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Readiness, Perception and Concerns of higher education students towards Online Education during COVID-19 Pandemic

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Abstract:

The present study attempts to understand the readiness, perception, and concerns of higher education students about online education during the COVID-19 pandemic. Data was collected from 5995 students from different colleges and universities located in North India (Haryana, Punjab and New Delhi) using Google forms. Most students have shown readiness for online education with few concerns like accessibility, user-friendliness, fatigue, and finding it more demanding. The study's findings revealed significant differences in readiness, perception, and concerns for online education based on gender and location. This study has implications for teachers, administrators, and policymakers as it has unveiled students' real problems and concerns about online education. The study findings and recommendations can help teachers cope with the changing educational scenario in this ongoing pandemic.

Keywords: Readiness, Perception, Concerns, Online Education and Higher Education

Introduction:

Historically, several epidemics and pandemics like plagues, yellow fever, flu pandemic, polio, AIDS, Swine flu, Ebola, Zika virus, etc., have ravaged humanity. But, in our last four generations, no one has faced such a situation in their lifetime. Like India, almost all countries worldwide were facing lockdown due to the COVID-19 pandemic (Agbejule & Ndzibah, 2021). The government of India announced a nationwide lockdown on March 24, 2020, as a preventive measure to contain COVID-19. This was one of the most essential and diligent steps to control and break the cycle of COVID-19.

Primarily, the COVID-19 pandemic is a health crisis, but it has impacted every aspect of human life in several ways. Along with economic consequences, the COVID-19 pandemic has had a devastating effect on education globally (Baticulon et al., 2021). Teaching was suspended in almost all educational institutions worldwide, and billions of students were facing the repercussions (Muthuprasad et al., 2021). Even policymakers were in a dilemma about students' readiness for online education, the mode of examination (online/offline), and the competence of teachers for online teaching. In recent years, e-learning has grown in popularity, and it is gaining widespread acceptance in higher education (Kisanga & Ireson, 2016). UNESCO in 2009 has also recommended the use of distance learning programmes and open educational applications (Altbach et al., 2009). Schools, colleges, and universities have adopted many hit and trial methods to continue teaching across the country. Along with school education, the COVID-19 pandemic has influenced the higher education sector in India as well. Even though, the Indian government has envisaged a National Mission for Education through Information and Communication Technology for the benefit of all students in higher education in 2009, Indian higher education institutions appear to be untested and less equipped for the current situation.

This pandemic situation has prompted us to understand, recognize and rethink the competence of our universities in dealing with such an adverse situation. This has brought a paradigm shift and has changed how we look at education. COVID-19 pandemic has spotlighted the problems that contribute to educational and income inequalities (Doyumğaç et al., 2020). Many countries worldwide, including developed countries, have realized the need to transform their education systems to meet such challenges. Remote learning seems to be the wisest and sole solution to mitigate the depressing impacts of lockdown and rebuild learning loss in the present condition (Aldhahi et al., 2021). In India, teachers are now required to transform their teaching model from traditional to technology-driven. There is an urgent need to redesign the education system and look for educational opportunities outside of school/college/universities. An education system that can cater to the needs of students both inside and outside of educational institutions is the need of the hour. A multi-stage prolonged strategy and a resilient education system are required to handle such a crisis (Coman et al., 2020). Despite this pandemic crisis, classes in India are often interrupted due to natural disasters such as floods, earthquakes, landslides, heat waves, strikes, political unrest at certain places. From the analysis of such incidents, it can be deduced that any crisis affecting a community has a lasting impact on education. The education sector is mostly the most prominent victim of continuity and quality (Czerniewicz et al., 2019). In such situations, technology can prove to be a saviour of education.

There is no doubt that attending schools/colleges/universities is the best way to enhance skills. The impact of online education will vary, as some students do not have access to online education for one or other reasons. Students from economically weaker sections may be at a significant disadvantage and vulnerable during this crisis due to lack of resources (Doyumgaç et al., 2020). Along with these challenges, the preparedness and concerns of students regarding online education must be taken into consideration and addressed adequately to obtain better results from online education. It is crucial to assess the teachers' e-readiness and perception in this situation. Review studies suggest that issues related to online learning have been previously addressed, ignoring student perceptions about online education during this pandemic (Khan et al., 2021). Investigators of this study believe that before making any significant changes in educational practice, a thorough study of the perspective of learners is the most desirable thing to do. Not only will this type of research help guide other policy decisions, but it will also help in improving the effectiveness of online education. Keeping this in view, this study has been undertaken to examine students' readiness for online education. This study may prove instrumental in understanding students' access to primary resources required for online education, readiness among students, and finding solutions to many important questions. This work is aimed at further understanding of difficulties faced by students during online learning and further planning.

Methodology:

In this study, students' readiness to accept online education has been studied using a scale called "Readiness and Concerns of Students towards Online Education". The reliability and validity of the scale was also verified before its use. The Cronbach Alpha (0.819) value and split-half correlation (0.817) were calculated to complete the reliability analysis. Data collection was done in April 2020 by the survey method during the lockdown period in India. The responses from the participants were collected through Google Form, and a response sheet was created. Before collecting data, the respondents were assured that their personal information would be kept confidential and used for research purposes only.

Sample:

The study sample was comprised of 5995 students (4220 females and 1775 males) enrolled in different colleges and universities located in North India (Haryana, Punjab and New Delhi). Participants are studying for various undergraduate and postgraduate courses. Among the participants, 2151 (35.9%) lived in urban areas, and 3844 (64.1%) lived in rural areas. Most of the students (98.2%) were in the age group of 15 to 25 years. The demographic details of the sample are given in Table 1.

Table 1: Demographic detail of the sample (N=5995)

Gender		Frequencies (f)	Percentage (%)
	Female	4220	70.4
	Male	1775	29.6
Age	Less than 15 Years	9	.2
	15-20 Years	3402	56.7
	21-25 Years	2487	41.5
	More than 25 Years	97	1.6
Location	Urban Area	2151	35.9
	Rural Area	3844	64.1

Results And Observations:

Generally, students are thought to be techno-savvy. However, surprisingly, only 32.3% of students (1983) were using a computer or desktop, and only 28.1% of students (1682) had a computer or desktop at their homes (Table 2). While 93.6% of students owned a smartphone, suggesting that smartphones are more popular with students. Of 5609 smartphone users, almost all students (89%) had internet access, essential for online education.

Table 2: Devices and internet access by students (N=5995)

1. Do you use computer/laptop?		Frequencies (f)	Percentage (%)
	Yes	1938	32.3
	No	4057	67.7
2. Do you have computer/laptop at home?	Yes	1682	28.1
	No	4313	71.9
3. Do you use Smartphone?	Yes	5609	93.6
	No	386	6.4
4. Do you have internet access?	Yes	5336	89.0
	No	659	11.0

Concerning online education, it has been observed that many students are well acquainted with online resources, and approximately 80% of them use them to study. About 46.1% of students have attended online courses before the COVID-19 lockdown (Table 3). However, few students (29.5%) are aware of the government of India's initiatives in online education, like the SWAYAM platform that hosts a large number of courses for school, undergraduate, and postgraduate students. It seems that colleges and universities have not taken firm steps to promote awareness among students about online education. The use of social networking sites like Facebook and WhatsApp is already very popular among them (93.4%), and most of them (90%) have created their electronic mail accounts. This demonstrates that nearly all students prefer technology for various purposes

and are acquainted with basic information and communication technology knowledge.

Table 3 Student's familiarity with online education and ICT

		Frequencies (f)	(%)
1. Do you use social networking sites like Facebook/WhatsApp?	Yes	5597	93.4
	No	398	6.6
2. Do you have your email account?	Yes	5394	90.0
	No	601	10.0
3. Have you attended any online courses?	Yes	2762	46.1
	No	3233	53.9
4. Do you know about SWAYAM?	Yes	1769	29.5
	No	4226	70.5
5. Do you use online resources for learning?	Yes	4771	79.6
	No	1224	20.4

A perusal of Table 4 reveals that a sizable portion of students perceives online education as a good opportunity for learning. Most of them find online education exciting and valuable. They can learn at their own pace with the flexibility of accessing content at any time. Nearly all the students believe that assignment submission can be done quickly, and videoconferencing is a good way of interacting with the teacher for synchronous learning. Regardless, around half of students have raised concerns about access to the resources and skills required for online education. Many students find online education stressful and believe that they do not prefer online education due to lack of resources. This may be because they face difficulties accessing online resources due to a lack of proper devices and poor or no internet connectivity. When the students were asked about their online education experience, many of them believed that online education could never replace conventional classroom teaching and felt more enthusiastic and engrossed in regular classrooms. According to them, online education may be integrated with regular teaching to a limited extent, subject to the availability of resources.

Table 4: Description of students' outlook regarding online education (N=5995)

Sr. No.		Mean	SD
1	Online education has provided new opportunities of learning for the students.	3.85	.840
2	Use of visuals and animations makes online	3.68	.863

	teaching more interesting.		
3	One can learn at his/her own pace via internet.	3.66	.787
4	Online education is very useful.	3.62	.910
5	Video conferencing provides very good opportunity to interact with teachers.	3.42	.996
6	Online learning provides me more flexibility of accessing content.	3.41	.927
7	Assignment can be submitted easily via internet.	3.46	1.011
8	I am afraid of using computer for online education.	3.35	1.029
9	Online education is very boring.	3.24	1.031
10	Online resources are easily accessible to everyone.	3.17	1.086
11	I don't have resources to access online courses.	3.19	1.040
12	I don't have enough skills which are required for online education.	3.17	1.073
13	I find e-learning more interesting than classroom learning.	3.03	1.060
14	Online education is stressful.	2.98	1.031
15	Due to lack of resources, I cannot learn through online mode.	2.91	1.044
16	Online teaching is not a substitute of conventional teaching.	2.45	.870
17	I feel more enthusiastic in classroom teaching.	2.23	.846
18	Face-to-face teaching results in more permanent learning.	2.08	.819
19	Classroom teaching is more interesting than online teaching.	2.08	.819
20	Online teaching can replace a teacher.	2.12	.959
21	I am more comfortable reading printed books than e-books.	3.75	0.959
22	Online teaching is difficult/troublesome for me	3.09	1.076

The results of the independent sample t-test assuming unequal variances (Table 5) revealed significant differences in readiness, perception, and concerns about online education based on gender. Such differences show that female

students have shown better readiness than male students. Mean values for readiness (male = 30.9, female = 31.46), perception (male = 12.64, female = 12.51) and concerns about online education (male = 21.7, female = 22.01) suggest most of the students have shown readiness for online education. However, they are not sure about the usefulness of online education and have many apprehensions about it. This may be due to lack of resources, awareness and computer literacy skills.

