in our regional heritage.

In 2023, we launched a new initiative, 'The Progress Journals' with a mission to highlight scholarly work on Sustainable Development in general and the significance of the Sustainable Development Goals (SDGs) proposed by the UN, specifically. This is our first issue and we are very grateful to all our contributors and supporters. We aim to release this bilingual journal on a quarterly basis and provide a space for new voices and fresh perspectives.

- *Dr. Samarendra Mohan Ghosh*  
*Editor-in-Chief*



# The Changing Dynamics of Family Structures: A Comparative Study of Traditional and Modern Family Roles in Urban and Rural Settings

**Sri Gauri Shankar**

Guest Lecture, Govt. Indru Kevat Kanya Mahavidyalaya, Kanker, Baster, C.G.

## Abstract:

*This study explores the evolving dynamics of family structures by comparing traditional and modern family roles in urban and rural settings. Traditionally, family roles in rural areas have often been characterized by rigid, hierarchical structures and clear gender-specific responsibilities. In contrast, modern family roles—more commonly seen in urban settings—are increasingly defined by shared responsibilities, dual-income households, and individual autonomy. This research aims to examine the extent of these differences and the socio-economic factors that drive such changes in family dynamics. Using a cross-sectional study design, data was gathered through surveys and structured interviews with 200 families (100 each from urban and rural areas), focusing on aspects such as decision-making, caregiving, and income generation.*

*Results indicate that while traditional family roles prevail in rural areas, urban families exhibit a significant shift toward equality in roles and responsibilities. Factors such as education, economic opportunities, and cultural exposure appear to influence these changing dynamics. This paper highlights the implications of these shifts on social values, child socialization, and gender empowerment. The findings contribute to a broader understanding of how family roles evolve in response to social changes, providing insights for sociologists, policymakers, and educators on the future of family structures across diverse communities.*

**Keywords:** Family structures, Traditional roles, Modern family dynamics, Urban vs. rural, Gender roles

## Introduction:

Family structures and roles have long been central themes in sociology, as they shape and reflect the broader social, economic, and cultural values of a society. Traditional family roles, often rooted in patriarchal values, have historically assigned distinct responsibilities based on gender, with men serving as primary breadwinners and women managing domestic responsibilities. These roles have been

more entrenched in rural areas, where cultural and familial expectations often reinforce traditional hierarchies and roles within households.

In contrast, urban families have increasingly embraced modern family roles characterized by flexibility, shared responsibilities, and dual-income arrangements. Influenced by higher levels of education, economic independence, and exposure to diverse perspectives, urban

families are more likely to adopt structures that challenge traditional gender norms. With urbanization and globalization, family roles in both urban and rural areas are undergoing significant transformation, impacting decision-making, child-rearing practices, and the division of household labor.

This study seeks to understand the evolving nature of family roles in urban and rural settings, examining how socio-economic and cultural factors influence these roles. By comparing urban and rural family structures, the study aims to illuminate the contrasts and gradual shifts occurring in these communities, contributing valuable insights into the future direction of family dynamics in society.

### **Hypothesis:**

- Traditional family roles, with distinct responsibilities based on gender, are more prevalent in rural areas.
- Urban families exhibit a shift toward modern family roles, characterized by shared responsibilities and dual-income households.
- Economic and educational factors significantly influence the adoption of modern family roles in urban settings.
- Cultural values in rural areas reinforce traditional family structures, maintaining hierarchical and gender-specific roles.
- Exposure to diverse social norms in urban settings contributes to a more flexible and egalitarian approach to family roles.

### **Literature Review**

The dynamics of family structures and roles have undergone profound changes over the past century, driven by factors such as economic development, urbanization, educational attainment, and shifting cultural values. This literature review explores previous studies on traditional and modern family roles, examines the impact of urbanization on family dynamics, and compares family structures in urban and rural settings. It provides a theoretical framework for understanding how social, economic, and cultural factors shape family roles.

#### **Traditional Family Structures**

Traditional family structures have historically been built on hierarchical and patriarchal foundations, particularly in rural settings where cultural norms and economic constraints often reinforce established gender roles. Parsons and Bales (1955) emphasized the significance of gender-specific roles in family systems, describing the instrumental role of men as providers and the expressive role of women as caregivers and homemakers. This division of labor was considered functional, creating a balanced family unit that meets both economic and emotional needs. Studies on rural families, such as by Goode (1963), found that family roles in these communities tend to remain rigid due to limited exposure to alternative role models and a reliance on established norms that promote family cohesion and stability.

#### **Modern Family Structures and the Shift in Roles**

In urban settings, family roles have evolved to accommodate dual-income households, greater individual autonomy, and a more

egalitarian approach to household responsibilities. Becker (1981) proposed the idea of shared economic responsibilities in families, arguing that dual-income households enable economic resilience and improved standards of living. This transition is often accompanied by a redefinition of traditional gender roles, with both men and women contributing to caregiving and household tasks. Popenoe (1993) observed that urban families are more adaptable, flexible, and individualistic, reflecting a shift toward personal fulfillment and a weakening of traditional hierarchies within the household. These changes are further supported by educational advancements, which empower individuals to pursue careers, assert autonomy, and make collaborative decisions in family settings.

### **Urbanization and Family Role Transformation**

Urbanization has been identified as a significant driver of change in family structures, fostering new economic opportunities and social attitudes that impact family dynamics. Caldwell (1976) found that urbanization not only increases access to education and employment but also introduces individuals to diverse cultural norms, often leading to a transformation in family roles and expectations. Urban families, particularly those exposed to progressive values, are more likely to adopt modern family structures, where men and women share both financial and domestic responsibilities. Studies by Cherlin (2004) emphasize that urbanization creates a “confluence of change,” reshaping family values, gender roles, and individual expectations, especially among younger

generations who are more likely to challenge traditional norms.

### **Comparative Analysis of Urban and Rural Family Structures**

Research comparing urban and rural family structures reveals significant differences in the adherence to traditional and modern roles. In a comparative study, Gupta and Kapadia (2009) noted that rural families often prioritize collective goals and familial loyalty, which tend to reinforce traditional roles and hierarchies. In contrast, urban families are influenced by individualism and career aspirations, often resulting in more flexible and egalitarian family dynamics. The economic benefits of urban living also allow families to afford childcare and household assistance, which can further enable dual-income arrangements and shared domestic responsibilities. Studies such as those by Thornton and Fricke (1987) highlight the role of socio-economic factors in shaping family dynamics, suggesting that urban families are more likely to adopt modern family structures due to greater access to resources, exposure to alternative lifestyles, and socio-economic pressures.

### **Theoretical Framework**

This study draws on several theoretical perspectives to analyze family structures. Structural Functionalism, as proposed by Parsons and Bales (1955), suggests that family roles are essential to social stability, but modern adaptations may reflect a more flexible approach to fulfilling family functions. Symbolic Interactionism provides insights into how family members negotiate roles and identities within changing social contexts, particularly in urban environments where diverse

lifestyles are more accessible. Feminist Theory, as discussed by Oakley (1974), also underpins this analysis, examining the impact of gender norms and highlighting the empowerment of women in modern family roles.

The literature underscores a clear distinction between traditional and modern family roles, shaped significantly by urbanization, economic development, and cultural values. Traditional family roles remain predominant in rural areas, where collective norms and economic limitations support hierarchical family dynamics. Conversely, urban settings exhibit a marked shift toward modern family roles, driven by education, economic independence, and exposure to diverse social norms. This review establishes a foundation for understanding how family structures adapt in response to changing socio-economic conditions and provides context for exploring the contrasts and transitions in urban and rural family dynamics in this study.

**Methodology**

**Research Design**

- **Comparative Cross-Sectional Study:** The study uses a cross-sectional design to compare family structures in urban and rural settings at a single point in time. This design is suitable for examining existing differences in family roles between these settings.
- **Mixed-Methods Approach:** A combination of quantitative and qualitative methods allows for both numerical analysis and in-depth exploration of attitudes and perceptions regarding family roles.

**Results and Discussion**

**Demographic Data**

Demographic Characteristic	Urban Families (n=100)	Rural Families (n=100)	Total (n=200)
<b>Average Age of Household Head</b>	45 years	50 years	47.5 years
<b>Education Level of Household Head</b>			
- No Formal Education	5%	30%	17.5%
- Primary School	10%	35%	22.5%
- High School	25%	20%	22.5%
- Graduate and Above	60%	15%	37.5%
<b>Average Family Size</b>	4.0 members	5.5 members	4.75 members
<b>Occupation of Household Head</b>			
- Farming	2%	50%	26%
- Skilled Labor	18%	20%	19%
- Professional	40%	5%	22.5%
- Service Sector	30%	15%	22.5%
- Unemployed	10%	10%	10%
<b>Monthly Household Income</b>			
- Below \$500	10%	50%	30%
- \$500–\$1000	20%	30%	25%

Demographic Characteristic	Urban Families (n=100)	Rural Families (n=100)	Total (n=200)
- \$1000–\$2000	30%	15%	22.5%
- Above \$2000	40%	5%	22.5%

• **Table 1: Demographic Characteristics of Urban and Rural Families**

This table summarizes the demographic differences between urban and rural families, which can help in understanding how socio-economic and educational factors influence family structures and roles in each setting. The data are categorized to allow easy comparison between the two groups, highlighting variances in education, income, and occupational backgrounds.

**Traditional vs. Modern Family Roles**

**Bar Chart:** Percentage Comparison of Families Following Traditional vs. Modern Family Roles in Urban and Rural Areas

**Percentage of Families Following Traditional vs. Modern Family Roles**

Setting	Traditional Roles (%)	Modern Roles (%)
Urban Families	35%	65%
Rural Families	70%	30%

In this example, urban families are shown to lean more toward modern family roles, with 65% adopting modern structures, while rural families predominantly follow traditional roles, with 70% maintaining more conventional arrangements.

**Discussion: Traditional vs. Modern Family Roles in Urban and Rural Areas**

- The analysis reveals a significant difference in family role structures between urban and rural settings. Traditional family roles are far more prominent in rural areas, where 70% of families adhere to conventional arrangements. In contrast, urban areas exhibit a tendency toward modern roles, with 65% of families displaying contemporary family structures.

**Characteristics of Traditional Family Roles in Rural Settings:**

- **Gender-Specific Roles:** Rural families often exhibit distinct, predefined gender roles. In many cases, men assume the role of primary earners, responsible for labor-intensive or agricultural work. Women, conversely, handle domestic responsibilities such as child-rearing, cooking, and household maintenance.
- **Hierarchical Family Structure:** Rural families tend to follow a patriarchal system where elders, typically male, are the main decision-makers. Decisions regarding family finances, marriage, and even educational pursuits are often made by the head of the family. In these settings, respect for elders and adherence to traditional customs are emphasized.
- **Extended Family Living Arrangements:** Traditional roles in rural areas often encourage extended family living, where multiple generations reside

together. This setup allows for shared responsibilities and fosters a close-knit family environment.

**Shift Toward Modern Family Roles in Urban Settings:**

- **Egalitarian Role Sharing:** Urban families are more likely to adopt egalitarian structures, where both spouses contribute to income generation and household tasks. Dual-income households are common, and role-sharing has become a pragmatic choice to manage financial needs and childcare.
- **Individualized Decision-Making:** Unlike in rural areas, urban families exhibit a shift toward individual decision-making, where each family member has more autonomy. Younger members, particularly women, participate in family decisions, including finances, career choices, and parenting approaches.
- **Nuclear Family Structures:** In urban areas, families increasingly prefer nuclear setups, allowing for independence and flexibility. This structure reflects the mobility and independence characteristic of modern urban lifestyles.

**Implications of the Findings**

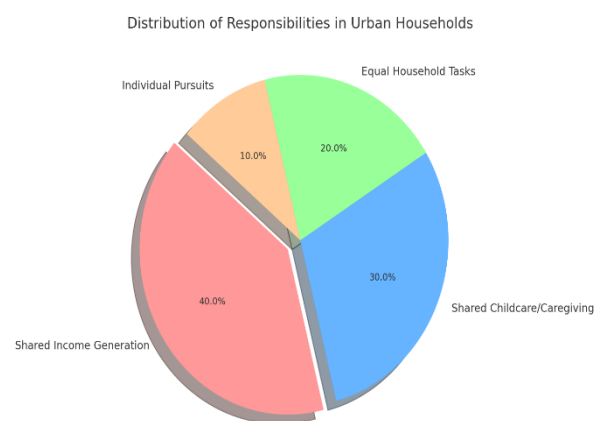
- The results highlight how traditional values remain deeply rooted in rural settings, reinforced by cultural norms, economic activities, and community expectations. Rural families, therefore, tend to maintain

structures that support traditional gender roles and multi-generational cohabitation.

- In contrast, urban families display adaptive changes in response to economic demands and cultural shifts, where flexibility and equality in family roles support the pursuit of individual aspirations. These differences underscore the influence of socio-economic environments in shaping family structures and roles across settings.
- This comparative analysis demonstrates that family roles evolve based on environmental and economic contexts, with rural settings adhering to established traditions and urban settings embracing modern, egalitarian dynamics.

**Role Changes in Urban Families**

**Pie Chart:** Distribution of responsibilities (e.g., caregiving, income generation) in urban households, showing increased role-sharing between partners.

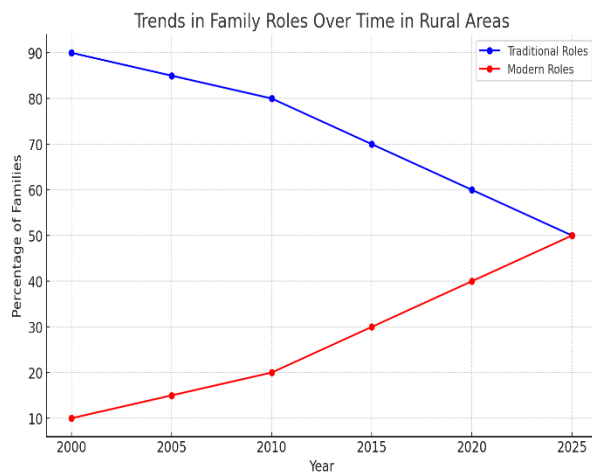


Here's a pie chart illustrating the distribution of responsibilities in urban households. It shows increased role-sharing

between partners in areas such as income generation (40%) and caregiving (30%), along with equal contributions to household tasks (20%). Individual pursuits make up a smaller portion (10%), reflecting a more collaborative approach to managing family responsibilities in urban settings.