Similarly, significant differences were observed in readiness, perception, and concerns about online education between urban and rural students. In addition, rural students show significantly more concerns about online education. This may be due to differences in access to different online tools and resources in rural and urban areas.

Table 5: Gender and locality differences in the scores of readiness, perception and concerns about online education						
	Gender	N	Mean	Std. Deviation	t value	Significance
Readiness	Male	1775	30.9194	6.37045	-3.512	.000
	Female	4220	31.4673	5.11277		
Concerns	Male	1775	21.7301	5.41740	-2.018	.04
	Female	4220	22.0182	4.88108		
Perception	Male	1775	12.6406	2.39300	1.9	.049
	Female	4220	12.5161	2.15757		
Total Score	Male	1775	65.2901	11.08539	-2.65	.000
	Female	4220	66.0017	8.70619		
Readiness	Urban	2151	31.6685	5.45360	3.81	.000
	Rural	3844	31.1017	5.54750		
Concerns	Urban	2151	22.9489	5.07453	11.79	.000
	Rural	3844	21.3645	4.94198		
Perception	Urban	2151	12.6769	2.31059	3.22	.001
	Rural	3844	12.4836	2.18146		
Total Score	Urban	2151	67.2943	9.75688	9.72	.000
	Rural	3844	64.9498	9.21269		

Mediation results presented in Table 6 and the mediation model shown in Figure 1 indicates the mediation effect of concerns of the students in the relationship between perception and readiness. Concerns of the students regarding online education partially mediate the impact of perception (predictor variable) on the readiness (outcome variable) of higher education students for online education. The indirect effect of perception on readiness was statistically significant ($\beta=0.0911$, $p<0.001$). The direct effect of perception on readiness was significant ($\beta=0.02$, $p=0.049$) but accounted for only 21.2% of the total effect. Both significant direct and indirect effects suggest that partial mediation is the case. The indirect effect of perception on readiness via concerns accounts for 78.2% of the total effect, which is a large effect. That is, to make students ready for online education, their concerns about online education must be adequately addressed to make them ready for online education.

Table 6: Mediation results								
Type	Effect	Estimate	SE	95% C.I. (a)		β	z	p
				Lower	Upper			
Indirect	Perception Concern Readiness	0.2254	0.0136	0.199	0.252	0.0911	16.62	<.001
Component	Perception Concern	0.5742	0.0283	0.519	0.630	0.2537	20.31	<.001
	Concern Readiness	0.3926	0.0136	0.366	0.419	0.3590	28.89	<.001
Direct	Perception Readiness	0.0606	0.0308	2.72e -4	0.121	0.0245	1.97	0.049
Total	Perception Readiness	0.2860	0.0318	0.224	0.348	0.1156	9.01	<.001
Note. Confidence intervals computed with method: Standard (Delta method)								
Note. Betas are completely standardized effect sizes								

Effect	Estimate	SE	Z	P	% Mediation
Indirect	0.2254	0.0136	16.62	<.001	78.8
Direct	0.0606	0.0308	1.97	0.049	21.2
Total	0.2860	0.0318	9.01	<.001	100.0

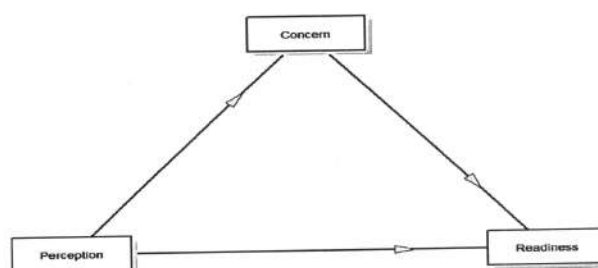


Figure 1: Mediation Model

Conclusion And Discussion:

Participation and adoption of online education practices were discretionary for both teachers and students, which is why many teachers and students are not prepared for online education. The results have revealed that most of the students use smartphones and the internet for different purposes, but less than 50% of the students have attended any online courses. Before the COVID-19 lockdown, approximately 46.1 per cent of students were taking online classes. They already use social networking sites like Facebook and WhatsApp (93.4 per cent). This means that students have basic knowledge of information and communication technology, but their use is less directed towards learning.

The majority of students find online education exciting and valuable. They can learn at their own pace and have access to content at all times. Half of the students are concerned about accessing the resources and skills required for online education. This could be due to a lack of suitable devices and a poor or no internet connection. Female students are more willing to learn online than male students. Students from rural and urban areas show significantly more concerns about online education. Differences may be due to access to different online tools and resources in rural and urban areas and differences in awareness and computer literacy. Most of them have accepted online education with some concerns and apprehensions. These apprehensions are most common among students who have problems accessing the internet and electronic devices (Doyumğaç et al., 2020). Acceptance and readiness of students towards online education can be seen as a good sign for policymakers in implementing online education. This can be done efficiently after addressing the problems and concerns of learners, especially those from rural backgrounds. However, students do not see online education as an

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शोध दिशा

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डॉ० मीना अग्रवाल

संयुक्त संपादक

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उपसंपादक

डॉ० अशोककुमार

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डॉ० कनुप्रिया प्रचण्डिय

कला संपादक

गीतिका गोयल/ डॉ० अनुभूति

विधि परामर्शदाता

अनिलकुमार जैन, एडवोकेट

आर्थिक परामर्शदाता

ज्योतिकुमार अग्रवाल, सी०ए

शुल्क

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वार्षिक शुल्क : एक हजार रुपए

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स्वत्वाधिकारी, मुद्रक, प्रकाशक डॉ० गिरिराजशरण अग्रवाल द्वारा श्री लक्ष्मी ऑफसेट प्रिंटर्स, बिजनौर 246701 से मुद्रित एवं 16 साहित्य विहार, बिजनौर (उ०प्र०) से प्रकाशित। पंजीयन संख्या : UP HIN 2008/25034

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Quality of life and Cardiovascular Risk in the female with Polycystic Ovary Syndrome: A Review

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Ovaries with many tiny cysts bordering or inside an ultrasound-echo-dense stroma are called polycystic ovaries. They frequently appear in female patients who exhibit no other syndrome signs. The frequency of polycystic ovaries is 21-33% in the normal community. PCOS is a hormonal disease that upsets people who are menstruation and is typically caused by an excess production of androgen, or male hormone. testosterone, a hormone associated with the male sex. Therefore in condition, the ovaries expand and create many cysts rather than a single cyst, which causes irregular, frequent, or delayed menstrual cycles that are frequently accompanied by excessive blood flow. The ovaries produce a large number of fluid-filled follicles but do not consistently release eggs. Ovaries with many tiny cysts surrounding or inside an ultrasound-echo-dense stroma are called polycystic ovaries.

In addition to having polycystic ovaries, a patient should also exhibit one or more additional symptoms, such as obesity, insulin resistance, menstrual cycle irregularities, and hyperandrogenism resulting in hirsutism and acne. Menstrual cycle disruptions and hyperandrogenism are two additional, more limiting definitions that are frequently used in North America. These definitions do not require an ultrasound finding of polycystic ovaries. They frequently appear in female patients who exhibit no other syndrome signs. In the general public, polycystic ovaries are present in 21-33% of people. The following are examples of polycystic ovarian syndrome symptoms:

- Inability to conceive as a result of irregular ovulation.
- An irregular menstrual cycle.
- An unexpected gain in weight.
- Oily skin.
- Face, chest, and back hair development is known as hirsutism.

The physical effects of the polycystic ovarian syndrome:

Metabolic syndrome: As a result of Polycystic Ovary Syndrome's alteration

of the body's normal metabolism level, the majority of overweight or obese women have the condition.

Women with Polycystic Ovary Syndrome are much more likely to experience sleep apnea, which is the halting of breathing while asleep.

The likelihood of having problems with cholesterol, high blood pressure, and blood sugar is increased by this illness.

Endometrial cancer: The middle layer of the uterus, the endometrium, thickens over time if a woman doesn't ovulate and sheds her uterus layer each month, increasing her risk of developing endometrial cancer.

Infertility: Patients with Polycystic Ovary Syndrome have difficulty getting pregnant because the regular menstrual cycle is disrupted.

Depression: Sudden hormonal changes and unwelcome hair growth have a detrimental impact on emotions and provide a breeding ground for diseases like depression.

Etiology: Although the exact cause of this condition is unknown from a medical standpoint, it is frequently linked to elevated amounts of the male hormone testosterone, which affects the normal function of the ovaries. Genes, inflammation, and insulin resistance are also connected with PCOS.

Quality of Life in Females with Polycystic Ovary Syndrome : A hypothetical construct, QOL must be operationalized for a particular objective (Clark, 1991). The idea of QOL is that it is a general, multidimensional construct (Haywood et al., 2005) and it reflects a person's understanding of their psychological health, social and environmental integration, and the entire situation in life (Jang Y. et al., 2004; Rapley, 2003). According to Trajanovic, Skakic, and Nikolic's definition of QOL from 2007, it is a general term based on an individual's perspective and subjective experiences. It includes every prerequisite element for a happy life. The WHO outlines QOL as, 'An individual's perception of his/her position in life in the context of the culture and value systems in which he/she lives, and about his/her goals, expectations, standards and concerns. It is a broad-ranging concept, incorporating in a complex way the person's physical health, psychological state, level of independence, social relationships, and their relationship to salient features of their environment' (WHOQOL Group, 1994).

Sense of his or her quality of life of a person is a highly subjective experience and a multifaceted notion that includes aspects of mental, physical, and social welfare. According to the World Health Organization (WHO), a person's mental and style of living account for 60% of their quality of life. A lifestyle that promotes health includes actions that give people more control over their health, which ultimately enhances both personal and societal well-being. The foundation of long-lasting well-being is the promotion of health. Since one of the most important goals for PCOS patients is to improve their life's quality. A study on the effects of lifestyle change among PCOS patients was carried out by Clark et al. in 1998. The results exhibited that the intervention raised people's quality of life.

According to Thomson et al., (2010) Study of lifestyle and quality of life in PCOS patients, keeping energy levels moderate enhances the quality of life whereas exercising without maintaining a healthy eating regimen offers negligible benefits. The initial line of PCOS treatment is suggested to be a lifestyle change. It has been calculated that adopting an optimal lifestyle has reduced issues in 75% of PCOS patients. Quality of life is widely embraced. 'how an individual measures the decency of various parts of their life'. These assessments consist of 'people's emotional responses to life events, feelings of life satisfaction and fulfilment, an satisfaction with work and individual connections' (Diener et al., 1999). The quality of life reveals a person's well-being. Finding a definition of the quality of life is challenging (Clarke et al., 2000; Farquhar, 1995).

Smith (1973) proposed that whereas the quality of life should only apply to a person's emotional assessment of their life circumstances, wellness relates to objective living situations relating to the general public. At present, both terms are used equally (De Leo et al., 1998). These ambiguous concepts result in various ways to comprehend the quality of life (Beesley & Russwurm, 1989). Observing an economic trend in the late 1960s that placed a strong emphasis on quality of life through quantitative metrics and job rates was one of the main presumptions (Liu, 1976). Furthermore, since objective evaluation alone was insufficient to measure a person's 'quality of life,' researchers began looking into how people perceived their own lives (Andrews & Withey, 1976;).

Teenage girls with PCOS experience poor effects on their HR QoL as a result of the condition. Instead of physical functioning, emotional and social functioning seems to be most compromised. Adult women with polycystic ovarian syndrome are far more likely to have issues at home and work, lower quality of life, and changes to their perception of themselves as women (Trent, M. E. et al 2002). Compared to adolescents without PCOS, those with PCOS have poorer HRQL. Adolescent HRQL is severely impacted by polycystic ovarian syndrome and the perceived severity of the condition. Upcoming studies are required to determine how to enhance communication between HCPs and PCOS-affected teenagers, particularly when it comes to diagnosis and the possibility of pregnancy.

Cardiovascular risk and PCOS in women

Women with PCOS who are overweight, smoke, have hypertension or dyslipidemia, subclinical vascular disease, impaired glucose tolerance, and dyslipidemia are at risk, whereas those who have metabolic syndrome and/or type 2 diabetes mellitus have a higher risk of cardiovascular disease (Wild, R. A. et al 2010). Additionally, insulin stimulates thecal cells by activating receptors and using inositol-glycan mediators as the signal transduction method, which increases testosterone biosynthesis in PCOS women (Nestler, J. E., 1998).

Women with PCOS also had oligomenorrhea (less than six menstrual cycles in the previous year), an elevated serum-free testosterone level, and ovarian ultrasound results that were consistent with PCOS (Yeh, H. C., 1987). In a large

community-based population receiving healthcare, diagnosed PCOS was highly prevalent and associated with noticeably higher rates of cardiovascular risk factors that varied by race/ethnicity (Lo, J. C., 2006). Cerebrovascular and cardiovascular events are more likely to occur in the postmenopausal subgroup of women who had PCOS when they were fertile (Carmina, E. 2009).

The Rotterdam General agreement Workshop group recommended in 2003 that the diagnosis of Polycystic ovary syndrome only be established when all other medical diseases that result in irregular menstrual periods and androgen excess have been ruled out. According to Glueck C.J. et al. (2003), 46% of PCOS-afflicted women also have metabolic syndrome. These elements work together to influence the PCOS patient's lipid profile. The link between metabolic syndrome and an elevated risk of developing diabetes mellitus and cardiovascular disease is widely documented (Ford, E. S. et al., 2002). Insulin resistance is a key component of PCOS (Legro, R. S. et al., 2001).

Conclusion-PCOS is a serious problem, which is increasing rapidly among women. In this, there are normally small follicles in the ovary, due to which the egg cannot be produced in females. In this, mainly the frequency change of the menstruation cycle, diabetes, mood swings, etc. are common symptoms. All this harms the quality of life of a woman. There are many risk factors for PCOS such as heredity, hormonal imbalance, cardiovascular and stress factors etc. For the treatment of PCOS, the amount of estrogen in women is increased and the amount of androgen is reduced. For this, the help of many medicines is also taken. Yoga, meditation, exercise, lifestyle change and changes in diet patterns are also effective to control this problem.

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Abstract

1960s was an important decade. It was the time when Civil Rights Movement was at its peak and the Feminist Movement blossomed but both these movements could not reach the black women. Their opinions were overshadowed by male leaders of Civil Rights Movement. The sexism of the Civil Rights Movement and the racism of Feminist Movement led to their separation and promoted a desire to develop organizations which would address issues pertaining to black women. Black women have experienced this intersection of racial and gender oppression throughout the plight of African Americans, from post slavery oppression until modern day inequality disputes. Women began questioning dominance and began to articulate their own concerns. For this they chose the medium of writing. How they redefine themselves by articulating their concerns through writing autobiographies is the main theme of this paper.

Keywords: Civil Rights Movement, Feminist Movement, Autobiography, Images.

1960s was an important decade. It was the time when Civil Rights Movement was at its peak and the Feminist Movement blossomed but both these movements could not reach the black women. Their issues in political organizations were not paid due attention. They found that many civil rights and Black Power organizations were unwilling to take up issues that were central to the lived experiences of black women (curb forced sterilization, access to contraception, legal abortion, domestic violence, safe and well-paid job opportunities for black domestics, etc.). Many women found that sexism was rampant throughout many of the more traditional civil rights organizations, as well as the Black Power organizations. At this stage they turned to Women's organizations. During 1960s the Feminist movement also blossomed which defied issues based on gender. However black women remained marginalized within the feminist movement also. Their issues remained unheard, unheard and unaddressed here as well and they remained invisible. They realized that in a racist and sexist society to be 'black' was to be a black man and to be a 'woman' was to be a white woman. It appeared that to be 'black' and 'female' were mutually exclusive. This invisibility led them to separate themselves from this movement and they established organizations meant for the welfare of black women, black women literary traditions and developed black feminist aesthetic tradition/consciousness. Black feminism became popular in response to the sexism of the Civil Rights Movement and racism of the Feminist Movement leading them to write books like *All the Women Are White, All the Blacks Are Men,*

But Some of Us Are Brave (1982). At this moment some women began questioning male dominance. They began to articulate their own concerns. This was one of the main reasons as to why women turned to writing to unveil their new image which emerged in the wake of Civil Rights Movement through their creative expression. So, women's writing in America evolved out of the socio-cultural context prevailing in the 1960s and 1970s. Their works took up issues of inequality and double oppression of race and gender. Many African-American women writers expressed themselves in the novel, short stories and autobiographies. The decade began with the work of Maya Angelou's *I Know Why the Caged Bird Sings* (1969), Tony Morrison's *The Bluest Eye* (1970), Alice Walker's *The Third Life of Grange Copeland* (1970) and it ended with Wallace's *Black Macho and the Myth of Superwoman* (1979) and Mary Helen Washington's *Midnight Birds* (1980). In the early literature, Black women particularly have been presented in a negative image as fat mammies, submissive, always cooking and cleaning, corpulent and seductive temptresses. Black feminist critics Barbara Christian and Elizabeth Fox-Genovese have brought out this fact in their works that how difficult it was to handle challenges of being black in a society which devalues one on the basis of the color of one's skin and which binds a person in stereotypical images on the basis of race and gender. Even very renowned black male writers like Ralph Ellison, Richard Wright and James Baldwin and others have portrayed the women characters in such a manner as if their lives are not worthy of emulation. They seem to live for others, for black men or white, for parents, for family or for their children bereft of an autonomous self. Throughout this decade there can be noted a subtle distancing of the African-American women writers from their male counterparts particularly in defining their beings in their own way. Mary Helen Washington, in her introduction to *The Midnight Birds* (1980) celebrates the fact that the works of these writers represent "an open revolt against the ideologies and attitudes that impress Black women into servitude" (xv). At this stage Black women writers took it as their responsibility to correct those images imprinted in everybody's mind. The pertinent concern of the black women writers has been to voice their experiences and defy the negative stereotypes of African American women. In spite of considerable change in the political, social and economic conditions that generated these images, these stereotypical images play a key role in the victimization of the African American women maintaining the seamless web of race, class and gender oppression. These negative and perpetuated

experiences, it has a function and scope far beyond. A good autobiography presents a new stage in self-knowledge and formulates a new responsibility towards the self. It presents a change of attitude through mental exploration. Self-knowledge thus becomes a primary motive of writing autobiography. During this process of writing autobiography writers relate the sordid details of their past not for the sake of titillating their audience, but only in relating these events can the writer and his readers arrive at a meaningful assessment of who he/she is in the present. Thus the main task of autobiography is to present the individual facing the obstacles created by the society in one's way and the journey of an individual in overcoming these obstacles. These writings not only offer a fresh perspective but also enrich and update the cultural stories for the generations to come. It is only through the autobiographical statement that we come to understand how and in what manner the Afro-American person evolved.