### Role Changes in Rural Families

**Line Graph:** Trends over time showing shifts from traditional to modern roles in rural areas.



Here is a line graph showing the trends over time in rural areas, illustrating the shift from traditional to modern family roles. The chart indicates a gradual decline in families adhering to traditional roles, decreasing from 90% in 2000 to a projected 50% by 2025. Conversely, the adoption of modern roles has increased steadily, reflecting a growing trend toward role flexibility and shared responsibilities in rural settings.

### Comparative Analysis of Urban and Rural Family Structures

Here's a comparative analysis table highlighting the key differences and similarities in family roles between urban and rural families, particularly focusing on

aspects such as decision-making, child-rearing, and household tasks.

**Table 2: Key Differences and Similarities in Family Roles Between Urban and Rural Families**

Aspect	Urban Families	Rural Families	Similarities
<b>Decision-Making</b>	Often shared among family members; may involve external influences (e.g., education, work)	Typically hierarchical; elder family members often make key decisions	Family members often discuss important issues together
<b>Child-Rearing</b>	Greater emphasis on individualism and self-expression; more exposure to diverse parenting styles	Strong focus on community involvement and traditional values; collective child-rearing	Importance placed on education and well-being of children
<b>Household Tasks</b>	Division of labor often based on personal preference and skills; may include hired help	More traditional division of tasks, often influenced by gender roles; all family members contribute	Cooperation among family members to maintain the household

Aspect	Urban Families	Rural Families	Similarities
<b>Roles of Women</b>	Greater access to education and employment; more opportunities for career advancement	More traditional roles, often centered around home and family care	Women play crucial roles in both settings, though the nature of their involvement may differ
<b>Economic Roles</b>	Dual-income households are common; financial independence is often prioritized	Single-income households are more common; reliance on agriculture or local trade	Both families seek economic stability for family welfare
<b>Social Networks</b>	Family structures often intersect with professional networks; friendships may be more transient	Strong community ties and long-lasting relationships; reliance on local support systems	Both rely on social networks for support and resource sharing

**Key Observations:**

- **Flexibility and Adaptation:** Urban families tend to adapt more quickly to changing social norms, while rural families may hold more steadfast to traditions.

- **Cultural Influences:** Urban families often reflect multicultural influences due to diverse populations, whereas rural families are typically shaped by local customs and traditions.
- **Support Systems:** Rural families may benefit from stronger community networks, while urban families often rely on a mix of family and professional connections.

The comparative analysis of urban and rural family structures reveals significant differences and similarities in their roles, particularly concerning decision-making, child-rearing practices, and household tasks. Urban families often exhibit more egalitarian structures, influenced by individualism and exposure to diverse cultural norms. This leads to shared decision-making, a flexible approach to household tasks, and greater opportunities for women in education and the workforce. In contrast, rural families typically uphold more traditional, hierarchical structures where elder members hold decision-making power, and gender roles are more pronounced in the division of household tasks.

Despite these differences, both urban and rural families prioritize the well-being and education of their children, showcasing a shared commitment to family welfare. Additionally, both settings underscore the importance of social networks, albeit in different forms—urban families relying on a mix of professional and personal connections, while rural families benefit from close-knit community ties.

Ultimately, understanding these distinctions enriches our comprehension of family dynamics across different contexts. It highlights the influence of socio-

economic factors and cultural norms on family roles, providing valuable insights for policymakers, educators, and social workers aimed at fostering family well-being and supporting diverse family structures in both urban and rural settings.

### Conclusion

The comparative analysis of urban and rural family structures reveals a notable persistence of traditional roles in rural areas, where decision-making tends to be hierarchical, child-rearing emphasizes community involvement, and gender roles in household tasks remain pronounced. In contrast, urban settings exhibit a shift toward more modern family structures characterized by shared decision-making, individualism, and greater opportunities for women in both education and the workforce. These differences have significant implications for children's socialization, as urban children may benefit from diverse perspectives and adaptive skill sets, while rural children are often instilled with strong community values and traditional ethics. Furthermore, the empowerment of women in urban areas contributes to evolving societal values that prioritize gender equality and economic independence, contrasting with the more traditional expectations observed in rural settings. However, this study has limitations, including a relatively small sample size and a focus primarily on urban and rural contexts, which may not fully represent the complexities of family dynamics across varying environments. Future research could explore family structures in semi-urban areas or conduct longitudinal studies to track ongoing changes and their impacts over time, thereby providing deeper insights into the

evolving nature of family roles in different socio-economic contexts.

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## Conflicts Between Professors in Granted and Private Colleges

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### Abstract:

*To determine the impact of grant in aid and private college teachers on conflicts is the goal of the research. In order to obtain data for this study, 100 private and 100 public participants were interviewed. college lecturers who receive grants. Both grant and private academics have some conflicts. We can also Consider the internal and external conflicts, as well as the realistic and imaginary conflicts between private and granted colleges teachers. Teachers in both private and public universities are similarly impacted by role conflicts.*

**Keyword:** *Conflict between Grant in Aid and Private College Professors*

### Introduction:

The acquisition of knowledge does not solely occur in a classroom or university setting; attentiveness and commitment are equally vital. Learning new tales, things, or experiences is education from birth to death. AIISE indicates that there are many students enrolled in postsecondary education, particularly in the fields of science, business, and the arts. In all, India has 399331 colleges and 993 universities. it is run by private management among the 385 universities. Rural regions are home to roughly 394 universities. Furthermore, 77.8% of all universities Private colleges exist. Of all colleges, 13.5% offer grants-in-aid.

Ralf Dahrendorf Philosophical Views and Research Issues

- (1) Conflict is a constant in society.
- (2) Every civilization has competing

interests, which lead to conflict.

- (3) The dominant and subordinate social groupings are perceived as having different levels of power.
- (4) Conflicts exist within interest groupings.
- (5) Dialectical conflict is present. There's a fresh dispute.
- (6) A necessary component of society is social change. Let's put it this way: the struggle theory for growth has no place in today's educational definitions neglected.

### Private College:

Funding for students is provided by contributions and government-approved fees; the college is associated with an accredited institution. Students' examinations, the job of the institution creates the grade sheets. Salary for professors is set by the trust.

**Granted College:**

The government provides funding for the college, which is connected to an accredited university. is supplied in accordance with.

**Research Methodology****Research Paper Objectives:**

- (1) To assess the degree of conflict between instructors in public and private universities.
- (2) To gauge faculty members' internal and external conflicts at public and private colleges.
- (3) Measuring the actual and improbable conflict between instructors at public and private colleges.
- (4) Understanding Professors and the Role Conflict Theory.
- (5) Assessing the Impact of Role Conflict on Academic Staff.

**Sample:**

A schedule of interviews with 100 private and 100 grant-in-aid college instructors was employed for data collecting in the research that was presented.

**Results:****Disagreement between public and private college instructors:**

How many persons simultaneously hold a submissive position in two groups or churches? the one way to look at this kind of debate between teachers in grant-aided and independent universities is to in order to compare the degree of partial disagreement among instructors at grant-in-aid universities while specific job-related factors are clarified. Government involvement in pay-related matters will also exist demands from the workplace,

leave, rights, and occasionally certain difficulties brought up by the unions, which we will attempt to resolve these. It is required to abide by the medications, rights, and work privileges that the superiors have established, subject to their own number. To put it briefly, we will compare the kind of partial conflict that exists between academics employed by grant-in-aid programs and the kind of full conflict that exists between academics employed by private (Independent) universities.

**Conflict on the Inside and Outside:**

There is currently a growing rivalry among academic quantities. For the purpose of moving up the ranks, each number in this competition places a strain on its faculty. Whatever the sport blaming one another for the paperwork results or test results fosters a hostile environment. It's an a self-financed college where the internal conflict rate is higher than is an example of an external conflict. the one outside of it. As a result of irregular work schedules, employment insecurity, or even gain from public holidays, but if you don't, you'll feel frustrated or have internal conflict in your head.

**Disagreement that is both realistic and unrealistic:**

Real conflict has a purpose. The grant-in-aid college's instructors will cease to argue when they fulfill their objectives. The Gujarat government refrained from implementing the pay commission's recommendations. produced by UGC, hence the dispute began as a strike, but if it is resolved, it appears to reached a standstill. Unrealistic conflict, however, is also evident. When he's not happy, he'll feeling of tension or annoyance in the mind. There will be bias against the government expressed by the board. It is

possible to approach the joyful research problem from different angles.

### **Professors and the Role Conflict Theory:**

Scholars at private universities are more likely than those at grant-in-aid universities to exhibit role conflict. If the role conflict among the professors in the current study is understood together with the explanations, then taking those reasons into consideration will help us digest this issue.

- (1) One group's standards are at odds with another group's standards. In this case, both kinds of universities will require the same level of study for teaching certification. The number or level of salary, leave, and development opportunities will remain unchanged, but the work hours and duties will in a grant-in-aid institution as opposed to a private college, government is observed more. Absence of equivalent there is role tension when there is equal work and benefit equality expectational Contradictions.
- (2) It is a constant struggle to reconcile the expectations of the a bureaucratic structure with professors, principals, and a board of directors for administrators expectations from staff members at both grant-in-aid and private colleges. Still, when it comes to private universities Teachers can be fired at any time, administrators rather than taking legal action to exacerbate the conflict among private college instructors.

### **The Effect of Role Conflict on academics:**

Examining how role conflicts affect academics in grant-in-aid and private colleges in any setting, with a focus on the current study's effects on the system, each person as well as society.

#### **(1) Deviances in Social Conduct**

Even if these policies or conventions are harmful to them, professors will occasionally accept them with conciliation. Nothing can be done about this except break it. UGC It's applied right away in government colleges as determined by the Pay Commission, adjusted if needed. When a significant amount of you spend time at the Grant-in-aid College. These academics are being agitated, not to be outdone. There is one boycotting scholarly publications Standard behavior also applies to this. Attending a private university, only "academic labor." Nothing to protect your rights. Any actions managers take in this regard is outside the norm in terms of pay, working hours, etc.

#### **(2) Norms Instability**

When deciding the adversarial role, the role conflict will bring up the question of which of the competing standards should be obeyed and which should not, which will present a challenge for academics. Professors will become less attached to standards as a result. An is scheduled to take place. teachers' perception of the legitimacy of standards has decreased. It might be referred to as instability of expectations for instructors.

#### **(3) Stress on the Mind**

The relationships that instructors have with the principal, the trust board, and other internal groups

inside the organization will shape the mindset of these groups while they carry out their jobs. Relationship with the trust board, the political affiliation of the instructor, and the relationship with the learners. Owing to human nature, he can experience jealousy and be unsure of what to do at the moment. It will cause mental anguish for him.

**Conclusion:**

Both grant and private academics have some conflicts. There are also conflicts between granted and private college

instructors, as well as internal and external conflicts. tension between roles influence both grant and private teachers.

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## The Issue Of Transphobia Among Private Sector Workers

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### Abstract:

*It is said that 4.9 lakh transgender individuals reside in India, making up just 1/6th of the country's total population, according to data from the 2011 census. Most transgender persons, according to research, experience discrimination, harassment, and abuse at work. To better understand transphobia among private sector workers, the current study was conducted. An investigation was carried out. Using the purposive sample approach, 150 private sector workers from Maharashtra and Karnataka were studied. The Enthenoma a transphobia assessment tool was the Transphobia Scale, developed in 2005 by Darryl B. Hill and Brian L.B. Willoughby. There's an important*

*Depending on their job title, private sector workers range in their levels of transphobia and gender discrimination. Moreover, the results indicate that depending on their job type and state of residence, there is a notable variation in gender bashing among private sector employees.*

**Keywords:** *Workers in the private sector, transgender workers, gender-bashing, and transphobia /genderism.*

### Introduction:

The term "trans-phobia" refers to a group of concepts and phenomena that include a variety of unfavorable attitudes, sentiments, and behaviors directed at transgender individuals or transness in general. Transphobia can manifest as feelings of discomfort, violence, hatred, dread, or repulsion. directed against those who defy societal gender norms. It is frequently used in conjunction with homophobic viewpoints and is therefore frequently regarded as a homophobic feature. Similar to racism, transphobia is a form of bias and discrimination and sexism, and transgender persons of color frequently experience all three types of discrimination simultaneously.

In addition to raising the danger of violence and other threats, transphobia-

related stress can have detrimental emotional effects repercussions that cause drug addiction, escaping from home (as a minor), plus an increased suicide rate. Slowly but surely, non-discrimination and equal opportunity policies have been established in the Western world the chance. In developing countries, the tendency is also beginning to take shape. Campaigns pertaining to the LGBT community are also spreading globally to enhance the societal acceptance of gender identities that are unorthodox. The efforts to "Stop the Stigma" among these developments is that of the UN.

The rights and benefits that are granted to individuals who share their gender identification but not their sex are not extended to transgender persons. Numerous transgender persons encounter

both homophobia and heterosexism because of the correlation between the two. This is because some individuals mistakenly link transgender identification with homosexuality, or because transgender people may also lean non-heterosexual in their sexual orientation. Making disparaging remarks about someone based on how you understand their gender identity. Contrary to "gay bashing," "trans bashing" refers to the act of attacking someone based on their perceived sexual orientation. Regardless of the motivation behind the negative attitude, the target of transphobia and cissexism suffers greatly as a result. Transgender persons who experience transphobia face tremendous stress, which can cause them to experience feelings of guilt, low self-worth, estrangement, and inadequate. Many times, transgender teenagers attempt to escape their homes, quit school, or use other harmful coping mechanisms to deal with their stress, self-harm or drug use. Transgender individuals are believed to have particularly high suicide rates because to the way they are seen by society from society and their family.