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सारांश

महिलाएँ विश्व आबादी का लगभग आधा भाग है। इस समानता के बावजूद भी महिलाएँ समाज में समानता लिए शताब्दियों से संघर्षरत रही हैं, इतिहास इस बात का साक्ष्य रहा है। इसके इस संघर्ष की कहानी विश्व इतिहास के पन्नों में देखी जा सकती है। घर की चार दिवारी में बन्द, वस्तु, समझी जाने वाली महिला ने स्वयं को चार दिवारी से न केवल बाहर निकाला है अपितु आज आसमान को भी छू लिया है। उसके साहस की कहानियों की न केवल धरती अपितु आसमान भी गवाह है। तमाम बाधाओं को पार करने में सार्थकता पाते हुए आज भी सशक्तिकरण के मार्ग में प्रयासरत महिलाएँ किसी परिचय की मोहताज नहीं हैं। महिला सशक्तिकरण के इस मार्ग में अनेकों समाज सुधारकों की अविस्मरणीय भूमिका रही है जिसमें न केवल महिलाएँ अपितु अनेकों पुरुष समाज सुधारक भी शामिल रहे हैं। प्रस्तुत शोध पत्र में महिला सशक्तिकरण एवं शिक्षा : सावित्री बाई फुले के योगदान के संदर्भ में महिला सशक्तिकरण की मिसाल और भारत की प्रथम महिला शिक्षिका सावित्री बाई फुले के महिला शिक्षा में योगदान का अध्ययन किया जाएगा।

महिला सशक्तिकरण के मार्ग में अविस्मरणीय योगदान देने वाले अनेकों समाज सुधारकों में सावित्रीबाई फुले का नाम अत्यन्त महत्वपूर्ण नाम रहा है जिनकी भूमिका को भारतीय समाज में महिला सशक्तिकरण हेतु मील का पत्थर कहा जाता है। बावजूद इसके भी समाज का एक बहुत बड़ा भाग उनके योगदान को नहीं जानता। डॉ० संगीता चौहान एवं सरिता देवी ने अपने शोधपत्र 'सावित्री बाई फुले के स्त्री शिक्षा से संधित विचारों के विश्लेषणात्मक अध्ययन' के शोध निष्कर्ष बताते हैं कि सावित्री बाई फुले के योगदान से समाज का अधिकांश भाग अनभिज्ञ है। इस शोध के निष्कर्ष बताते हैं कि समाज का शिक्षित वर्ग भी इस बात से अनभिज्ञ है कि सावित्री बाई फुले ने सती प्रथा, बाल विवाह जैसी कुश्रितियों का खुलकर विरोध किया। प्रस्तुत शोधपत्र का उद्देश्य महिला सशक्तिकरण एवं शिक्षा के मार्ग में सावित्री बाई फुले के योगदान का अध्ययन करना है। इसके साथ ही विषय के समग्र अध्ययन हेतु सावित्री बाई फुले के जीवन को जानना भी अध्ययन का अन्य उद्देश्य रहेगा।

महिला सशक्तिकरण एवं शिक्षा

समाज में पितृसत्तात्मक दृष्टिकोण के चलते महिलाओं की स्थितिको सदैव पुरुषों की तुलना में कमतर आँका गया है। इस स्थिति में सुधार हेतु राष्ट्रीय एवं अन्तर्राष्ट्रीय स्तर पर अनेकों प्रयास किए गए ताकि महिलाओं की इस स्थिति में सुधार कर उसे शारीरिक, मानसिक, आर्थिक, सामाजिक दृष्टि से सशक्त बनाया जाए। महिला को सशक्त बनाने की इस प्रक्रिया को महिला सशक्तिकरण कहा जाता है। महिला सशक्तिकरण के इस मार्ग में उसका सबसे अधिक सहयोग शिक्षा ने

दिया है। महिलाएँ समाज की वास्तविक वास्तुकार होती हैं। हम सब महिला सशक्तिकरण की बात करते हैं परन्तु वास्तव में यदि उसे सशक्त बनाना है तो उसे शिक्षित बनाना होगा क्योंकि शिक्षा ही उसके सशक्तिकरण का एकमात्र आधार है। महिलाओं को शिक्षित करने का अर्थ है एक अन्य समाज का निर्माण करना। दुनिया की इस आधी आबादी को शिक्षित किए बिना वास्तविक अर्थों में सम्य एवं शिक्षित समाज के निर्माण की हम कल्पना भी नहीं कर सकते, और न ही एक विकसित राष्ट्र का निर्माण कर सकते हैं। महिलाएँ प्रत्येक घर की मजबूत नींव होती हैं, उसी पर घर का भविष्य निर्भर करता है। घर को सुचारु एवं नियोजित रूप से चलाने के लिए पुरुष एवं महिलाएँ दोनों का शिक्षित होना अति आवश्यक है।

बुद्धि, तर्क एवं विवेक सभी का आधार शिक्षा ही है। एक शिक्षित महिला ही शिक्षा के महत्त्व को समझते हुए शिक्षा की जोत से जोत जगाते हुए, पीढ़ी दर पीढ़ी उसे आगे बढ़ा सकती है। परिवार एवं समाज में आने वाले अनेक उतार चढ़ावों को शिक्षित महिलाएँ ही समझ सकती हैं और समाज में अपनी सकारात्मक भूमिका निभा सकती हैं। समाज के हर क्षेत्र में महिलाएँ अपना लोहा मनवा रही हैं, अनेको महत्वपूर्ण पदों पर अपना परचम लहरा रही हैं। आज वह न केवल राष्ट्र में अपितु अन्तर्राष्ट्रीय क्षेत्र में भी अनेको पदों पर कार्यरत हैं। अपनी भूमिकाओं को प्रखरता और विश्वसनीयता के साथ निभाने न, मुख्य आधार शिक्षा ही रहा है।

शिक्षा ने ही उसकी निर्णय लेने की क्षमता में वृद्धि की है। समाज में आज वह जिस मुकाम पर पहुँच पाई है, शिक्षा के अधिकार के बिना ये संभव न था। सावित्री बाई फुले ने महिला शिक्षा की इस आवश्यकता को बखूबी समझा। जिसके परिणामस्वरूप उन्होंने अपना सम्पूर्ण जीवन महिला शिक्षा को समर्पित कर दिया।

सावित्री बाई फुले का अविस्मरणीय योगदान सावित्री बाई फुले एक निडर, तर्कशील, प्रखर, दार्शनिक, स्त्रीवादी एवं लोकप्रिय कवयित्री थी। उनका जन्म महाराष्ट्र राज्य के सतारा जिले के नाय गाँव में सन् 1831 में हुआ था। 1840 में नौ वर्ष की छोटी सी उम्र में उनका विवाह भारतीय स्वतंत्रता संग्राम के प्रतिष्ठित व्यक्ति महात्मा ज्योतिबा फुले से हुआ। सावित्री फुले अनपढ़ थी और जब उनकी शादी हुई उस वक्त वह पढ़ना लिखना भी नहीं चाह रही थी। ज्योतिबा फुले ने पढ़ाई का महत्त्व समझाते हुए पढ़ने के लिए प्रेरित किया। पति के कहने पर सावित्री बाई फुले ने पढ़ाई का मन बनाया और स्कूल जाने लगी। उनके लिए यह दौर बड़ा ही कठिन दौर था, स्कूल जाते समय लोग उन पर अभद्र टिप्पणियाँ करते थे, यहाँ तक कि उन पर कीचड़ भी फेंकते थे। कुछ लोग नहीं चाहते थे कि वह पढ़ाई करे, इसलिए उन पर स्कूल जाते समय कंकड़ पत्थर भी फेंके जाते थे जिससे उन्हें कई बार चोटें भी आई। ज्योतिबा फुले ने तमाम सामाजिक कठिनाइयों

की परवाह किए बिना सावित्रीबाई फुले की पढ़ाई में पुरजोर सहयोग किया।

उन्होंने समाज के लोगों के मिथक तोड़ने के लिए खूब प्रयास किए। फलस्वरूप धीरे धीरे वह स्वयं को साबित करने में सफल हुई। परन्तु सावित्रीबाई फुले की यात्रा यहाँ समाप्त नहीं होती है। एक प्रश्न हमेशा उन्हें झकझोरता था कि आखिर महिलाओं को इतना अनावश्यक संघर्ष क्यों करना पड़ता है। उन्होंने स्वयं से एक संकल्प किया कि जीवन रहने तक वह महिलाओं के कल्याण के लिए सभी सामाजिक कुरीतियों से लड़ती रहेंगी और यहाँ से उन्होंने आरम्भ की संकल्प से सिद्धि तक की अपनी यात्रा।

ब्राह्मणवाद एवं पितृसत्तात्मक व्यवस्था का विरोध करते हुए, लड़कियों के शिक्षा के लिए विद्यालय खोलने से लेकर समाज में व्याप्त तमाम बुराइयों, सामाजिक एवं धार्मिक रूढ़ियों एवं प्रतिक्रियावादी ताकतों पर अपनी शिक्षा को एक हथियार के रूप में इस्तेमाल करते हुए स्वयं द्वारा रचित साहित्य के माध्यम से कड़ा प्रहार किया। सावित्री बाई फुले का साहित्य में उनकी कविताएँ, पत्र, लेख, भाषण एवं किताबें शामिल हैं। उन्होंने अपने जीवन में दो काव्य पुस्तकें 'काव्य फुले' (1854) एवं 'बावनकशी सुधा' बरत्नाकर' (1891) की भी रचना की।

लड़कियों की पढ़ाई के लिए देश में 18 स्कूलों का निर्माण किया। उनके अथक प्रयासों की बदौलत ही 1848 में, महाराष्ट्र के पूणे में बालिका स्कूल की स्थापना की एवं पहली महिला शिक्षिका भी बनी। इस स्कूल को देश का पहला महिला विद्यालय होने का गौरव प्राप्त है।

शिक्षिका के साथ-साथ सावित्री बाई फुले पहले बालिका विद्यालय की पहली महिला प्राचार्या भी बनी।

पितृसत्तात्मक एवं स्वर्ण व्यवस्था की बाधाओं के बावजूद भी सावित्री बाई ने अपने संकल्प को टूटने न दिया अपितु इन अड़चनों ने उनकी लगन और विश्वास को मजबूती प्रदान की। समानता, बंधुता एवं न्याय के लिए, सामाजिक क्रांति को आगे बढ़ाने के लिए सावित्री बाई फुले ने साहित्य की रचना की और उनके इसी साहित्य ने इतिहास रचने में उनका सहयोग किया। निसन्देह वह अशिक्षा रूपी अज्ञानता की बात कर रही है जब वह लिखती है—

“हमारे जानी दुश्मन का नाम है अज्ञान उसे घर दबोचो, मजबूत पकड़ कर पीटो” विद्यार्थियों का विद्यालय आने पर जिस तरह स्वागत करती है। वह उनकी शिक्षा के प्रति लगन को दर्शाता है—

“सुनहरे दिन का उदय हुआ आओ प्यारे बच्चों आज, हर्षोल्लास से तुम्हारा स्वागत, करती हूँ आज” विद्या और ज्ञान को ही सर्वश्रेष्ठ धन बताती है—

“विद्या ही सर्वश्रेष्ठ धन है सभी धन—दौलत से जिसके पास है ज्ञान का भण्डार है वो ज्ञानी जनता की नजरों में” महिला शिक्षा के लिए संघर्षरत सावित्री बाई फुले लड़कियों के घर के काम की अपेक्षा उनकी पढ़ाई को अधिक महत्व देती थी—

“चौका बर्तन से बहुत जरूरी है पढ़ाई
क्या तुम्हें मेरी यह बात समझ में आई”

“चलों चले पाठशाला हमें है पढ़ना
नहीं अब वक्त गँवाना है

ज्ञान विद्या प्राप्त करे, चलों अब चलकर संकल्प करे
मूढ़ अज्ञानता, गरीबी गुलामी की जंजीरों को चलो खत्म करें।”

उनकी कविताओं की उपरोक्त सभी पंक्तियाँ ये बताती हैं कि सावित्री बाई फुले शिक्षिका के साथ-साथ महान समाज सुधारक थी। उन्होंने अपनी पूरी प्रतिभा एवं ताकत के साथ समाज के वंचित तबकों के अधिकारों के लिए संघर्ष किया विशेषकर महिलाओं के उत्थान एवं छुआछूत के खिलाफ आवाज उठाने से भी वह नहीं डरी, विपरीत सामाजिक परिस्थितियों के बावजूद भी अड़िग रही।

महिला शिक्षा के साथ-साथ उन्होंने निराश्रित महिलाओं के लिए आश्रम खोले।

उन विधवाओं और बाल वधुओं को आसरा व सहारा दिया जिनकों उनके परिवारों ने घर से बेघर किया था। सावित्री बाई फुले नारी मुक्ति आन्दोलन का नेतृत्व करने वाली पहली महिला थी। उन्होंने केवल महिला अधिकार अपितु कन्या शिशु हत्या को रोकने की प्रभावी पहल की। महिला आश्रम ही नहीं नवजात कन्या शिशुओं के लिए भी उन्होंने आश्रम खोले। प्लेग महामारी के दौरान उन्होंने प्लेग से ग्रसित मरीजों की सेवा की जिसके कारण उन्हें भी यह बिमारी हो गई और इसी बिमारी की वजह से उनका निधन (10 मार्च 1897) हुआ।

महिलाओं के विकास के बिना किसी भी समाज का विकास अधूरा है। डॉ० बी० आर० अम्बेडकर ने कहा है कि “मैं किसी समुदाय की प्रगति उस समुदाय में हुई महिलाओं की प्रगति से मापता हूँ।” साथ ही उन्होंने यह भी कहा कि, “शिक्षा जितनी पुरुषों के लिए आवश्यक है उतनी ही महिलाओं के लिए है।” यह कहना गलत न होगा कि राष्ट्र का विकास महिलाओं के विकास पर और महिलाओं का विकास शिक्षा पर आधारित है। सावित्रीबाई फुले ने राष्ट्र विकास की इस बुनियाद को बखूबी समझा और संकल्प से सिद्धि को प्राप्त करने में अपना सम्पूर्ण जीवन समर्पित किया। आगामी पीढ़ियों के लिए यह आवश्यक है कि उनके इस संघर्ष और बलिदान को न केवल जाने व समझे अपितु पीढ़ी दर पीढ़ी इसे निरन्तर आगे बढ़ाएँ ताकि आने वाली पीढ़ियों को सामाजिक कुरीतियों के खिलाफ अपनी आवाज बुलन्द करें।

संदर्भ ग्रन्थ छुआछूत के खिलाफ आवाज उठाने से भी वह नहीं डरी, विपरीत सामाजिक परिस्थितियों के बावजूद भी अड़िग रही।

निष्कर्ष:

महिला शिक्षा के साथ-साथ उन्होंने निराश्रित महिलाओं के लिए आश्रम खोले। उन विधवाओं और बाल वधुओं को आसरा व सहारा दिया जिनकों उनके परिवारों ने घर से बेघर किया था। सावित्री बाई फुले नारी मुक्ति आन्दोलन का नेतृत्व करने वाली पहली महिला थी। उन्होंने केवल महिला अधिकार अपितु कन्या शिशु हत्या को रोकने की प्रभावी पहल की। महिला आश्रम ही नहीं नवजात कन्या शिशुओं के लिए भी उन्होंने आश्रम खोले। प्लेग महामारी के दौरान उन्होंने प्लेग से ग्रसित मरीजों की सेवा की जिसके कारण उन्हें भी यह बिमारी हो गई और इसी बिमारी की वजह से उनका निधन (10 मार्च 1897) हुआ।

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"The Philosophy of the Indian Constitution: Respect for Human Values"

Dr. Mamta Rani

Abstract

Man is a social animal, as Aristotle said. He can survive in the society with the cooperation of his fellow beings. There is a need of cooperation in various fields like social, economic and political. Although man is a social animal and cannot live without his fellow beings still there is a factor of selfishness in his nature. This negative aspect of his nature plays an important role in increasing evils in the society. Only the human values can protect the society from these social evils. Every religion of the society is based on human values. Not only the religion but all the constitutions in the world are forced to accept the philosophy of Humanism which is based on human values. The constitution of India is also totally based on human values. Dr. B.R. Ambedkar played a vital role to accommodate human values in the constitution.

Key Words: Humanism, Human Values, Constitution and Preamble.

Importance and Objective of the Study

The study is most significant in the present complex society which is paralyzed due to various evils. The study is emphasized on the adherence of human values enshrined in the Indian Constitution. The paper entitled 'The Philosophy of the Indian Constitution.: Respect for Human Values' presented a detailed analysis of the philosophy accommodated in the Indian Constitution. The main objective of the study is to analyze the human values enshrined in the preamble of the Indian constitution for the dignity of individual and unity of the nation.

Human Values and the Constitution of India

The constitution of India contains the values that are the universal and democratic values in the modern age. Constitution is the supreme law of the country. The constitution of the Indian Republic is not a product of political revolution but of the research and deliberations of eminent representatives of the people who sought to improve the existing system of the country. They had the great philosophy to overcome the problems laying the society. And the philosophy faithfully reflected in the preamble of the constitution which summaries the aims and objects of the constitution based on human values;

We, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a

SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC and to secure to all its citizens;

JUSTICE, Social, Economic and Political;

LIBERTY of thought, expression, Belief, faith and worship;

EQUALITY of status and opportunity and to promote among them all;

FRATERNITY assuring the dignity of the Individual and the unity and

Integrity of the Nation;

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949, do

HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.

Sovereign state means that Indian state has independent authority. Sovereignty is the supreme, uncontrollable and absolute power of the state to legislate on any subject and that it is not subject to the control of any other state and external power.

Socialist world was added to the preamble of Indian constitution by the 42nd Amendment Act in 1976. The goal of the Indian policy of socialism was ensured by added the word 'socialist' in the preamble. The principal aim of socialism is to eliminate inequality of income and status of life. Therefore, the constitution of India does not seek to abolish private property altogether but seeks to put it under restraints so that it may be used in the interests of the nation, which includes the upliftment of the poor people.

Secular state means that the state protects all religions equally and does not itself uphold any religion as the state religion. The objective of the Indian secularism has been expressed by added the word secular in the preamble by 42nd Amendment Act 1976. The attitude impartiality towards all religions of secular state is secured by the Indian Constitution by several provisions (Article 25-28) under the freedom of religion in the chapter IV of fundamental rights:

There shall be no state religion in India.

The state will not compel any citizen to pay any tax for the promotion of any particular religion.

No religion instruction shall be provided in any educational institution which was funded by the state.

There is no religion above the humanism. Dr. Ambedkar aptly said about the religion that "I like the religion that teaches liberty, equality and fraternity."

Democratic state means that the people have the authority to elect their representatives. As Abraham Lincoln said, "Democracy is the government of the people, by the people and for the people." As a form of government, the Indian democracy is a representative (Indirect) democracy and in our constitution there is no provision of direct democracy such as 'Referendum' or 'Initiative'. Democracy is not only a form of government; it is an attitude of respect and reverence towards fellowmen. The preamble of the Indian Constitution envisages not only a democratic form of government but also a democratic society infused with spirit of Justice, Liberty, Equality and Fraternity.

India is not only a democratic state but it is also a republic state. **Republic** means that the head or president of the state elected by the people in a direct or indirect method. A republic form of government is in which power is held by the

people and their elected representatives and who is not selected on the basis of heredity which is found in the monarchy.

The spirit of **Justice** is incorporated in the preamble of the constitution of India. The Indian constitution makers were aware about the need of justice in the Indian system. There have been so many evidences in the history to prove that without the existence of justice, a civilized society cannot exist. Justice means to give every people what they deserve. Article 14 to 16 of the Indian Constitution reflects the concept of Justice. Provisions of free legal aid and equal justice are also explained in the article 39A in the directive principles of the state policy. It is the duty of the state to provide equal opportunities to all the citizens to ensure the justice in the society. Article 38 and 39 of the constitution of India explain 'Distributive Justice'. It means appropriate distribution of resources among those who are needy.

Constitution of India defines three types of Justice: Social, Economic and Political. Social Justice demands equal opportunities to every Citizen without any discrimination based on caste, religion, race, sex, birth, and place. Social justice is based on social equality.

Economic Justice is also a part of social justice. Economic Justice ensures the economic equality in the society. No one can be deprived from any opportunity on the basis of economic status. Economic justice means eradication of poverty by the equal distribution of resources.