The study by Law et al. (2011) examined the relationship between transsexual employees' disclosure behaviors in the workplace and their degree of disclosure to individuals outside of work, as well as the organizational supportiveness of transsexual identity centrality. Organizational commitment and work satisfaction are favorably correlated with these disclosure behaviors.

Although few studies have looked at this, transgender people report frequently encountering transphobia at work phenomenon. India is a nation renowned

for its variety, stunning culture, and historic landmarks. One such historic home in Known by several names as Kinnar, Hijra, and Eunuchs, humans are the members of the transgender society and so on. Temples of worship were constructed for transgender people in India, a nation where they were formerly revered as gods.

They are situated in a predicament to defend their acceptability and rights. That this historic town overlooked until recently is heart breaking. 2011, Census. There are 4.9 lakh transgender people in India, according to the 2011 census number. "India's Transgender Community," 2015 Although many of them choose not to disclose their identities for fear of prejudice, transgender activists and organizations believe that the number is between 60 and 80 lakh. A research on the "Human Rights of Transgender People" found that nearly 99 percent of the participants. Gender Identity as a Third They had experienced social rejection on multiple occasions in the past, according to (John, 2017).

To forbid such actions, the Indian government passed the Transgender Person (Protection of Right) Act, 2019. Welfare measures and discrimination against transgender people in the workplace, in schools, and in health care been implemented to safeguard transgender people's rights. Additionally Community members continue to face hardships even after this bill was passed. numerous difficulties in the workplace, in society, and in obtaining education.

**Research Methodology:****Research Design:**

Studying transphobia among private sector workers involves the use of comparative research. Quantitative research design is used to conduct the current study. Statistical analysis of the data was done with SPSS. It was determined by descriptive analysis what the features included in the data. One statistical method that is employed is the Mann Whitney U Test.

**The Problem:**

The goal of the study is to comprehend how transphobia among workers can worsen harassment, abuse, and disruption of a transgender employee's mental health.

**The research's objectives:**

In order to evaluate the degree of gender discrimination, transphobia, and gender stereotypes among private workers.

- To ascertain whether there is a discernible variation in transphobia and gender-based harassment among private professionals
- to determine whether age has a substantial impact on the prevalence of transphobia and gender-based harassment among private employees based on their educational background,
- to determine whether there is a discernible difference in transphobia and gender bashing among private employees credentials.
- To determine if employment in the private sector significantly affects employees' experiences with

transphobia and gender bashing variety based on marital status,

- To determine whether there is a discernible difference in transphobia and gender bashing among private employees.
- To determine whether the state in which private employees are located significantly affects their levels of transphobia and gender bashing.

**Hypothesis:**

- **H<sub>01</sub>** Based on their gender, private employees won't experience a discernible difference in transphobia or gender bashing.
- **H<sub>02</sub>** Age will not significantly affect the prevalence of transphobia or gender-based harassment among private employees.
- **H<sub>03</sub>** Based on the educational background, private employees' transphobia and gender bashing will not differ significantly certification.
- **H<sub>04</sub>** The job status of private employees will not significantly affect the level of transphobia or gender bashing style.
- **H<sub>05</sub>** Based on their marital status, private employees will not experience significantly different levels of transphobia or gender bashing.
- **H<sub>06</sub>** The state in which private employees are located will not significantly affect the level of transphobia or gender bashing.

**The Conceptual Structure:**

The study includes gender bashing and transphobia /genderism as variables.

**Define Operational Framework:**

A cisgender person's incapacity to comprehend and sympathize with a transgender person is the operational definition of transphobia.

**Factors pertaining to the population:**

State location, marital status, work type, age, gender, and educational attainment are the demographic factors. the region that includes several states, including Maharashtra and Karnataka.

**Sample Distribution:**

Conditions of inclusion Participant age ranges (ages 21 to 50) and employment status in the private sector are the inclusion criteria for this study. as well as post-HSC academic credentials.

**Qualifications for exclusion:** The age ranges below which individuals are excluded are 21 and above, public sector workers, students, and those who reside in disabled people, foreign workers, gay people, and transgender people.

**Illustration and methodology**

The research will take place in Maharashtra, Karnataka, and other states, with employees serving as the sample population. The process of sampling Purposive sampling is the method employed.

**The study procedure:**

To facilitate the conduct of the survey, a Google form was built and distributed analyze. Both the participant's consent form and the Genderism and Transphobia Scale questions were included using the works of Brian L.B. Willoughby and theprogressjournals.com

Darryl B. Hill. Through the responses to the Google form, the raw data was gathered distributed. A Google form with instructions to carefully read the questions and offer an honest response was given to members of the selected generation in order to gather data through the purposive sample approach. I then used Microsoft Excel to score the data. Once the necessary statistical analysis was completed, SPSS was utilized.

**Definition of the Tool:**

Sex Roles, Vol. 53, Nos. 7/8, October 2005; Darryl B. Hill and Brian L.B. published the Genderism and Transphobia Scale. Willie. 32 items make up the test, and a 7-point scale is employed. On the Likert scale, the validity is its 0.95 reliability and Capacity to identify the well-known disparities between genders in perceptions of transgender individuals.

**Evaluation of Statistical Data:**

MS was utilized to gather and grade the data.

Ms Excel software. descriptive analysis carried out to comprehend the properties of the data. With SPSS software, the mean and SD were determined.

**Using descriptive statistics:** with mean and standard deviation, evaluate the amounts of variables.

**Inferential Statistics:** To identify significant differences in variables based on demographic information, the Mann Whitney U-test was employed variables.

**Findings And Talks:**

**Goal 1:** To evaluate the degree of gender discrimination and transphobia/genderism among private sector workers.

**Descriptive Data on Gender-Bashing and Transphobia/Genderism Among Private Sector Workers.**

**Table 3.1: Descriptive Statistics**

Variables	N	Mean	Std. Deviation
Transphobia/Genderism	150	128.36	49.6663
Gender Bashing	150	39.16	15.8576

**3.2 Result showing test of normality for transphobia/genderism and gender bashing Table**

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Transphobia/Genderism	0.259	150	0	0.685	150	0
Gender Bashing	0.317	150	0	0.606	150	0

**3.2: Normality Test**

The test of normalcy for the variables of gender bashing and transphobia/genderism is presented in

Table 3.2. According to the table, gender bashing and transphobia/genderism have significant values of 0.000. Therefore, the comparison will be measured using a non-parametric test.

**Goal 2:** Determine whether gender makes a substantial difference in transphobia and gender-based harassment among private employees.

**H<sub>01</sub>** Employees in the private sector won't experience appreciable differences in transphobia or gender-based harassment based on their gender.

**Results of the gender-based gender bashing and transphobia /genderism Mann Whitney U test :**

Table 3.3: Mann Whitney U Test on transphobia /genderism and gender bashing based on gender.

Variables	Mann Whitney U	Sig. (2-tailed)
Transphobia/Genderism	2607	0.531
Gender bashing	2727	0.862

The relevance of gender-based gender bashing and transphobia/genderism are displayed in Table 3.3 along with their Mann Whitney U value. Transphobia/Genderism based on gender has a Mann Whitney U value of 2607 and a sig value of .531, respectively. Men and women working in the private sector do not differ significantly in their levels of transphobia or gender discrimination. Moreover, when it comes to gender-based harassment, the Mann Whitney U value and sig value are, respectively, 2727 and .862. This indicates that there Male and female employees in the private sector did not significantly differ in their gender-bashing. So, the null hypothesis which claims that gender will not significantly affect transphobia among private employees accepts.

**Goal #3:** To based on their age, discover a substantial difference in transphobia and gender bashing among private employees.

**H<sub>02</sub>** Age will not significantly affect the prevalence of

**3.4 Results of the age-based gender bashing and transphobia/genderism Mann Whitney U test**

**Table 3.4: Mann Whitney U Test for gender discrimination and transphobia/genderism dependent on age**

transphobia or gender-based harassment among private sector workers.

Variables	Mann Whitney U	Sig. (2-tailed)
Transphobia/ Genderism	1281	0348
Gender Bashing	1205	0.172

The Mann Whitney U value and significance levels of gender bashing, transphobia, and genderism are displayed in Table 3.4 according to age. Based on age, transphobia /genderism has a Mann Whitney U value of 1281 and a sig value of .348, respectively. Age-based differences in transphobia and gendered discrimination are not statistically significant. The sig and Mann Whitney U value Based on age, the value of gender bashing is 1205 and .172, respectively. Therefore, the null hypothesis, which predicts that there won't It is acknowledged that there are notable age-related differences in transphobia among private employees.

**Goal 4:** Determine whether there is a discernible difference in transphobia and gender-based harassment among private employees based on their qualities in education.

H03 There won't be any notable variations in Employees in the private sector are subjected to transphobia and gender

bashing because of their academic credentials.

**Mann Whitney U test results on gender-bashing and transphobia/ genderism according to educational background.**

Table 3.5 shows the Mann Whitney U Test results for gender bashing and transphobia/genderism according to educational background.

Variables	Sig. (2-tailed)
Transphobia/ Genderism	0.956
Gender Bashing	0.523

The significance of gender bashing and transphobia/genderism is broken down by educational background in Table 3.5.

According to their educational background, transphobia and genderism have a significance level of 0.956. It demonstrates that there is no discernible variation in transphobia or genderism among staff members according to their level of education. Furthermore, The significance of gender-based harassment based on educational background is 0.523. It demonstrates that there are no noteworthy Based on their educational backgrounds, employees were found to be discriminated against in terms of gender. Consequently, the null hypothesis that asserts that a person's educational background will not significantly affect how transphobic a private employee is acknowledged.

**Goal 5:** Determine whether there is a discernible difference between transphobia and gender bashing among private employees based on on their kind of employment.

H04 Employees in the private sector will not experience a discernible difference in transphobia or gender bashing based on their type of employment

**Mann Whitney U test results on gender-bashing and transphobia/genderism according on employment type**

Table 3.6: Mann Whitney U Test on Gender Bash and Transphobia /Genderism according to Employment Type

Variables	Sig. (2-tailed)
Transphobia/Genderism	0.022
Gender Bashing	0.027

The levels of transphobia/genderism and gender bashing, broken down by type of work, are displayed in Table 3.6. Depending on the nature of their profession, employees' levels of transphobia and genderism varied significantly (sig=0.022). Additionally, according on the type of job, there is a substantial variation in gender bashing between employees (sig=0.027). Thus, the null hypothesis, which contends that there won't be any appreciable variation in transphobia among private employees according to their Employment type is disregarded, and the other theory is acknowledged.

**Goal 6:** Determine whether a private employee's marital status significantly affects their level of transphobia and gender bashing status.

H05 Based on their marital status, private sector workers won't experience a discernible difference in transphobia or gender bashing status.

**Mann Whitney U test results on gender discrimination, transphobia, and gender denial according on marital status**

Mann Whitney U Test on Gender Blasting and Transphobia/Genderism depending on Marital Status is shown in Table 3.7.

Variables	Mann Whitney U	Sig. (2-tailed)
Transphobia/Genderism	2043	.272
Gender Bashing	2042	.260

Based on marital status, Table 3.6 displays Mann Whitney U and the degrees of relevance of gender bashing, transphobia, and gender genderism. Based on marital status, the Mann Whitney U value and sig value of transphobia/genderism are, respectively, 2043 and .272.

Based on their marital status, employees' levels of transphobia and genderism do not significantly differ from one another. The Mann Based on marital status, the gender bashing Whitney U value and sig value are 2042 and .260, respectively. It demonstrates that there isn't Depending on their marital status, employees' gender bashing differed significantly. Consequently, the null hypothesis that affirms that there will be no appreciable variation in transphobia among private employees according to their marital status.

**Goal 6:** To identify the important differences in gender-bashing and transphobia among private employees according to where they work condition.

H05 Based on the location, there won't be any appreciable differences in transphobia and gender-based harassment among private sector workers condition.

### 3.7 Mann Whitney U test results on gender bias, transphobia, and gender derogation according to state of residence

Table 3.7: Mann Whitney U Test on Gender Blasting and Transphobia/Genderism according to State of Residence

Variables	Sig. (2-tailed)
Transphobia/Genderism	0.022
Gender bashing	0.027

Based on the state in which they are located, Table 3.7 displays the degrees of relevance of gender bashing and transphobia/genderism. Based on their educational background, transphobia and gendernism have a significance level of 0.022. Workers' levels of transphobia and gender stereotypes change significantly depending on the state in which they work, as does their gender. bullying amongst coworkers according to a state's location, hence the null hypothesis is rejected.

#### Overview And Results

Regarding the state of transgender issues in the workplace going forward, there are plenty of reasons for optimism. In the corporate sector as well as the broader public, acceptance and knowledge of transgender issues are growing. Workplace protections based on gender identification have grown from 3% to 83 percent of Fortune 500 businesses between 2020 and 2017.

Many unsettling transgender workplace challenges still exist, though. Legal protections for transgender employees are haphazard. High rates of harassment and

abuse, as well as several barriers in working cultures. Employers who are transgender-friendly must prioritize improving knowledge of their particular difficulties and modifying procedures and guidelines to suit their different requirements. There are many obstacles that transgender workers must overcome to find work. Considering a three-fold increase in unemployment higher.

According to the U.S. average, a large portion of the prejudice against transgender employees in the workplace is seen in the employment procedure.

The truth about how much acceptance they actually have in society: Because of incentives, 27% of Americans think they wouldn't make friends with transgender people.

The Daily Beast's Samantha Allen advises transgender candidates to conceal their identities throughout interviews and application processes: At best Obviously, in the real world, having brown eyes and being transgender would have almost little bearing on the hiring process. Yet in the recognizing the unpleasant inevitability—or at the very least, the probability—of being exposed in the current context could be a crucial first step in light of each person's unique circumstances.

Abuse at work, employers that are unprepared, and cultural obstacles are issues that trans-employees face. Upon entering the office, transgender employees encounter numerous with additional challenges, such as alarmingly high rates of overt maltreatment, employers that mean well but lack capacity, work environments where transgender workers are penalized for disclosing their identities, even subtly. DEI Training Facilitators'

Guide practice initiating and facilitating fruitful dialogues.