Political justice provides equal political opportunities and rights to every citizen without any discrimination such as right to vote, right to contest elections; right to form political parties and right to criticize the government. Political status of any citizen should not give any advantage to him. Every law should be equally applicable on him irrespective of his political status.

Every citizen of India guaranteed **liberty** in the preamble of Indian constitution. Democracy is directly connected with the idea of liberty. The preamble is committed for the liberty of citizens which gives them liberty of thought, expression, belief, faith and worship. Articles 19 to 22 of fundamental rights are also committed for freedom and liberty. Articles 25 to 28 are provide the right to freedom of religion to all the citizens of the state. The preamble and fundamental rights of the Indian constitution also committed for **equality**. Every Indian citizen guaranteed equality of status and opportunity without any discrimination such as caste, religion, sex, birth place etc. Rights have no meaning if they cannot be enjoyed equally by the citizens. Articles 14 to 18 of fundamental rights enjoin the state not to discriminate with the citizen. The rule of law ensures the equal protection of all citizens before law. **Fraternity** is also sought to be promoted by ensuring equal rights to all citizens. Dr. B.R. Ambedkar said that, "Fraternity is the principle which gives unit and solidarity of social life." It protects the dignity of individual and unity and integrity of the Nation.

Conclusion

All the Constitution in the world are based on human values and drafted to achieve, equality, liberty, justice and fraternity which are the four pillars of democracy. Even the

charter of U.N. is drafted on the basis of humanism. The philosophy of Indian constitution is also based on these human values. No doubt, the Indian Constitution is a value loaded document which success is depends on the values of citizen of the country.

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सारांश

मानव एक सामाजिक एवं बौद्धिक प्राणी है। विश्व में हो रहे विभिन्न परिवर्तन और नित नए विकास के आयाम उसकी बौद्धिकता को प्रमाणित करते हैं। ज्ञान, विज्ञान एवं अनुसंधान और उभरते नवाचार के मापदण्डों में हमें इसकी इस बौद्धिकता की झलक स्पष्ट दिखाई देती है। आज के वर्तमान परिदृश्य में हम जिन सामाजिक दृष्टिकोणों एवं विश्वासों के साथ पीढ़ी दर पीढ़ी आगे बढ़ रहे हैं, इन्हें आधार प्रदान करने में आधुनिक ही नहीं वरन् प्राचीन एवं मध्यकाल के विचारकों एवं दृष्टिकोणों का अहम् योगदान रहा है। प्राचीन एवं आधुनिक दृष्टिकोणों की नवाचारी मिश्रित पद्धतियों का वर्तमान परिदृश्य में प्रचलन भी दिखाई देता है। प्रस्तुत शोधपत्र 'मैकियावली की रचना 'द प्रिंस': वर्तमान परिदृश्य में प्रासंगिकता' का उद्देश्य मैकियावली के शासन कला सम्बन्धी विचारों की वर्तमान समय में प्रासंगिकता का अध्ययन करना रहेगा। विषय के समग्र अध्ययन हेतु मैकियावली का संक्षिप्त जीवन परिचय व उनके समय की परिस्थितियों का अध्ययन करना भी शोध पत्र का अन्य उद्देश्य रहेगा।

मैकियावली: एक परिचय

मैकियावली एक पाश्चात्य राजनीतिक चिन्तक थे। उन्हें मध्य युग एवं आधुनिक युग के बीच की कड़ी कहा जाता है। उन्होंने प्राचीन एवं मध्य युग के प्रचलित सिद्धांतों का खण्डन करते हुए अपने आधुनिक विचार प्रस्तुत किए। मैकियावली के राजनीतिक विचारों को जानने के लिए यह आवश्यक है कि हम पहले उन परिस्थितियों और वातावरण का अध्ययन करें जिनमें उन्होंने अपने जीवन को व्यतीत किया और जिससे सबसे ज्यादा प्रभावित हुए। प्रत्येक दार्शनिक पर उसके समय और परिस्थितियों का प्रभाव पड़ता है या हम यह भी कह सकते हैं कि परिस्थितियाँ ही उसे दार्शनिक बनाती हैं। मैकियावली के लिए डनिंग ने कहा है कि "वह अपने युग का शिशु था।" मैकियावली ने अपने समय की राजनीति में सक्रिय भूमिका निभाई, अनेकों राजनीतिक पद भी संभाले एवं सचिव और कूटनीतिज्ञ भी रहे। उनकी कुटिल राजनीति को मैकियावलीवाद के नाम से जाना जाता है। वह संगीतज्ञ, कवि व नाटककार भी रहे हैं। मैकियावली पुनर्जागरण काल का एक प्रमुख व्यक्तित्व रहा है।

मैकियावली का जन्म इटली के फ्लोरेंस शहर में हुआ था। उस समय इटली एकीकृत राज्य नहीं था यह पाँच नगर राज्यों में बंटा हुआ था : फ्लोरेंस, नेपल्स, मिलन, वेनिस और पोप के नियंत्रणाधीन नगर राज्य। सभी नगर राज्य आपस में लड़ते झगड़ते रहते थे। कुछ बड़े राज्य ब्रिटेन, फ्रांस, स्पेन, जर्मनी, इटली की राजनीति में हस्तक्षेप करते रहते थे मैकियावली इटली को भी ब्रिटेन व फ्रांस की भांति एक एकीकृत राष्ट्र के रूप में देखना चाहते थे। 1494 तक फ्लोरेंस पर मेडिसी परिवार का शासन था और 1494 में इटली में तख्ता पलट हुआ। परिणामस्वरूप फ्लोरेंस में गणतंत्रीय सरकार की स्थापना हुई।

29 वर्ष की आयु में मैकियावली ने सार्वजनिक जीवन में प्रवेश किया। लोक सेवा में उनकी सैकिंड चांसलर के पद पर नियुक्ति हुई। उनके 'टेन ऑफ वॉर कमेटी' का सदस्य भी नियुक्त किया गया। 14 वर्षों तक मैकियावली ने एक राजनयिक के रूप में काम किया। अपने इस कार्यकाल के दौरान मैकियावली ने विभिन्न राज्यों का दौरा किया और उनकी नीतियों को बारीकी से समझा। 1512 में मेडिसी शासन की फिर से वापसी होती है और मैकियावली को उनके पद से हटा दिया जाता है। इतना ही नहीं उन्हें 1513 में मेडिसी परिवार के विरुद्ध षड़यंत्र के आरोप में गिरफ्तार करके जेल भी भेज दिया गया और उन्हें अत्यधिक प्रताड़ित किया गया (स्किनर, क्वेंटिन)। तत्पश्चात् मैकियावली को इस शर्त पर मुक्त किया गया कि वह सार्वजनिक जीवन में कोई भागीदारी नहीं निभाएंगे। परिणामस्वरूप मैकियावली अपने पैतृक गाँव चले गए और वहीं उन्होंने अपना लेखन कार्य आरम्भ कर दिया जिसमें 'द प्रिंस', 'द डिस्कोर्स', 'द आर्ट ऑफ वार' और 'द हिस्ट्री ऑफ फ्लोरेंस' प्रमुख हैं। उन्होंने हास्य, कार्निवाल गीत और कविताएँ भी लिखी (नजेमी, जॉन एम)। उनका व्यक्तिगत पत्राचार इतिहासकारों एवं इतालवी पत्राचार के विद्वानों के लिए अत्यन्त महत्वपूर्ण है। उनका सभी रचनाओं में 'द प्रिंस' सबसे महत्वपूर्ण रचना मानी जाती है जिस शासनकला के संबंध में मैकियावली ने अपने विचार व्यक्त किए हैं। उनकी ख्याति इसी रचना के कारण है जिसे व्यवहारिक राजनीति महान ग्रन्थ के रूप में स्वीकार किया जाता है। प्रस्तुत शोध अध्ययन 'मैकियावली की रचना 'द प्रिंस': वर्तमान परिदृश्य में प्रासंगिकता' मैकियावली के शासनकला संबंधित विचारों को 'द प्रिंस' के आधार समझने का प्रयास किया गया है। उनकी इस रचना का आधार शक्ति को कैसे प्राप्त किया जाए और उसे कैसे संरक्षित किया जाए अर्थात् बनाए रखा जाए। शक्ति को पाने और बनाए रखने के लिए मैकियावली ने इस पुस्तक के माध्यम से शासक को शासनकला संवद अनेक सुझाव दिए हैं। 'द प्रिंस' शासनकला पर लिखी गई एक अद्वितीय रचना है। मैकियावली के अनुसार शासक का अन्तिम उद्देश्य शक्ति बनाए रखना है और वह शक्ति को पाने और बनाए रखने के लिए प्रत्येक प्रकार के साधन अपनाने के लिए स्वतन्त्र है। मैकियावली लिखते हैं कि, "वह (शासक) हिंसा, चतुराई व हत्या को अपना सद्व्यवहार है।" इन्हीं कारणों से मैकियावली को 'यूरोप का चाणक्य' भी कहा जाता है। उनके अनुभव और इतिहास को पढ़ने से पता चलता है राजनीति हमेशा धोखे, विश्वासघात और अपराध के साथ खेली जा रही है (कासिरर, अन्सर्ट)।

मैकियावली दर्शन का आधार: मानव स्वभाव

मैकियावली के अनुसार मनुष्य जन्म से ही बुरा है, घोर स्वभाव दुष्ट है। वह दुर्बलता, मूर्खता व दुष्टता का सम्मिश्रण है (प्रभुदत्त)। 'द प्रिंस' के 17वें अध्याय मैकियावली ने लिखा है, "वे (मनुष्य) कृतघ्न, चलायमान, मिथ्यावादी, डरपोक और स्वार्थ लिप्सु होते हैं।

तभी तक आपके बने रहते हैं जब तक कि सफलता आपके पास है।" भय, शक्ति, चलायमान और स्वार्थ ही मनुष्य की प्रेरक शक्तियाँ हैं। जब कभी भी मनुष्य को स्वविवेक से कार्य करने की स्वतन्त्रता दे दी जाए तो वह समाज में अराजकता व अव्यवस्था फैला देगा। मनुष्य के स्वभाव संबंधी मैकियावली का ये कथन अत्यधिक प्रचलित है कि "मनुष्य अपने पिता की मृत्यु को भूल सकता है परन्तु पितृघन की हानि को कभी भी नहीं भूल सकता है।" लियो स्ट्रॉस जैसे कुछ विद्वानों ने पारम्परिक राय को दोहराते हुए कहा है कि मैकियावली 'बुराई के शिक्षक' थे (स्ट्रास, लियो)।