Workplace transgender difficulties, such as persistent harassment and discrimination. Though certain transgender-friendly However, it is still very common for transgender workers to encounter prejudice and targeted harassment at work.

A 2011 survey found that although opinions of this type of care varied, 90% of participants said they had "directly encountered abuse or harassment in the workplace. There are several ways that this abuse and harassment might appear: questionnaire

The rates of abuse that respondents saw were as follows: 50% of respondents stated they had experienced harassment from coworkers, and 41% said they had been the subject of inappropriate queries on their transgender identity or state of surgery; Twenty percent claimed they were barred from speaking with clients directly, and twenty percent claimed they lost out on a promotion. 7.5% reported having been the victim of physical violence, with 6% reporting sexual assault. Tragically, the already elevated instances of abuse continue to climb. Greater among transgender workers of color.

### **Findings**

Based on their type of job, private sector employees' levels of transphobia and gender denial fluctuate significantly, according to the study's findings. The results also indicate a noteworthy variation in gender-based harassment within the private sector depending on the kind of work and the state in which they are located.

### **Summarization**

The study's conclusion shows that there are no appreciable differences in transphobia or gender stereotypes among private sector workers according to factors like gender, age, educational background, marital status, or state of residence. Furthermore, gender does not significantly differ.

Discrimination against workers in the private sector on the basis of marital status, age, gender, and educational attainment.

The research findings show a noteworthy variation in transphobia and gender stereotypes among employees in the private sector. depending on the nature of the job. Additionally, a noteworthy distinction in gender-based harassment was discovered among employees in the private sector. according to the state and kind of job.

### **Implication:**

This study's practical application is to understand how transgender employees' experiences with their jobs can vary. Speaking about employment types, years of experience, training, and other factors are indicative of permanent employees, temporary employees, interns, and other types. Development can encourage gender sensitivity among staff members and assist shift attitudes around transgender employees.

### **Limitations of the study**

- It could not uncover the actual amount of transphobia among the employees.
- The study was limited to 21-50 years of age group of individuals.
- Insufficient time
- Regional restrictions

- Restricted to workers in the private sector

### Idea for additional investigation

As a result, if this study needs to be amended in the future, all of the aforementioned variables can be included. Essentially, the focus of this research was on transphobia among employees in the private sector, negating the public and government sectors. Moreover, the By expanding the age bracket from 21 to 60, research may be conducted more effectively and will provide them with a broader understanding. since the level of response to transphobia varies among age groups.

### Acknowledgement

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## Recent Trends in Computer Technology: AI, Cloud Computing, Quantum Computing, and Cybersecurity

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### Abstract:

*This paper explores the latest advancements in computer technology, emphasizing artificial intelligence (AI), cloud computing, quantum computing, and cybersecurity. It investigates how these innovations are shaping industries and discusses their potential future impact. Data from industry reports and surveys are used to present current trends, adoption rates, and challenges. Charts and graphs illustrate the rapid growth and adoption of these technologies. The paper concludes by examining the role of these developments in shaping the future of computing.*

**Keywords:** *Artificial Intelligence (AI), Cloud Computing, Quantum Computing, Cybersecurity, Technology Adoption Trends, Digital Transformation*

### Introduction

In recent years, computer technology has undergone a remarkable transformation, characterized by rapid advancements that are reshaping various sectors of society. Key innovations such as artificial intelligence (AI), cloud computing, quantum computing, and cybersecurity are at the forefront of this evolution, driving significant changes in how organizations operate and deliver services. The rise of AI and machine learning has enabled businesses to harness vast amounts of data, leading to improved decision-making processes, enhanced customer experiences, and the automation of complex tasks. As AI continues to evolve, its applications are becoming more sophisticated, influencing industries from healthcare to finance.

Simultaneously, the expansion of cloud computing has revolutionized the way

organizations manage their IT resources. By leveraging cloud services, companies can achieve greater scalability, flexibility, and cost-efficiency, enabling them to focus on innovation rather than infrastructure. This transition to cloud-based solutions is fostering digital transformation across various sectors, empowering businesses to adopt new technologies and enhance collaboration.

At the same time, quantum computing is emerging as a groundbreaking frontier technology. With its potential to solve complex problems beyond the capabilities of classical computers, quantum computing is poised to revolutionize fields such as cryptography, material science, and optimization.

However, these advancements come with challenges, particularly in the realm of cybersecurity. As digital infrastructures

become more interconnected, the importance of robust cybersecurity measures has intensified. Organizations must navigate an increasingly complex landscape of threats while ensuring the integrity and confidentiality of their data.

This paper aims to provide a comprehensive overview of these pivotal trends, exploring their current trajectories and potential implications for the future of computing. Through data-driven analysis and illustrative graphics, we will delve into how these technologies are shaping industries and what lies ahead in this dynamic landscape.

### Key Focus Areas:

- The rise of artificial intelligence and machine learning
- Expansion of cloud services and its benefits
- Quantum computing as a frontier technology
- Increasing importance of cybersecurity in a connected world

### Literature Review

In the last few years, various studies have examined the growing influence of AI, cloud computing, quantum computing, and cybersecurity on industries worldwide. Research highlights that these technologies are at the core of the current digital transformation.

- **AI and Machine Learning:** AI's role in enhancing business processes, predictive analytics, and automation is expanding rapidly. According to a McKinsey report (2023), over 50% of businesses are

using AI to improve customer service and decision-making.

- **Cloud Computing:** Cloud computing continues to revolutionize how organizations store, access, and manage data, providing scalability and cost efficiency (Gartner, 2023).
- **Quantum Computing:** Though in its infancy, quantum computing promises to solve problems beyond the capabilities of classical computers (Jones, 2022).
- **Cybersecurity:** As technology evolves, so do the threats. Studies show that cybersecurity concerns are rising, with an estimated 40% increase in cyberattacks in 2023 (Kim, 2023).

### Methodology

Data was collected from industry reports, technology surveys, and published research papers. The study focused on the adoption rates of AI, cloud computing, and quantum computing across different sectors. Cybersecurity challenges were analyzed through reports on security incidents and trends from the past three years.

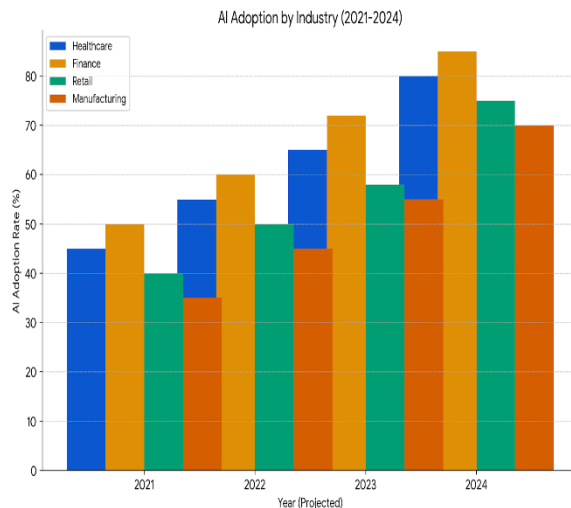
### Findings

#### AI and Machine Learning Trends

Artificial intelligence is playing a pivotal role across sectors like healthcare, finance, and retail. The increasing adoption of machine learning algorithms has accelerated the automation of decision-making processes, data analytics, and customer service.

**AI Adoption by Industry (2021-2024)**

Industry	2021	2022	2023	2024 (Projected)
Healthcare	45%	55%	65%	80%
Finance	50%	60%	72%	85%
Retail	40%	50%	58%	75%
Manufacturing	35%	45%	55%	70%



**Graph 1: AI Adoption Growth (2021-2024)**

- AI adoption is expected to grow significantly in the next year, particularly in the healthcare and finance industries. This growth is attributed to advancements in predictive analytics and automated decision-making.

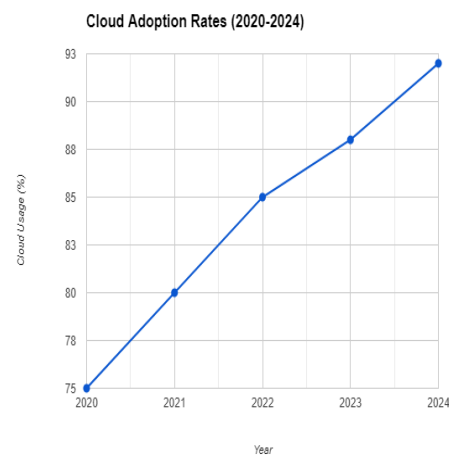
**Cloud Computing Trends**

Cloud computing has seen substantial growth as organizations seek to improve theprogressjournals.com

scalability and data accessibility. Over 90% of businesses are expected to utilize cloud services by 2024.

**Cloud Adoption Rates (2020-2024)**

Year	Cloud Usage (%)
2020	75%
2021	80%
2022	85%
2023	88%
2024	92% (Projected)



**Graph 2: Cloud Usage Growth (2020-2024)**

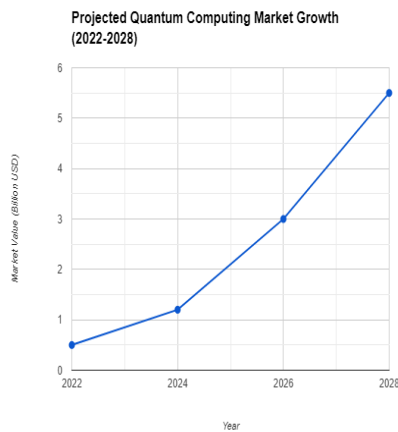
Cloud computing’s continued expansion is driven by its efficiency in managing large data sets and providing flexible computing resources. As companies migrate more data to the cloud, cybersecurity concerns become more prevalent.

### Quantum Computing: The Future of Computing

Quantum computing remains in the early stages of development but promises transformative changes. According to research, quantum computing is expected to outperform traditional computers in solving complex optimization problems and simulations within the next decade.

#### Projected Quantum Computing Market Growth (2022-2028)

Year	Market Value (Billion USD)
2022	0.5
2024	1.2
2026	3.0
2028	5.5



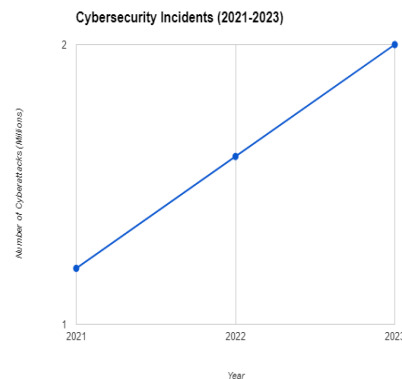
Quantum computing has immense potential, particularly in fields like cryptography, drug discovery, and material science, due to its ability to process vast amounts of data simultaneously.

### Cybersecurity: Rising Threats and Solutions

As organizations adopt AI and cloud computing, they face increasing cybersecurity risks. Data breaches, ransomware, and phishing attacks are the most common threats, and with the growing sophistication of cybercriminals, companies are investing heavily in security infrastructure.

#### Cybersecurity Incidents (2021-2023)

Year	Number of Cyberattacks (Millions)
2021	1.2
2022	1.6
2023	2.0



#### Graph 3: Cyberattack Growth (2021-2023)

Cybersecurity solutions, including AI-driven threat detection, encryption, and multi-factor authentication, are becoming essential as companies manage more sensitive data online.

## Discussion

The findings indicate that computer technology is evolving rapidly, with AI, cloud computing, and quantum computing leading the way. However, this growth also presents new challenges, particularly in the realm of cybersecurity. Future developments in quantum computing may lead to breakthroughs in processing power, but they also highlight the need for stronger encryption techniques.

### Key Insights:

- AI and machine learning are being adopted across sectors, with healthcare and finance showing the highest growth rates.
- Cloud computing is becoming ubiquitous, with almost all industries utilizing cloud-based services.
- Quantum computing, though still in early stages, is expected to have a significant impact within the next decade.
- Cybersecurity risks are growing as companies move more operations online, requiring increased investment in security solutions.

## Conclusion

The current landscape of computer technology shows immense promise for the future, with AI, cloud computing, and quantum computing paving the way for significant advancements across industries. However, the accompanying cybersecurity risks must be addressed to ensure that these technologies can be safely and effectively utilized. As these technologies continue to mature, they will undoubtedly shape the

future of how we live, work, and interact with technology.

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## Identifying The Deficiencies In Learning Among Fifth-Grade Students In Addition To

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### Abstract:

*The most crucial factor in people's arithmetic learning is addition. In this paper, we examined several forms of learning deficiencies among school-level readers based on their answers on the Essential Problem Arithmetic Test.*

*The 200 fifth-grade high school pupils who read under CG board were the subject of the current study. The study found a few typical mistakes made when learning addition. The study's findings suggest that there was a gender variation in learning addition. Statistical analysis has made use of descriptive statistics. The study's conclusion is that weak students should be provided with thorough counseling and remedial programming tailored to their individual levels of abstract ability.*

**Keywords:** *Arithmetic learning deficiencies, Addition learning challenges, Essential Problem Arithmetic Test, Gender variation in arithmetic, Remedial programming for weak students*

### Introduction:

The idea that all children should receive an education has gained acceptance during the previous several decades or so. However, it has made teaching twice as difficult and increased the proportion of weak students. Since mathematics fosters intellectual habits, numeracy, and calculation skills, it is the most significant topic in the curriculum. A vital place in one's life has been gained by addition, which largely aids in learning these skills. In addition, the basis of mathematics is taught from the start of the school to ensure that students are competent in carrying out basic mathematical operations because they are necessary in the community.

Understanding concepts, counting, memorizing math facts, and adhering to instructions are just a few of the numerous skills needed to do addition. Weaknesses in any one component can

eventually affect how well a child does in the other component. For example, when youngsters struggle with a particular assignment, they may start to believe that they are "no good at math" and get depressed about it (Danvir & Brown, 1986). A lot of kids struggle with one or more aspects of addition. Since this varies on the criteria that are employed, it is impossible to quantify the percentage of people that have trouble.

There are numerous reasons, including mathematical difficulties. There is a good chance that between 15% and 20% of people struggle with addition to the point where it poses a serious practical and pedagogical challenge for the individual (Bynner & Parsons, 1997, 2005: Every Child a Trust, 2008). After doing numerous case studies of kids who were struggling in math class, Ginsberg (1972–77) and his associates discovered that while certain

kids had unique and atypical patterns, other kids shared more common patterns of strengths and weaknesses. Children with arithmetical impairments typically struggled with a number of issues, but the most prevalent one was difficulty doing multi-step arithmetic, according to research by Bryant, Bryant, and Hammill (2008).

### **A Review Of Connected Works**

A diagnostic investigation on the challenges students in standard third were having with computation was carried out by Jasmine (2004). The study's findings show that pupils' performance level was extremely low when it came to adding four digits to a one-digit number.

A test that is based on the successive processes of learning an additional process can yield diagnostic information. Schonell & Schonell (1947) broke down each basic procedure into a number of steps that they felt were indicative of the steps youngsters took to advance in their understanding of arithmetic operations. A study on "The Assessment of Math Learning Difficulties in a Primary Grade 4 Child with High Support Needs: Mixed Methods Approach" was carried out by Munida, I (2013). They discovered that elementary school students have a number of challenges when learning arithmetic. In 2010, a study titled "Developmental Dynamics of Math Performance from Pro School to Grade 4" was undertaken by Aunola, K., Leskinen, E., Lerkkenen, M.K., and Nurmi, J. They discovered that counting ability was the best indicator of the beginning level of arithmetic performance in their long-term study spanning from pro school to the fourth grade. They also discovered that children's conceptual understanding of counting objects and their understanding of number order are critical components of later arithmetic performance. In 2013, Fragnant, A. and Vlassis, J. carried out a study titled "Analysis of the impact of schematic representation in arithmetical problem solving on grade 5 students."

A significant percentage of students are able to solve new mathematical problems by salvaging the presentation they see, which is the study's main finding. Schematic representation has a demonstrably positive impact on students' performance overall. A study of children with normal and mathematically disabled abilities in counting knowledge and skills in cognitive addition was conducted by Geary et al. (2012). The study's main conclusions are that young children with math challenges exhibited significant conceptual issues and were more prone to make procedural mistakes when counting. An investigation into the diagnostic mistakes made by standard V math students when completing problems was conducted by Gurusamy, S. (2011).

The study's main conclusions are that there was a significant decrease in errors and an improvement in students' mean achievement scores.

In 2010, a study was conducted by Bryant, D.P., Braynt, B.R., and Hammill, D.D. on the "Characteristic behavior of students with learning disabilities who have teacher defined weaknesses in arithmetic." The study's main conclusions are that while children with mathematical deficiencies frequently experience a variety of challenges, mastering multi-step arithmetic was the most prevalent issue. "Developmental differences in solving simple arithmetic problems and simple number facts problems: a comparison between mathematically normal and mathematically disabled children" was the topic of S. Osted's (2008) research. The investigator employed a longitudinal study. From Norwergain City, 36 students in grade 5 who struggled with math and 36 students who did not were chosen.

The mathematics achievement test from Norway was standardized. The study's main conclusion is that kids with arithmetic problems almost exclusively utilized counting-based techniques, whereas kids without math problems were more likely to employ retrieval or derived fact

procedures. Furthermore, as they become older, children who struggle with math use retrieval techniques more frequently and count-based procedures less frequently; yet, the strategies employed by these kids do not alter as they become older. Desoete and Gregoire (2007) carried out research on the topic of "Numerical competence in young children and children with learning disabilities in mathematics."

The investigator discovered that first-graders with math impairments had already faced challenges with number in early childhood education. Additionally, they discovered some indication that third-grade students with arithmetic impairments did not have similar numerical abilities. Children's profiles of addition and subtraction understanding was the subject of a study conducted in 2005 by Canobi, H., and Katherine. The study's main discovery is that children's innate recognition of the existence of integers between 0 and 1 is closely linked to their understanding that such numbers are infinitely divisible—that is, they can be split again without ever reaching 0.

"Diagnosis of weaknesses in Arithmetic as related to the Basic Arithmetic Skills and their Remedial Measures" was the topic of a study done in 1983 by Rastogi, S. The study was designed primarily with an experimental approach. A diagnostic exam for fundamental math skills was created. The sample comprised 406 class VIII students (230 boys and 176 girls) from nine distinct schools, one in each of Arunachal Pradesh's districts. The study's main conclusion is that a weak grasp of fundamental arithmetic skills—which is strongly correlated with achievement—was one of the major factors contributing to mathematical backwardness.

**Purpose Of The Study**

The present study aims to achieve the following objectives:

- 1) Identifying and analyzing the various kinds of mistakes these kids made when learning addition.

- 2) To draw attention to a few widespread myths that were found by using the diagnostic tool.

**Research Design**

Due to the fact that this study focuses on the current addition issues that fifth-grade children face, a descriptive methodology will be used. Factfinding survey design, one of the key components of descriptive research, has been used by the researcher to carry out the current field of study.

**Research Aid (Tools)**

For the purpose of achieving the research objectives, the researcher collected data using the following tool. The researcher developed a "Schonell Diagnostic Arithmetic Test," developed by F. J. Schonell in 1947, based on the "Essential Problem Arithmetic Test.

**Outcome**

Examining several kinds of errors in Arithmetic's that students in Grade V have committed.

The Essential Problem Arithmetic Test data set is being analyzed in order to study the various addition errors made by pupils in grade v. Un-attempted questions were considered a different type of error, and their percentage of all questions was calculated. The bar chart in Figure 4.5 displays the relative frequency distribution of the percentage of errors made by male and female students simultaneously. Every color denotes a distinct kind of mistake.

Different types of faults in learning addition are displayed in Table 1.

Name of errors	Boys		Girls	
	Number	Percentage	Number	Percentage
Errors in Combination	30	9.4339	71	20
Omitted	51	16.0377	43	12.1126

<b>Carry Figure</b>				
<b>Carried Wrong Number</b>	67	21.0691	77	21.6901
<b>Added Number From Other Column</b>	4	1.2578	10	2.8169.
<b>Added Carrying Number Twice</b>	13	4.0880	11	3.0895
<b>Omitted Number From Column</b>	31	9.7842	37	10.4225
<b>Carry When Nothing To Carry</b>	11	3.4591	3	0.8450
<b>Retraced Worked Partly Done</b>	11	3.4591	18	5.0704
<b>Added Carried Number Irregularly</b>	3	0.9433	7	1.9037
<b>Wrote Number To Be Carried</b>	12	3.7735	5	1.3623
<b>Subtracted Instead Of Addition</b>	12	3.7735	2	0.5633
<b>Subtracted And Addition Both</b>	3	0.9433	5	1.3623
<b>Irregular Procedure</b>	70	22.0125	78	1.654
<b>Total</b>	318		367	
<b>Mean</b>	24.4615	7.6923	28.2307	7.9438
<b>S.D.</b>	23.8139	7.4886	29.6764	8.3664

It is evident that 21% of both male and female pupils made mistakes when transporting numbers. To calculate addition between two or three digits, the majority of students (22&and theprogressjournals.com

21.97%) employ irregular approach. In Figure 4.6's bar chart, the relative frequency distribution of the error percentages for male and female students is simultaneously presented. Every color stands for a distinct kind of inaccuracy.

### Conclusion Of The Study

It is evident that a lot of kids struggle with some or all of the arithmetic concepts. Mathematical difficulties can take many different forms and have many different reasons since mathematical reasoning comprises so many different components.

That being said, a sizable segment of the populace struggles with specific aspects of mathematics, enough to give them at least some practical and educational issues. Throughout the lesson, educators should constantly be aware of the kinds of mistakes that their students are making and adjust their lesson plans accordingly. When it comes to pupils who struggle greatly with math, teachers need to use caution. Remedial programs and thorough counseling should be made available to weak students, taking into account their cognitive abilities.

### Study's Limitations

The researcher found certain limitations in the study despite taking every precaution during the process.

- 1) The research has certain limitations. Firstly, the study was restricted to the rural areas of South 24 Parganas.
- 2) The research was restricted to government added secondary and higher secondary schools in class V.

### Further Research

The results of this study led to several areas, including the identification of learning weaknesses in addition to those students who belong in class V. Of course, more research is required to demonstrate the difficulties related to other aspects of arithmetic. More research would

explore what influence this variable on participant in problem arithmetic test. In this study, I felt that there was a need for a remedial treatment for the students who are very weak. Therefore, there is room for more research. Teachers were not included in the study, so there is a gap between their understanding of different types of weaknesses and the weak students.



## Challenges in Inclusive Education: A Critical Analysis

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### **Abstract:**

*This paper explores the key challenges in implementing inclusive education, especially in diverse classrooms with varied needs. It highlights the obstacles faced by educators, students, and policymakers in creating a supportive learning environment for students with disabilities and special needs. The paper also discusses potential solutions to make inclusive education more effective and accessible.*

**Keywords:** *Inclusive Education, Implementation Challenges, Diverse Classrooms, Special Needs Support, Educational Accessibility*

### **Introduction**

Inclusive education is an approach that integrates students with diverse abilities, including those with disabilities and special needs, into mainstream classrooms. This approach is rooted in the belief that all students, regardless of their physical, intellectual, social, or emotional differences, have the right to learn together in an environment that accommodates their needs. Inclusive education moves beyond mere physical integration; it aims to foster a sense of belonging among all students, promoting their active participation in learning experiences. By supporting diverse learners within a common educational setting, inclusive education aspires to provide equal educational opportunities and cater to each student's unique abilities and needs.

The importance of inclusive education extends beyond academic benefits. It plays a significant role in social integration, allowing students to learn from one another's strengths and challenges. When students with disabilities are included in

regular classrooms, it helps foster empathy, respect, and understanding among their peers. This exposure not only breaks down prejudices but also prepares all students to live in diverse societies, reducing discrimination and fostering a culture of acceptance. In addition, inclusive education benefits students with special needs by giving them access to the same quality of education and resources as their peers, which can significantly enhance their academic and social development. By removing barriers to learning and participation, inclusive education promotes equality, nurtures students' potential, and equips them with skills necessary for independence and self-confidence.

The purpose of this study is to critically analyze the main challenges in implementing inclusive education and to explore practical solutions to these issues. Although inclusive education is widely advocated, its implementation faces several obstacles, such as insufficient resources, inadequate teacher training, and societal attitudes. This study seeks to identify these

challenges and propose actionable strategies that can help make inclusive education more effective, accessible, and sustainable in diverse educational settings.

### Literature Review

The concept of inclusive education has been adopted globally, with various countries developing policies and practices to support students with diverse needs in mainstream classrooms. **Global Perspectives on Inclusive Education** highlight significant strides made in countries like Canada, Finland, and Australia, where inclusive education policies emphasize equal access and tailored support. For example, Canada's education policies ensure that students with disabilities can attend regular schools with necessary accommodations, while Finland invests in teacher training and resources to create accessible and supportive classrooms. However, in many developing nations, limited resources pose challenges, though countries like India have introduced inclusive education policies in recent years, showcasing a commitment to equitable education.

Despite these global efforts, **Challenges Highlighted in Previous Studies** reveal recurring obstacles to implementing inclusive education effectively. Studies consistently report that insufficient resources—such as specialized teaching aids, assistive technologies, and accessible school infrastructure—restrict the ability to meet students' diverse needs. Additionally, lack of teacher preparedness is a major issue, with many educators not receiving adequate training to handle varied learning requirements. This lack of training results in lower confidence among teachers and less effective integration of students with special needs. Furthermore, societal

attitudes and stigmas associated with disabilities create barriers, leading to isolation and discrimination, which hinder social and educational inclusion.

### Success Stories and Best Practices

illustrate how effective strategies can overcome these challenges. For example, Italy has successfully implemented inclusive practices that emphasize collaborative teaching and individualized support, resulting in positive outcomes for students with disabilities. In the United States, the Individuals with Disabilities Education Act (IDEA) mandates resources and personalized education plans for students with disabilities, providing a structured framework for inclusion. These successful models underscore the importance of resources, well-prepared educators, and supportive policies, offering valuable insights for other regions aiming to improve inclusive education.

### Methodology

This study adopts a qualitative research design, utilizing both a literature review and primary data collection through interviews and observations. The literature review focuses on analyzing existing studies on inclusive education to identify common challenges and effective practices. This secondary data provides a broad understanding of global perspectives, highlighting policies, barriers, and success stories related to inclusive education.

For primary data collection, semi-structured interviews were conducted with a sample of 20 participants, including teachers, parents, and school administrators from both public and private schools. This sample was chosen to ensure diverse insights on inclusive education practices and challenges. Teachers were selected for

their direct experiences with inclusive classrooms, parents for their perspectives on how inclusive education impacts their children, and administrators for their understanding of policy implementation at the school level. Observations were also carried out in four inclusive classrooms to examine teaching methods, classroom interactions, and resource availability for students with diverse needs.

The demographics of participants cover a range of ages, genders, and experience levels in education to provide a comprehensive perspective. Teachers and administrators involved in the study had varying levels of experience with inclusive education, allowing the study to capture diverse viewpoints on resource adequacy, teacher preparedness, and social integration. Through the combined insights from literature, interviews, and observations, this methodology aims to present a well-rounded analysis of the challenges and potential solutions in implementing inclusive education.

### Findings and Discussion

- **Teacher Preparedness and Training:** Lack of specific training to handle diverse classrooms is a significant barrier.
- **Infrastructure and Resource Limitations:** Many schools lack physical resources, such as accessible classrooms, assistive technologies, and teaching aids.
- **Attitudes and Beliefs:** Societal and peer attitudes toward students with disabilities impact their inclusion and learning experience.
- **Policy and Funding Gaps:** Many regions lack proper funding or

policies to support inclusive education fully.

- **Parental Involvement:** Challenges related to parents' understanding and engagement in the inclusive education process.

### Conclusion

- **Summary of Findings:** Reiterate the main challenges identified and the importance of addressing these issues.
- **Recommendations:**
  - Increase teacher training programs focused on inclusive education.
  - Allocate more funds for resources and infrastructural improvements.
  - Encourage policy reforms that mandate inclusive education practices.
- **Future Research Directions:** Future research in inclusive education can focus on areas that enhance teaching practices and improve student outcomes. A key area is the **impact of specific inclusive teaching strategies on student success**, especially for students with disabilities. Research could investigate which methods—like differentiated instruction, collaborative learning, and assistive technologies—are most effective in promoting both academic progress and social integration. This knowledge would help educators adopt evidence-based practices that create more supportive and effective learning environments.