मनुष्य सदैव प्रतियोगिता एवं संघर्ष की स्थिति में रहता है। उसके इसी संघर्ष एवं प्रतियोगिता के चलते वह समाज में अराजकता एवं अव्यवस्था को बढ़ाता है। इस संघर्ष और प्रतिस्पर्धा के वातावरण में मानव जीवन का अस्तित्व और उसकी सुरक्षा दोनों को ही खतरा उत्पन्न होता है। समाज में इस अव्यवस्था की समाप्ति हेतु कानून और व्यवस्था को बनाए रखना अत्यन्त आवश्यक है जिसके लिए मैकियावली के अनुसार एक लोकतान्त्रिक तानाशाह की नितान्त आवश्यकता है। मैकियावली 'द प्रिंस' में लिखते हैं कि समाज में दो प्रकार के लोग पाए जाते हैं। एक वो जो अपने आपको आदेश देने वाली कुलीन स्थिति में रहना चाहते हैं और उपद्रव को भी बढ़ाते हैं। इस प्रकार के लोग कम विश्वसनीय और अधिक खतरनाक होते हैं। इसके अतिरिक्त दूसरे प्रकार के वो लोग होते हैं जो न ही आदेश की स्थिति में होते हैं और न ही उपद्रवी होते हैं। ये साधारण लोग होते हैं। जो कम खतरनाक और अधिक विश्वसनीय होते हैं। शासक की शक्तियाँ इन साधारण लोगों पर आधारित होती हैं। इसलिए शासक को इन लोगों की सुरक्षा करनी चाहिए। इनके जीवन और सम्पत्ति की भी सुरक्षा करनी चाहिए एवं कानून व्यवस्था में स्थायित्व लाना चाहिए। मैकियावली का मानना है कि शासक का मुख्य उद्देश्य राज्य की सुरक्षा करना है एवं अपनी शक्ति एवं स्थिति को बनाए रखना है। साथ ही अपने राज्य की बाहरी धमकियों एवं खतरों से सुरक्षा करना है। समाज के अस्तित्व को मात्र इसी प्रकार से बनाए रखा जा सकता है। समाज के अस्तित्व को बनाए रखने के लिए मनुष्य के अराजक व्यवहार को नियंत्रित एवं प्रतिबन्धित करने के लिए एक शक्तिशाली शासक की आवश्यकता है। एक शक्तिशाली शासक ही इस अराजकता के वातावरण को नियंत्रित कर सकेगा।

'द प्रिंस': शासनकला संबंधी मैकियावली का दर्शन शास्त्र मैकियावली के दर्शन शास्त्र में मानव स्वभाव संबंधी जिस विचारधारा का वृत्तान्त मिलता है, उसी के आधार पर मैकियावली की सम्पूर्ण विचारधारा आधारित है। मैकियावली का मानना है कि समाज में अराजकता व अव्यवस्था का जन्मदाता मनुष्य का स्वार्थी व्यवहार ही है। मनुष्य का यही व्यवहार मैकियावली की रचना 'द प्रिंस' का आधार है। समाज में इस अराजकता का अन्त करने के लिए कानून व्यवस्था को बनाए रखना होगा, मात्र तभी समाज और मानव सभ्यता का अस्तित्व बच सकेगा। मैकियावली ने दुनिया की सुप्रसिद्ध रचना 'द प्रिंस' लिखी। इस रचना से उन्हें अथाह यश की प्राप्ति हुई। 'द प्रिंस' इतालवी भाषा में लिखी गई शासन कला पर एक अद्भुत रचना है जो मैकियावली के निधन के पाँच वर्ष पश्चात 1532 में प्रकाशित हुई।

'द प्रिंस' में मैकियावली उन खतरों के बारे में भी बताते हैं जिनसे राजा को अपने राज्य की सुरक्षा करनी है:-

- भाग्य (Fortuna)
- पारम्परिक नैतिकता (Conventional Morality)
- कुलीनता/अभिजन (Nobility/Elite)
- सामान्य जन (Common People)
- पड़ोसी राज्य (Neighbouring States)

राज्य की सुरक्षा के समक्ष सबसे प्रथम चुनौती या खतरा मैकियावली भाग्य (Fortuna) को मानते हैं। मैकियावली लिखते हैं कि "भाग्य हमारी आधी गतिविधियों को नियंत्रित करता है और बाकी की आधी गतिविधियों को हम स्वयं नियंत्रित कर सकते हैं।" उनका मानना है भाग्य अवसर भी ला सकता है और तबाही भी ला सकता है पौरुष (VIRTU) वो क्षमता है जिससे अवसर को काबू किया जा सकता है। मैकियावली का कहना है कि इस पौरुष के गुण से ही अवसरों को समझने में और उनका उपयोग करने में मदद मिल सकती है। मैकियावली भाग्य की नदी से तुलना करते हुए कहते हैं कि यह बाढ़ ला सकती है परन्तु पौरुष एक ऐसा गुण है जिससे तबाही से बचा जा सकता है।

मैकियावली राज्य के समक्ष द्वितीय चुनौती या खतरा पारम्परिक नैतिकता (Conventional Morality) को बताते हैं। यह पारम्परिक नैतिकता शासक एवं उसके राज्य के संरक्षण के लिए किस प्रकार से खतरा उत्पन्न करती है इसे जानने के लिए नैतिकता को जनना होगा। नैतिकता एक ऐसा मापदण्ड है जो अच्छे और बुरे में भेद करता है। जो अच्छा है वह हमें करना है और जो बुरा है उसे करने से हमें बचना है। अब देखना यह है कि इस अच्छे और बुरे का वर्गीकरण किन आधार पर किया गया है। आखिर वो कौन से आधार है जो अच्छे और बुरे के बीच विभाजन रेखा खेंचते हैं। ये आधार समाज के कुछ निश्चित मूल्य, नियम और सिद्धांत हैं। मैकियावली का मानना है कि ये निश्चित मूल्य, नियम और सिद्धांत धर्म पर आधारित होते हैं। उनका मानना है कि राजा को धार्मिक, नैतिक और भद्र होना चाहिए। मैकियावली इस बात को भी स्वीकार करते हैं कि राजा के लिए धार्मिक होने से अधिक महत्वपूर्ण है उसका प्रभावकारी होना।

शासक को इस धार्मिक नैतिकता को अनदेखा कर देना चाहिए, यदि यह उसके मार्ग में बाधा उत्पन्न करती है। उसे पारम्परिक नैतिकता का केवल तभी तक पालन करना चाहिए जब तक कि यह राज्य संरक्षण में राजा के लिए आवश्यक है। मैकियावली राजा को इस धार्मिक नैतिकता से भी ऊपर मानते हैं मैकियावली का मानना है कि राजा का स्तर इतना ऊँचा है कि वह कानून निर्माण द्वारा नैतिकता का निर्माण कर सकता है और वह राज्य को संरक्षण हेतु किसी भी प्रकार की बुराई अर्थात् अनैतिकता का भी इस्तेमाल करने के लिए स्वतंत्र है।

राजा की शक्ति और राज्य को संरक्षण एवं स्थायित्व को तीसरा खतरा या चुनौती मैकियावली अभिजनवर्ग (Elite Class) को बताते हैं। मैकियावली के अनुसार यह अभिजन वर्ग राजा के

सबसे नजदीक होता है। यह राजा को सबसे बड़ा खतरा है, यह शक्ति के लिए प्रतिस्पर्धा कर सकता है, शडयंत्र रच सकता है और राजा के शत्रुओं के साथ मिलकर उसके लिए चुनौती उत्पन्न कर सकता है। यह वर्ग राजा की शक्ति में बड़ी बाधा उत्पन्न कर सकता है। इस चुनौती से निपटने के लिए राजा को इस अभिजन वर्ग की इच्छाओं को नियंत्रित करना होगा। इस नियंत्रण हेतु राजा में शेर और लोमड़ी दोनों के गुणों का होना आवश्यक है। उसे न केवल शेर की भांति साहसी और शक्तिशाली बनना है अपितु उसे लोमड़ी की भांति चतुर भी होना चाहिए।

मैकियावली राजा व राज्य के संरक्षण का सबसे बड़ी चुनौती साधारण लोग हैं। मैकियावली कहते हैं कि ये साधारण लोग ही राजा की शक्ति और समर्थन का आधार हैं। इसके बावजूद भी राजा को ये चुनौती उत्पन्न कर सकते हैं, ये राजा का विरोध कर सकते हैं और सरकार का तख्ता पलट कर सकते हैं। इस चुनौती से निपटने के लिए राजा को इन्हें सन्तुष्ट रखना है। इन्हें सन्तुष्ट रखने के लिए राजा को इनमें डर और प्रेम (लगाव) दोनों उत्पन्न करने पड़ेंगे। अगर शासक प्रेम और लगाव उत्पन्न नहीं कर सकता तो डर अवश्य उत्पन्न करना होगा। मैकियावली का मानना है कि राजा इनमें डर तो अवश्य उत्पन्न करे लेकिन ये साधारण लोग राजा से घृणा न करें, नफरत न करें। इसके लिए राजा को उनकी व्यक्तिगत सम्पत्ति और महिलाओं से एक दूरी बनानी होगी। राजा के लिए राज्य संरक्षण हेतु पाँचवी और अन्तिम चुनौती मैकियावली पड़ोसी राज्यों को बताते हैं। पड़ोसी राज्य कभी भी राज्य पर आक्रमण कर सकते हैं। अतः राजा को आक्रमण से निपटने के लिए सदैव तैयार रहना चाहिए। मैकियावली ने तो यहाँ तक भी कहा है कि शांति के समय में भी राजा को युद्ध की तैयारियाँ जारी रखनी चाहिए। मैकियावली भाड़े के सैनिक (Mercenary Soldiery) की तुलना में नागरिक सेना (Citizen Army) के इस्तेमाल का समर्थन करते हैं। उन्होंने भाड़े के सैनिकों पर अविश्वास जताया इसकी बजाए नागरिकों के साथ अपनी सेवा का संचालन किया (विरोली, मॉरीजियो)।