Another crucial area for exploration is **teacher training in inclusive education**. Studies could assess the effectiveness of various training models, such as experiential workshops, peer mentorship, and online training programs, in preparing educators to manage diverse classrooms. Evaluating how teacher training influences classroom dynamics and student outcomes could provide valuable insights into the benefits of continuous professional development in inclusive practices.

Research into **parental and community involvement** is also valuable, as it plays a significant role in fostering a supportive network for inclusive education. Future studies could explore how family engagement in education affects students' social and emotional well-being or how community awareness initiatives can reduce stigma around disabilities.

Lastly, **policy impact analysis** could be vital in understanding how government policies and funding allocations shape the quality of inclusive education. Research focused on the gap between policy intentions and classroom realities would help in crafting policies that better support educators, students, and inclusive practices, ultimately leading to more accessible education for all.

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## शिक्षक में व्यवसायिक विकास की आवश्यकता

**डॉ मृदुला कुमारी भगत**

असिस्टेंट प्रोफेसर

ग्रिजली कॉलेज ऑफ एजुकेशन

**सारांश:**

*शिक्षकों के लिए व्यवसायिक विकास का तात्पर्य एक शिक्षक के औपचारिक रूप से चल रहे कैरियर विकास से है। शिक्षकों के लिए व्यवसायिक विकास का छात्र परिणाम से अटूट संबंध शिक्षक शिक्षा से संबंधित हर कार्य को पूरा करने में एक महत्वपूर्ण भूमिका निभाता है। चुकि देश के युवा पीढ़ी एक राष्ट्र का भविष्य और कक्षा में एक राष्ट्र की नियति का निर्माण किया जा रहा है और यह भाग्य निर्माता शिक्षक है। इसलिए छात्रों को मूल्यवान शिक्षा प्रदान कराने का शिक्षक का दायित्व है इस उद्देश्य को पूरा करने के लिए शिक्षक के लिए उचित व्यवसायिक विकास की आवश्यकता है।*

**मुख्य शब्द:** व्यवसायिक, शिक्षक, शिक्षा।

**परिचय:** विश्व में व्यावसायिक परिवर्तन निरंतर होने के कारण प्रति स्पर्धा भी निरंतर बढ़ रही है। इसलिए करियर की प्रगति की तुलना में व्यवसायिक विकास अधिक महत्वपूर्ण है। व्यवसायिकता का तात्पर्य काम के प्रति आपका दृष्टिकोण, समर्पण, और ईमानदारी इत्यादि के बारे में और व्यावसायिक विकास किसी के अपने कार्य व्यवसाय में वृद्धि और विकास के लिए है। आमतौर पर कौशल युक्त शिक्षा अनुभव ज्ञान

प्राप्त करने के लिए संदर्भित करता है जो व्यावसायिक रूप से प्रगति में मदद कर सकता है।

इसके लिए बहुत सारे शिक्षक शिक्षा कार्यक्रम सरकार द्वारा तैयार किए गए हैं। भारत में शिक्षक प्रशिक्षण कार्यक्रम को दो भागों में वर्गीकृत किया जाता है अर्थात सेवाकालीन और सेवा पूर्व में फ्री सर्विस कार्यक्रम वह वह है जो किसी भी सेवा के लिए अनिवार्य नौकरी प्राप्त करने के लिए न्यूनतम मापदंडों

को पूरा करता है। लेकिन शिक्षकों के व्यावसायिक विकास के लिए सेवाकालीन शिक्षक कार्यक्रमों पर विचार किया जाता है यह ऐसे कार्यक्रम हैं जिनमें एक सेवारत शिक्षक अपने व्यावसायिक कौशल ज्ञान और दक्षताओं को उन्नत करने के लिए भाग ले सकता है।

#### व्यावसायिक विकास की आवश्यकता---

शिक्षकों में व्यावसायिक विकास की आवश्यकता ज्ञान, कौशल तथा अभिवृत्तियों की दक्षता होनी चाहिए। व्यावसायिक लक्षण युक्त व्यक्ति आवश्यक वृद्धि करके जीवन में व्यावसायिक दक्षता प्राप्त करेगा। इस प्रकार अध्यापक के विकास और वृद्धि की पूर्णता जीवन का संदर्भ विकसित करेगा।

कौशल का विकास--वर्तमान परिवेश विज्ञान और प्रौद्योगिकी का है। शिक्षक और सीखने में दिन प्रतिदिन नए कौशल विकसित किये जा रहे हैं। शिक्षक में विभिन्न कौशल विकास के लिए भिन्न-भिन्न व्यावसायिक विकास कार्यक्रमों की आवश्यकता होनी चाहिए। यह कार्यक्रम उन्हें अपने समय की बेहतर योजना बनाने और व्यवस्थित करने में मदद कर सकते हैं। व्यावसायिक विकास कार्यक्रमों के माध्यम से एक शिक्षक कठिन कौशल और सॉफ्ट कौशल दोनों बढ़ा सकता है। कठिन कौशल संस्था से संबंधित है अर्थात् यह शिक्षण रणनीतियों, शिक्षण विधि, दृष्टिकोण, अध्यापन आदि से संबंधित है, जबकि सॉफ्ट कौशल व्यक्तिगत विकास से

संबंधित है जैसे संचार, कौशल अन्य सहयोगियों और छात्रों के साथ व्यवहार करना आदि।

- **निर्देशों में नवीनता---**व्यावसायिक विकास कार्यक्रमों के माध्यम से शिक्षण निर्देश के नए विचारों की खोज कर सीख सकते हैं और उन्हें बेहतर परिणाम के लिए अपने कक्ष में लागू कर सकते हैं। यह कार्यक्रम एक शिक्षक को छात्रों के लिए प्रासंगिक और सार्थक निर्देश बनाने के लिए स्वयं को सशक्त बनाने में मदद करते हैं। जो उनके शिक्षक को प्रभावी बनाता है।
- **शैक्षिक शोध एवं नए ज्ञान का अनुकूलन--**शिक्षा परिदृश्य निरंतर परिवर्तन के दौर से गुजर रहा है जिस सामाजिक परिवर्तन, तकनीकी प्रगति और वैश्विक प्रभावों जैसी गतिशील ताकतों ने आकर दिया है। इसलिए शिक्षकों को भी नई तकनीकी के साथ होना चाहिए। हर दिन नया शोध नई जानकारी हमारे ज्ञान के लिए नई विधियां और रणनीति को उठा रही है शिक्षक का कर्तव्य है वह ज्ञान को समझकर अपने छात्रों के सामने प्रस्तुत करें और यह केवल तभी संभव होगा जब शिक्षक स्वयं को तैयार करेगा।

- **विभिन्न शिक्षण शैलियों और रणनीतियों को चुनना---** नई रणनीतियों और शिक्षण शैली की प्रक्रिया के दृष्टिकोण के कार्यबित के लिए वर्तमान शिक्षा की आवश्यकता है इसलिए नई शिक्षा तकनीक विधि दृष्टिकोण और रणनीतियों के बारे में जानने के लिए शिक्षक को अवसर प्रदान करना संस्थान की जिम्मेदारी है।
- **नई-नई तकनीक का प्रयोग--**शिक्षण अधिगम की प्रक्रिया में नई तकनीक का उपयोग करना समय का अपरिहार्यता है हमने देखा कोविड के लॉकडाउन में शिक्षण के दौरान डिजिटल प्लेटफॉर्म को मजबूती से स्थापित किया गया था। जूम, गूगल, और यूट्यूब आदि। विभिन्न ऑनलाइन एप्लीकेशन का उपयोग छात्रों से जुड़ने और उन्हें शिक्षा प्रदान करने के लिए किया जाता था जो कि केवल तकनीकी कौशल से ही संभव था। शिक्षक प्रशिक्षण कार्यक्रमों को प्रदान करना तकनीकी द्वारा ही संभव था।
- **शिक्षण सहायक सामग्री को विकसित करना--**शिक्षक अक्सर शिक्षण अधिगम की प्रक्रिया को प्रभावी बनाने के लिए विभिन्न शिक्षण सामग्री का उपयोग करते हैं और विभिन्न शोधों ने यह साबित भी किया है की नई शिक्षण अधिगम सामग्री के उपयोग से शिक्षा की समग्र प्रणाली में विकास किया जा सकता है। इस प्रकार एक शिक्षक को विभिन्न कार्यशालाओं, संगोष्ठियों और सम्मेलनों के माध्यम से शिक्षण अधिगम की सामग्री ने नए नवाचारों के बारे में ज्ञान होना चाहिए।
- **भविष्य उन्नयनकरण--**एक शिक्षक को अपने करियर की प्रगति के लिए और अधिक अवसर प्राप्त करने में मदद कर सकता है। नए कौशल लगातार पारंपरिक शिक्षक की तुलना में एक शिक्षक के बीच एक बेहतर क्षमता विकसित करते हैं। इसलिए यह कार्यक्रम शिक्षक के लिए उपलब्धियां के नए द्वार खोलते हैं
- **आंतरिक शक्ति बढ़ता है--**एक शिक्षक व्यवसायिक विकास से आत्मविश्वास, आंतरिक शक्ति को मजबूत कर सकता है शिक्षकों में निरंतर व्यवसायिक विकास आत्मविश्वास को बढ़ाता है। व्यवसाय में चुनौतियों का सामना अच्छी तरह कर सकता है।
- **संस्थान में चुनौतियों का निर्माण--**एक शिक्षक शिक्षण संस्थान में तकनीक में नवाचार करके और शिक्षक अवधारणाओं में नई तकनीक को एकीकृत करके चुनौतियों का

निर्माण कर सकता है। इन चुनौतियों के माध्यम से वे अपने छात्रों की क्षमताओं के बारे में जानकर उन्हें प्रेरित और प्रोत्साहित कर सकता है।

- **व्यवसायिक विकास के लिए विभिन्न प्रारूप--**आजीवन सीखने के लिए समर्पित शिक्षकों के लिए व्यवसायिक विकास के अनेक रास्ते हैं हर एक के अद्वितीय फायदे हैं यहां इन प्रारूपण का गहन अनुसंधान किया गया है—
- **सेमिनार एवं सम्मेलन--**सेमिनार और सम्मेलन व्यवसायिक विकास के लिए अच्छे स्रोत हैं। जहां शिक्षकों को अक्सर व्यावहारिक अनुभव, भूमिका निभाना, समूह चर्चा और विशिष्ट क्षेत्रों में विशेषज्ञों द्वारा सहायता प्रदान की जाती है। सेमिनार और सम्मेलन व्यवसायिक विकास के लिए अच्छे स्रोत हैं। संस्थान में राज्यस्तर, राष्ट्रीय स्तर या अंतरराष्ट्रीय स्तर पर आयोजित किया जा सकता है।
- **कार्यशालाएं--**कार्यशालाएं व्यवसायिक विकास के लिए अच्छे स्रोत हैं। यह शिक्षक के उद्देश्य और सीखने के परिणाम के साथ आयोजित की जाती है लेकिन कार्यशालाओं में सेमिनार में होने वाले विचार-विमर्श को कुछ ठोस आयाम दिया जाता है और प्रतिभागियों के समूहों के बीच काम सौंप कर विचारों का आदान-प्रदान

होता है। यह सब गोष्ठियों की तुलना में अधिक व्यावहारिक दृष्टिकोण है।

- **ऑनलाइन पाठ्यक्रम और वेबीनार--**वर्तमान समय डिजिटल युग है ऑनलाइन पाठ्यक्रम अत्यधिक लचीलापन प्रदान करते हैं, जिससे शिक्षकों को अपने व्यस्त कार्यक्रम में सीखने का समय मिल जाता है भारत सरकार का SWAYAM प्लेटफॉर्म शिक्षकों के लिए तैयार किए गए हैं और कई ऑनलाइन पाठ्यक्रम प्रदान करता है। इसके अलावा एनपीटीईएल(नेशनल प्रोग्राम ऑन टेक्नोलॉजी एनहांड लर्निंग) जैसे प्लेटफॉर्म मुख्य रूप से उच्च शिक्षा क्षेत्र के लोगों के लिए ऑनलाइन पाठ्यक्रम प्रदान करते हैं।
- **स्कूल स्तर पर कार्यक्रम--**शिक्षकों के व्यवसायिक विकास के लिए स्कूल स्तर पर विभिन्न कार्यक्रम आयोजित किए जाने चाहिए। शिक्षकों को शैक्षिक मेला, प्रदर्शनी, विस्तार व्याख्यान आदि में भी भाग लेना चाहिए।
- **कॉलेज प्रशिक्षण कार्यक्रम--**विभिन्न सेवाकालीन प्रशिक्षण कार्यक्रमों को राज्य और केंद्र शिक्षा संस्थानों जैसे संस्थाओं को एनसीईआरटी, इत्यादि और अन्य द्वारा शिक्षा से संबंधित विभिन्न कौशल के अधिग्रहण के

लिए प्रशिक्षण प्रदान करने के लिए व्यवस्थित किया जाता है। शिक्षक इन प्रशिक्षण कार्यक्रमों जैसे संस्थान प्रयोग, प्रशिक्षण, प्रयोगशालाओं की व्यवस्था क्लब और पुस्तकालय शिक्षण सहायक सामग्री इत्यादि प्रशिक्षण कार्यक्रमों में भाग लेकर आवश्यक ज्ञान और कौशल प्राप्त कर सकते हैं।

- **मुक्त विश्वविद्यालय द्वारा उच्च अध्ययन**--अध्ययन के क्षेत्र में उच्च अध्ययन भी व्यावसायिक विकास में संभव है जैसे स्नातक डिग्रीधारी मास्टर की डिग्री ले सकते हैं और मास्टर डिग्री वाले अनुसंधान कर सकते हैं।
- **व्यावसायिक पत्रिका, किताब लेखन**-- एक शिक्षक व्यावसायिक पत्रिका, किताब विशेषज्ञों के लिए खुद के साथ खुद को समृद्ध कर सकते हैं और वह अपने संचार कौशल में सुधार कर सकते हैं।
- **क्रिया अनुसंधान**--क्रिया अनुसंधान के द्वारा शिक्षक शिक्षक संबंधी समस्याओं को हल कर सकते हैं साथ ही कक्षा में शिक्षण रणनीतियां, शिक्षण विधियां और शिक्षण सामग्री में नए नवाचारों को समझने और

क्रियान्वित करने का प्रयास कर सकते हैं।

- **अभिविन्यास और रिफ्रेशर पाठ्यक्रम**--विश्वविद्यालय अनुदान आयोग कॉलेज और विश्वविद्यालय स्तर पर सेवारत शिक्षकों की गुणवत्ता में सुधार के लिए अस्तित्व में जब से आया है प्रत्येक प्राध्यापक के लिए प्रत्येक 3 से 5 वर्षों में कम से कम एक बार अभिविन्यास/रिफ्रेशर कोर्स में भाग लेना जरूरी है।
- **व्यवसायिक विकास का महत्व**--व्यवसायिक विकास एक शिक्षक के विकास पद की आधारशिला है। यह न केवल पुनश्चया के रूप में कार्यकर्ता है, बल्कि शिक्षकों के लिए आधुनिक, नवीन और प्रभावी बने रहने का एक अवसर भी है। सीखने के प्रति समर्पण केवल व्यक्तिगत विकास की खोज ही नहीं बल्कि यह शिक्षक की कला को निखारने की प्रतिबद्धता है। सीखने के प्रति समर्पण केवल व्यक्तिगत विकास की खोज ही नहीं बल्कि यह शिक्षक की कला को निखारने की प्रतिबद्धता है। शिक्षक खुद का विकास करके शैक्षिक पद्धतियों में विकसित हो रहे परिदृश्य को नेविगेट करने के लिए बेहतर ढंग से सुसज्जित है शैक्षिक पद्धतियां, पाठ्यक्रम, दिशा निर्देश और मानक

वक्त के साथ-साथ प्रतिदिन परिवर्तन हो रहे हैं, जिसमें शिक्षकों के लिए क्षेत्र के रुझानों और सर्वोत्तम प्रथाओं के साथ बने रहना चुनौती पूर्ण हो गया है। व्यवसायिक विकास शिक्षकों को आज के छात्रों के लिए प्रासंगिक और अनुरूप पाठ्यक्रम निर्देश बनाने में सक्षम बनाकर बेहतर और अधिक उपयुक्त शिक्षणों में बदल देता है। अमेरिकी शिक्षा विभाग ने इंस्टीट्यूट आफ एजुकेशन साइंसेज के शोध ने निष्कर्ष निकला है कि अच्छी तरह से डिजाइन किए गए व्यवसायिक विकास कार्यक्रमों में शिक्षकों की भागीदारी के परिणाम स्वरूप छात्र उपलब्धि में 21% अंकों तक सुधार हो सकता है।

**गुणवत्तापूर्ण व्यवसायिक विकास शिक्षकों के लिए कुछ ध्यान देने योग्य युक्तियां--**

**स्पष्ट उद्देश्य निर्धारित करना है--**स्पष्ट उद्देश्य के साथ व्यवसायिक विकास अवसर का इस्तेमाल कर कौशल को आगे बढ़ाएं।

- **फीडबैक ले--** शिक्षक सुधार के क्षेत्रों को पहचान के लिए अपने सीनियर्स को शामिल करें।
- **बुद्धिमानी से चुने--**यह सुनिश्चित करने के लिए अपना शोधकर कि आप प्रतिष्ठित और लाभकारी अवसरों में विषय और संसाधनों का निवेश कर रहे हैं।

- **खुले विचारों वाले बने--** कुछ हासिल करने के लिए आराम क्षेत्र से बाहर रहना पड़ता है।

**निष्कर्ष--** एक शिक्षक की यात्रा निरंतर सीखने की होती है। शिक्षक स्वयं विकास को प्राथमिकता देकर वह न केवल अपने करियर को बढ़ाते हैं, बल्कि छात्रों का मार्गदर्शन करके उनके जीवन को भी समृद्ध बनाते हैं। व्यक्तिगत और व्यावसायिक उन्नति के प्रति इस समर्पण के माध्यम से शिक्षक शैक्षिक परिदृश्य को बेहतर बनाने में महत्वपूर्ण योगदान देते हैं। अतः शिक्षण का संस्था के साथ-साथ पूरे देश के विकास के लिए व्यवसायिक विकास की आवश्यकता है।

**संदर्भ ग्रंथ:**

- बिकॉज़ और ट्रेसका (2014) शिक्षक की गुणवत्ता बढ़ाने में शिक्षक पेशेवर विकास का प्रभाव अतः विषय अध्ययन की अकादमी पत्रिका 3 (6)369-377.
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- <https://little voice little lives.com>.
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# A Comprehensive Review of Intrusion Detection by Leveraging the Machine Learning Techniques

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## Abstract:

*With advancement in digital devices and openness of critical network systems. The threat of cyber-attack and intrusion attack is a major concern to the critical resources of network security and systems. The cyber attacker takes the advantages of weakness and vulnerabilities exist in network system or users devices in order to exploit the various assets and steal valuable information. Over the past decades, Internet and computer systems have raised numerous security issues due to the explosive use of networks. Intrusion Detection System (IDS) provides the protection against any kind of network attack by detecting network intrusions from the suspicious traffic data. However, most of the intrusion detection data suffers from high dimensionality, due to this IDS leads to the degraded performance and lower prediction rate of any kind of new intrusion. Therefore, this work presents a comprehensive analysis of an intrusion detection system for network traffic data using machine learning techniques. The proposed system employed machine learning and data mining techniques in order to detect different kind of intrusion from network traffic on NSL-KDD dataset. The obtained results of proposed work show that the intrusion detection model for network system can efficiently and effectively identify intrusion behavior and malicious intension with higher accuracy.*

**Keywords:** *Intrusion detection, Machine learning, cyber-attacks, data mining, Network security, Artificial Neural Network*

## Introduction:

In this section definitions of different key words that are used in this works are presented to have better understanding.

## Data Mining

Usually, data mining also referred to as information discovery is the method of analyzing facts from distinctive views and abbreviation it into precious statistics that can be used to enhance revenue, cuts fees, or both. For analyzing information data mining software is a single wide variety of analytical gear. Data mining allow users to examine statistics from many different theprogressjournals.com

measurement or angles, classify it, and review the relationships recognized. Theoretically, data mining is the procedure for finding correlation or styles together with dozens of fields in massive relational databases. On the equal time as massive-scale information generation has been growing separate transaction and information systems, data mining provides the connection between the two. Data mining techniques are at the present time used in various applications such as finance, medical, telecommunication and other. Data mining tasks are generally categorized as classification and prediction;

outlier analysis; cluster analysis. Among these the two most popular tasks, classification and prediction are widely used. There is various machine learning techniques which can used to perform following data mining functionalities:

- **Clustering:** Clustering can be invented as identification of comparable classes of objects. Via the usage of clustering techniques we are able to supplementary identify dense and sparse regions in item area and this can determine average distribution pattern and correlations among information attributes. There are three styles of clustering methods that is portioning method, Density based method, and Model based method.
- **Classification:** type is commonly carried out in statistics mining technique, which employs a set of pre-labelled examples to increase a model. Fraud detection and credit danger programs are in particular nicely suitable to this type of take a look at. This method frequently employs choice tree or neural community-primarily based classification algorithms.
- **Prediction:** The prediction is an character records mining strategies that discover courting among impartial variables and association among dependent and independent variables. For instance, the prediction analysis technique can be used in transaction to predict profit for the potential if we consider sale is an independent variable, profit could be a dependent variable.
- **Association:** affiliation and correlation is typically to discover

frequent object set findings among huge facts units. This type of judgment helps businesses to create certain decisions; Association Rule algorithms need to be able to produce rules with confidence values less than one.

- **Decision Tree:** One of the most used data mining techniques is decision tree because its model is straightforward to understand for users. In selection tree technique, the root of the selection tree is a easy query or condition that has a couple of solutions.

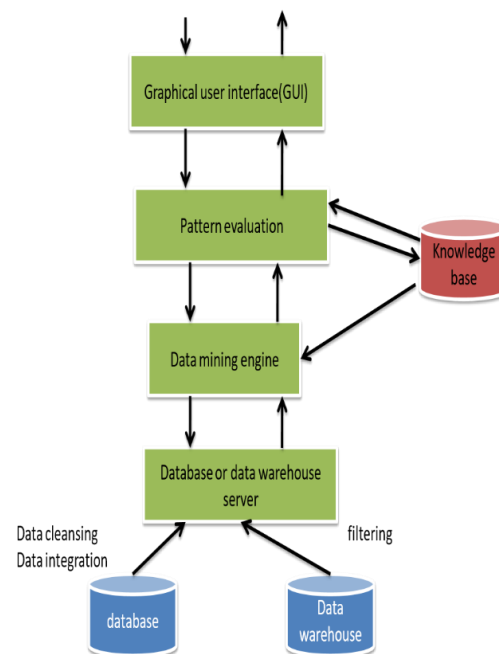


Figure 1.1 Architecture of a Typical Data Mining System.

There are data mining methods which invent in the artificial intelligence and the machine learning. In modern years the utility of the methods has been proven also in network attack. Data mining aims at describing specific patterns which may be present in data. These patterns, exposed in historical data, may be used to support

future decisions relating to attack. Such knowledge may also have a huge value for decision making in action planning, hazard analysis and other predictions. Earlier to the mining procedure it is essential to grow sufficient amount of data. This may possibly require integrating data from multiple varied information sources and transforming it into a form which is specific to a target decision support application. Afterwards the data has to be organized for knowledge extraction. The next step comprises induction of rules which may be encouraging in the finding attacks on network. The Figure 1.2 shows the process of discovering knowledge from data.

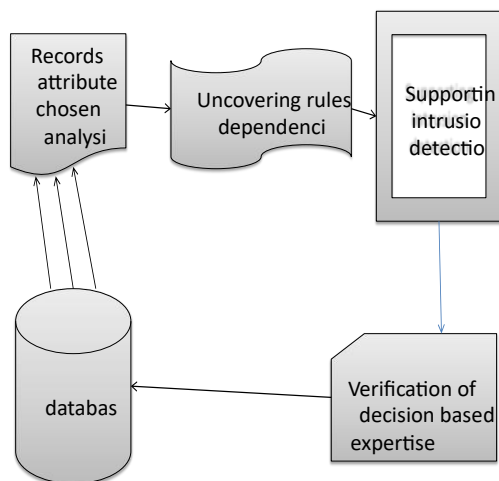


Figure 1.2 Discovering Knowledge from Data

The data mining process is a complex process and it has been divided into several steps:

- Domain analysis and data accepting
- Data collection
- Data analysis and pre-processing
- Data reduction and transformation
- Attribute selection
- Reduction in number of dimensions
- Normalization

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- Aggregation
- Selection of data mining
- Visualization
- Evaluation
- Knowledge utilization

### Intrusion Detection System

Now a day's community security infrastructure depends on to network Intrusion Detection Gadget (NIDS). NIDS gives protection from acknowledged intrusion attacks. It's impossible to forestall intrusion attacks, so organizations need to be prepared to deal with them [13]. Intrusion detection machine (IDS) Intrusion detection system (IDS) is a defensive mechanism whose elementary purpose is to keep work going on considering all possible attacks on a computer system. Intrusion detection is a one type of process used for to detect suspicious activity and malicious activity both at network level and host level. Two main Intrusion Detection techniques available are anomaly detection and misuse detection. In anomaly based totally detection device, audit facts is used to differentiate atypical facts from ordinary statistics. On the other hand, in misuse detection gadget, additionally known as signature primarily based IDS, using patterns of well-known attacks to match with audit data and identify them as intrusions. Functioning of misuse detection models is very much similar to that of antivirus applications. Misuse IDS can Examine network.

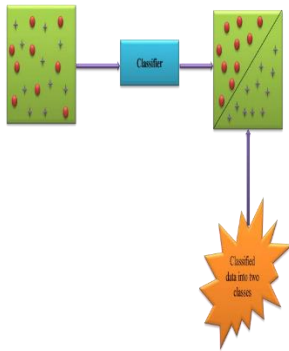


Figure 1.3 Two Class Classifier of IDS

S.NO	Intrusion Attack	Description With Example
1	Worms	It is a section of code or program which replicates or folds themselves from computer to computer without any use of host file. The whole document such as word or excel vary from one system to another system should consider as worm. E.g. Pretty Park
2	Trojans	Trojans having a malicious code or malevolent code, when triggered it may causes loss or even theft of data. E. g Mail Bomb
3	Physical Attack	It is an attempt to damage the physical components or hardware components of networks or computers. E. g Cold boot
4	Password Attack	In this type of attack, password is obtained within a small or short period of time which is indicated by a sequence of login failure. E. g SQL injection attack
5	Information gathering attack	It is Able to gather or gain information to find out intrusion or vulnerabilities. These activities are generally done by scanning the whole computers or networks. E. g XMAS scan
6	Malware	Malware is a program that is basically written intentionally to harm or attack system. It is not the buggy software or any programs.

7	Vulnerability	The Program that is written by humans. Programmers are sometimes forget to or unaware of cross t's and dot i's and those mistakes create strange behaviour in the programs, it create a hole or make a secret path that malware or attacker could use to access system more easily and effectively, that is known as a vulnerability.
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Table 1.1 Types of Attack in Network

### Motivation

Over the past decades, Internet and computer systems have raised numerous security issues due to the explosive use of networks. In the present day intrusion detection gadget is most useful because we are now use any time computer internet and the intruder easily attacks on our network. In this decade many modern techniques and computational system have been emerged in order to facilitate their operations .Nowadays many types of attacks are found for this we have data in databases and facts Warehouse. The essential data include just primary information about attack such as call, kind etc. In order to facilitate the storage and maintenance of this huge data a new type of system has been emerged that is known as intrusion detection system. Its goal is to carry out early detection of malicious pastime and in all likelihood save you greater extreme damage to the included system by using IDS.

It originates in the trade intelligence in order to support attack decisions. The research may improve the procedure of finding attacks and stop that attack as well as decrease the risk of finding attack mistake or the time of a finding attack. This may revolve out to the critical especially in

data is very important. This may also turn out to be a time saving effort. The research area which tries to find for practice of knowledge wrenching from data is described as know-how discovery or data mining.

### Objectives:

The main purpose of this paper is to discover the maximum promising data mining techniques which yield great effects in terms of all performance measurements like accuracy, sensitivity and specificity with reduced number of features. The evaluation is performed on NSL-KDD Dataset from UCI repository site (UCI Repository).

In order to reach the main goal of paper following objectives to be fulfilled:

- a) Analysis of NSL-KDD dataset.
- b) Identification of the most common data mining algorithms implemented within Various datasets.
- c) Identification of the most promising feature choice method for reducing features.
- d) Improvement of algorithm for type of IDS assaults.
- e) Evaluation of the specific strategies used on different datasets for comparing performance.

### 1.5 Research Methodology

Research is a way of knowledge improvement. The main motivation of research is to extend human knowledge rather than to create or discover new things. To conduct master's paper first literature survey is done for analysis of the existing facts and figures. In this literature survey assessment is performed not most effective

at the papers associated with the intrusion detection device however also diverse assaults like u2r,r2l, everyday, prob and so on that has been discussed in bankruptcy 3. Subsequent evaluation of intrusion detection gadget used in community. there are numerous IDS which might be utilized in community that has discussed later on this chapter. the following step is to become aware of the common records mining algorithms and feature choice method which has been carried out and sooner or later to pick a aggregate of information mining approach and feature choice technique for assessment.

### Related Work

Intrusion detection gadget (IDS) is one of the maximum crucial research vicinity for community and facts safety with fast improvement of internet in all around the world .IDS are a classifier that can classify the network information as ordinary or assault. Researchers are generally used characteristic choice approach with statistics mining because it assists to lessen time for result and locating and some of author used combination of a couple of technique for higher effects. There are many authors who use KDD99 information set and many of them makes use of NSL-KDD data set because both are bunch mark data available in UCI Repository site after a decade review we find an ensemble model with feature selection. There are lots of research work already done by the various authors as explained below with some recent publications:

**Gang Kou et.al., (2009)** have compared various classification algorithms like C4.5, SVM, Naïve Bayes, Logistics, CART, See5 with proposed model Multi-class, multi-

criteria mathematical programming (MCMP) model to develop IDS. MCMP model is best classifier for KDD99 data set in case of multi class classification problem.

**V. Balon Canedo et al., (2011)** proposed a new KDD winner method consisting of discretizations, filters and various classifiers like Naive Bayes (NB) and C4.5 to develop a robust IDS. The proposed classifier gives high accuracy i.e. 99.45% compare to others.

**Mohammad Saniee Abadeh et al., (2011)** have suggested three kinds of genetic fuzzy system based on Michigan, Pittsburgh and iterative rule learning (IRL) to deal with intrusion detection as high dimensional classification, in which genetic fuzzy Michigan approach is better to deal intrusion detection problem compare to others.

**M. Govindarajan et al., (2011)** have proposed a brand-new technique, that is ensemble of Multilayer Perceptron (MLP) and Radial foundation characteristic (RBF). The proposed ensemble version gives better improvement compare to its man or woman model

**Saurabh Mukharjee et al.** have discussed new feature reduction method known as feature validity-based reduction method (FVBRM) applied on one of the efficient classifier Naive Bayes on reduced data set with 24 features for intrusion detection. Result obtained in this case is better as compare to case-based feature selection (CFS), gain ratio (GR), info gain ratio (IGR) to design efficient and effective network intrusion detection system.

**Y. Li et al., (2012)** have recommended regularly characteristic decreased (GFR)

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approach implemented on green classier assist Vector gadget (SVM) with KDD99 records set. SVM classifier offers high category accuracy as ninetyeight.62% for intrusion detection in case of 10-fold pass validation.

**L. Koc et al., (2012)** have delivered Hidden Naive Bayes (HNB) model with promotional k-c programming language discretization and have interaction feature choice technique. They have compared their proposed model with conventional Naive Bayes method. The proposed models offers exceptional end result as ninetythree.72% accuracy and zero.66% error charge in multiclass class for intrusion detection.

**Mrutyunjaya Panda et al., (2012)** have suggested hybrid method with aggregate of random wooded area, dichotomies, and ensembles of balanced nested dichotomies (cease) for binary class trouble, which gives detection fee 99.50% and occasional false alarm rate of zero.1%. They evaluated the overall performance of model with different measures like Ffee, precision and don't forget.

**Nagaraju Devarakonda et al., (2012)** have presented Hidden Markov Model (HMM) is a simplest kind of dynamic Bayesian network model for intrusion detection system. They have taken only five features (protocol\_type, flag, src\_bytes, dst\_bytes, and, count) out of 41 to develop robust IDS to classify the attacks.

**Hesham Altwaijry et al., (2012)** have suggested Bayesian network to improve the accuracy of R2L type of assault. Experiment accomplished with distinct function subset of KDD99 statistics set and offers better effects for R2L attack with

detection price eightyfive.35% using three features.

**Muamer N. Mohammed et al., (2012)** have proposed a new method focus on improving intrusion system in wireless area network by using support vector machine. This technique produced a better result in terms of detection rate and eliminating false positives and false negatives.

**John Zhong Lei et al., (2012)** have used various techniques like K-means, SOM, Improve Competitive Learning Network (ICLN), and Supervised Improve Competitive Learning Network (SICLN) to develop intrusion detection system. They have suggested SICLN technique and achieved high accuracy like 99.66% compare to others.

**Y. Y. Chung et al., (2012)** have proposed a new hybrid network intrusion detection system using intelligent dynamic swarm based rough set (IDS-RS) and simplified swarm optimization with weighted local search (SSO-WLS) strategy for intrusion data classification. Proposed hybrid model SSO-WLS improve the overall performance of the network intrusion detection system with 99.3% accuracy.

**B. Kavitha et al., (2012)** have expand a brand new rising Neurosophic common sense classifier (IDS), which is extension/aggregate of fuzzy logic, intuitionist good judgment and three-valued logics that offers a excessive detection rate and coffee false alarm rate compare to others.

**Shih-Wei Lin et al., (2012)** have proposed a new technique based on feature selection and decision tree rule which is combination of support vector machine (SVM), decision tree (DT), and simulated annealing

(SA).The proposed technique achieved 99.96% of accuracy as best model in case of 23 features.

### Problem Description

According to the analysis of literature survey many authors have developed novel methods not only for the classification of attack but also for other attacks like u2r,r2l,probe,DoS etc. with the help of intrusion detection system. Development of novel techniques for classifying different attacks in network is a current research topic and is very popular among the researchers; it was found that many popular journals are publishing many research articles frequently. Problems related to classification have identified its applicability in real sense. The main problem is that all attacks share the same features. This may mystify a practicers. As a result we can state that one of the important problem in this research is decision making regarding a attack in which one attempts to match patterns and attack but on the other hand it does not be attached to typical behavior. From literature survey we conclude that each author proposed individual data mining techniques for calculating performance measures and from individual model we observe that accuracy does not increase. There is one more problem related to the number of feature which is used for classification. There are some authors who have applied feature selection methods like ranker method, best first search method etc. With the help of feature selection data quality gets improved as redundant and noisy get removed. And one more advantage is that the dimensionality of the feature space, to limit storage requirements and increase algorithm speed.

Ø Analysis of various previous researches comprises following problems:

- a) Decision making process does not conform to standard behaviour.
- b) Huge number of features due to which quality of data gets affected.

### Proposed Approach for Classification

After analyzing the previous work of classification of intrusion it found that there is a need of more reduction in features so that noisy and redundant data get remove and quality of data may get improved for better results. In this paper we have proposed an ensemble model approach of a feature selection for the classification of intrusions. In this proposed approach first model is trained using machine learning techniques and then features get reduced with the feature selection method and after testing of model it is evaluated using various performance measurements. The work flow of the proposed work is shown below with the help of diagram

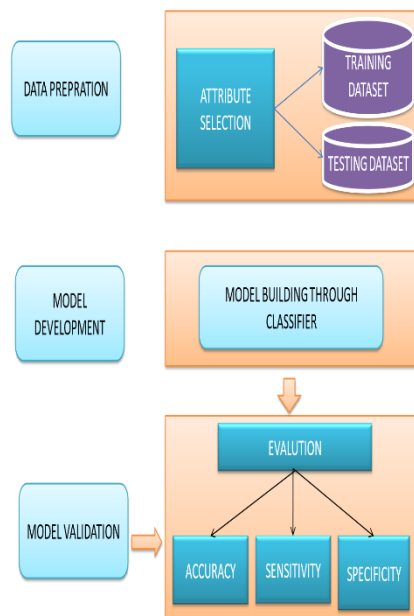


Fig 1.4 Work Flow of Proposed Approach

The work flow diagram show that for finding attacks first we prepared the data with training and testing set and then develop a model for classification and at the last stages a model for Classification and at the last stage we evaluate accuracy of that model.

### Experiment and results analysis

This paper presents the results conducted with a hybrid technique of ANN and Bayes net with Feature selection method. The technique has been applied to NSL-KDD dataset which consists of 41 features. The experiments are conducted in CLEMENTINE 12.0 version.

This experiment used CLEMENTINE open-source data mining tool to analysis of data. In these Experiments we have used NSL-KDD data which is collected from UCI repository data source. These facts set implemented in diverse records mining techniques for categorization of assault and ordinary. The test divided into sections: First evaluation the person and its ensemble model and then practice the feature selection technique on satisfactory version.

### An Ensemble Model for Classification of IDS Data

In this experiment we've implemented different walls of records situate in distinct information. Mining strategies like C5.0, SVM, ANN and Bayes net for category of NSL-KDD statistics. Number one we've got applied this data position into diverse individual's facts mining techniques and calculated the accurateness of models. Second we've hybrid the two fashions for category of NSL- KDD information. We have also ensemble ANN and Bayes net for classification of this data which gives higher accuracy compared to each

individual’s models. Data partitions acting very significant role for accuracy of model. From one partition to other partitions accuracy is changeable and our proposed ensemble ANN and Bayes net gives high classification testing accuracy as 98.74% in case of 65-35% as training- testing partitions.

Table 1.2 Accuracy of Different Model with Different Partitions of Dataset

Model	60/40 % partition testing	80/20% partition testing	65/35% partition testing
ANN	98.23%	97.77%	96.81%
Bayes Net	97.46%	98.68%	97.16%
ANN+ Bayes Net	98.73%	98.47%	98.74%

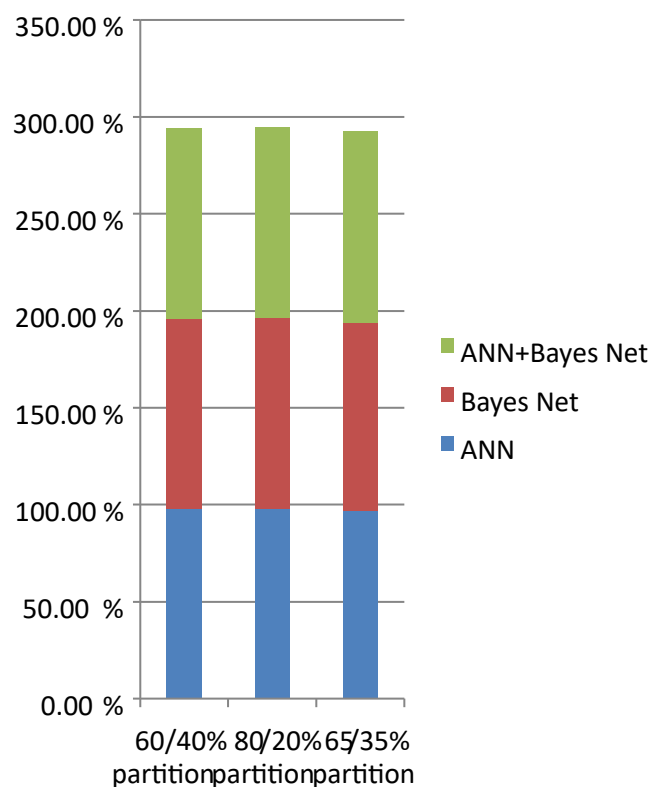
By using graphical representation we show that ensemble model is give high accuracy as Compare to individual.

Figure 1.5 Classification Accuracy of Individual and Ensemble Model

**Conclusions and Future Works:**

Due to huge amount of data transmission over public network it is mandatory to protect data and information from the intruders for individual as well as for any organization. ANN artificial neural network were very popular among the researchers, many models with many variations of ANN are developed and integrated with other techniques due its internal good characteristics on the other hand relatively new technique bayes net is widely accepted for development of intrusion detection

system (IDS). This study involves with a comparison of new and old techniques for intrusion related data classification based on two different partitions. An experimental result proves that bayes net is outperforming than ANN at both training and testing stages. After that we are ensemble ANN and bayse net and get highest accuracy with reduced feature. Since outcome of Research work as follows:



- a) This research work have developed ensemble model (ANN+ Bayes net) for Classification of attacks.
- b) This model gives 98.74% accuracy in case of 65-35% data partition as robust model.

Feature selection is also very important role to improve the classification of data set. In

this work, rank based feature selection techniques used on NSLKDD data set and reduce the features. An ensemble of ANN and Bayes net model gives 98.74% of accuracy in case of rank-based feature selection technique.

The main goal of this research work is to get higher accuracy with minimum number of features. In this study we have used NSL-KDD dataset which has been downloaded from UCI machine learning repository site. The proposed model can be used in future in following ways-

1. This ensemble model can also used for reduce feature, improve accuracy.
2. This proposed model can be applied to real time data.
3. This proposed model can be expanded with extra results.

In future, it is proposed to reduce features and make an Ensemble model for intrusion detection system having a better accuracy rate.

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