‘द प्रिंस’ एवं शासनकला: वर्तमान परिदृश्य में प्रासंगिकता

मैकियावली की रचना ‘द प्रिंस’ को शासनकला पर लिखी गई सबसे अद्भूत रचना माना जाता है। मैकियावली पर आरोप लगते हैं कि उन्होंने शासकों को निरंकुशता की खुराक दी है। इतिहास में विश्व के बड़े-बड़े शासकों ने ‘द प्रिंस’ से प्रेरणा ली। आलोचक यहाँ तक भी कहते हैं कि जर्मनी के हिटलर और इटली के मुसोलिनी की प्रेरणा का स्रोत भी मैकियावली की यही रचना रही है। हालांकि मैकियावली को शासनकला संबंधी ‘द प्रिंस’ के विचारों को लेकर मैकियावली को अत्यधिक आलोचना का शिकार होना पड़ा तथापि राजनीति के व्यवहारिक जगत में हम उनके विचारों की महत्ता को नहीं नकार सकते (प्लाज्ज, अरेण्डस)। एक कल्पनाशील दार्शनिक नहीं थे, वे व्यवहारिक राजनीति के जन्मजात थे। मैकियावली वो आधुनिक विचारक थे जिन्होंने वर्तमान आधुनिक एवं काल्पनिक जगत से राजनीति को पृथक् करने का श्रेय मैकियावली को ही जाता है। निरंकुश व सीमित प्रभुसत्ता का एक अद्भूत उदाहरण मैकियावली के दर्शन में ही देखने को मिलता है जिसे उन्होंने लोकतान्त्रिक तानाशाह

(Democratic Despot) कहा है। जहाँ वह शासक को तानाशाह होने की सलाह देते हैं वहीं उन्होंने साधारण जन के व्यक्तिगत जीवन में हस्तक्षेप न करने की भी सलाह दी है। राजनीति में उन्हें धर्मनिरपेक्षता का भी जन्मदाता माना गया है। धर्म को राजनीति से पृथक् करने का श्रेय उन्हें जाता है जहाँ वह लिखते हैं कि धर्म और राजनीति ठीक उसी प्रकार एक साथ नहीं रह सकते जैसे एक म्यान में दो तलवारें। ‘द प्रिंस’ में मैकियावली की एक शासक को दी गई सलाह की वर्तमान समय में प्रासंगिकता अत्यधिक बढ़ चुकी है। निसन्देह शासक को लोमड़ी की भांति चतुर और शेर की भांति साहसी होना चाहिए।

निष्कर्ष:

राज्य की सुरक्षा एवं संरक्षण के लिए शासक को दी गई सलाह की महत्ता सदैव प्रासंगिक रहेगी, उस पर कोई प्रश्नचिह्न कभी भी नहीं लग सकता। मैकियावली के सम्पूर्ण दर्शन-शास्त्र का आधार ‘संगठित राष्ट्र’ है जिस विचार की महत्ता सदैव एक राष्ट्र राज्य के लिए कायम रहेगी। वर्तमान आधुनिक सम्पूर्ण प्रभुत्व सम्पन्न धर्मनिरपेक्ष, लोकतान्त्रिक, गणतन्त्रात्मक, स्वतंत्र एवं राष्ट्रीय राज्यों पर मैकियावली की देन की झलक स्पष्ट दिखाई देती है। कैटलिन से हमें सहमत होना पड़ेगा। वह लिखते हैं “मैकियावली प्रथम राजनैतिक वैज्ञानिक थे।” मैकियावली की राजनीतिक साहित्य के क्षेत्र में एक यथार्थवादी एवं आधुनिक राजनीतिक विचारक के रूप में जो आज पहचान है मैकियावली इसके लिए योग्य थे।

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3.3.2



Review Article Based on Proceeding on National Workshop In 1988

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Abstract:

The Vedic Mathematics has been dormant for a period long. Now the national educational policy focus on the blissful knowledge of wisdom of India.

This study demonstrates a general understanding of Vedic mathematics. Vedas are a collection of knowledge that is universal. It describes long term strategies for spreading mathematics and course work at college, high school and University levels. This article focus on the proceeding and recommendations from the national workshop organized by Rashtriya Veda Vidya Pratishthan. The Swamiji books which includes 40 chapter and the areas in which each of its 16 sutras are used. It describe the concerning epicycle model and algebraic concept.

Keywords:

Vedic Mathematics, Workshop, Vedas, Sutras, Ancient Mathematics.

Introduction:

This workshop on Vedic Mathematics was organized under the auspices of the University of Rajasthan from 25 to 28 March, 1988 under the auspices of Rashtriya Veda Vidya Pratishthan, in association with the Government of India, the Indian Council of Philosophical Research, Rajasthan University, Pondicherry University, and Rashtriya Sanskrit Sansthan. Sawai Jai Singh, the founder of this historic city, was a renowned Indian astronomer who left an indelible mark on the history of celestial science in the form of the Jantar Mantar in Jaipur.

By addressing the sensitive matter of religion, the history of Vedic Mathematics shows that it has frequently been a very sensitive field, whose growth has been embedded in the passions and prejudices of sectarian jealousy and fanaticism. In this backdrop, the current Workshop are important, and we need to expose different points of view in a contemporary setting without bringing conflicting socio-religious ideologies and institutions to India. The current we know that Vedas contain a great storehouse of supreme wisdom that could not be found anywhere else in the world during the time they were said to have been written.

In this session, Professor Daya Krishna, a philosopher, spoke to the delegates about the implications of the Vedic knowledge and its impact on Indian scientific and philosophical thought.

Other suggestions for attaining the objective of the session were welcomed from the participants. They proposed many methods of disseminating Vedic Mathematics, and the formation of a general understanding of its importance among the delegates was highly encouraging and beneficial.

This workshop was devoted to lectures on Vedic Mathematical and its transmission throughout mathematics history.



As a follow-up measure, the director appointed three groups of delegates to recommend ways and means to achieve specific components of the workshop's goal in the categories listed below:

1. General understanding of Vedic Mathematics
2. Long-term objectives for Vedic Mathematics spread.
3. Curriculum development at the secondary, college, and university levels.

This workshop was planned with all of this in mind. During the workshop, lectures on mathematics, science, and Vedic knowledge will be delivered. The Discussion Group will examine various aspects of Vedic science and mathematics. It will be our endeavour to research and recommend which aspects of this knowledge may be incorporated into our textbooks, to make it freely accessible, and to assist produce in the learner an awareness of the achievements of Vedic science.

Summary of the workshop:-

1. The Deceptive Title of Swamiji Book

K.S. Shukla

In this workshop, K.S. Shukla discussed the 16 Vedic formulas as well as the Vedas and Upa Vedas, explaining how ancient Indian Vedic literature should be all-encompassing, and flawless. And able to shed the most light possible on any subject that an aspirant to knowledge could choose to become enlightened on. He discussed Swamiji's book, describing its 40 chapters and the areas in which each of its 16 sutras is used. He also gave a succinct explanation of the Nikhilam technique, Vajasaneyi-Samhita, fractional numbers, baudhayana numerals, and decimal fractions, Theorem of Pythagoras, Analytic conics, sum and differences of squares, squaring, cubing, square roots, cube roots, and other methods, etc.

2. An overview of Vedic Mathematics

Narendra Puri

Not only are the Vedas the oldest, but they are also the best. The first stage in the Vedic Mathematics system is to recognize the pattern of the problem and choose the most effective Vedic algorithm. Vedic math is the gift of the Vedas to address the issue of math anxiety faced in math education in the world. Vedic mathematics offers original solutions in many situations where the only current available option is trial and error. The cover page of the spring 1985 issues of AI (Artificial Intelligence) was decorated with Sanskrit Slokas from the second chapter of the Srimad Bhagavad Gita and the brief synopsis of these slokas was provided. They introduced the reference from Dr. R. Briggs of NASA California. He also referenced a Ph.D. thesis on Vedic mathematics that Mr. S.K. Kapoor had filed, which detailed Vedic Mathematics seminars that held at national and international levels in 1988 at colleges, universities, and schools. In this workshop, they described that Vedic Mathematics research was done at the Roorkee campus of the university. SSG is producing video cassettes on Vedic mathematics and publishing a series of books in Hindi and English to provide thorough details about the heritage of the ancient Indian culture.

He discussed the Vinculum number, Nikhilam method for multiplications, Anurupyena for a simple equation involving a cube, the evaluation of determinants in a simultaneous linear equation, transcendental equation, Kepler's equation, nonlinear differential equation, integral differential equation, Vedic numerical code, and plane and spherical trigonometry. He discussed the solution of the plane and spherical triangle, 3-D transformation, planetary position prediction, and 2-D, 3-D coordinate geometry.

Finally, he emphasised how Vedic Mathematics is perfectly suited to oral instruction and mental computation because it employs many more unique methods than standard methods and a more direct manner of thinking. He also introduced Dr. Ram Chandra from Jodhpur and Dr. Khanna of BHU, who are working on Vedic methods for determining the outcome of any multiplication. Additionally, due



to the ease and simplicity of the procedure and the lower memory requirements, small computers are capable of handling much larger problems when using Vedic algorithms for autonomous computing. Let's learn, practise, and spread Vedic mathematics, which kids may learn while beaming with joy.

3. On Factorization and Partial Fraction

WazirHasan Abdi

He discussed the more challenging quadratic for the Lopansthapana method of factoring homogeneous polynomials of second degree in three variables. This method, which also introduces the partial fraction and decomposes the denominator into irreducible factors, has been demonstrated to operate even with linear and constant terms. He explained integration and partial fraction. It has been suggested that the integrand in the problem of rational function integration be split by Paravartya.

The Swamiji monograph has served a solitary purpose in that it has made us aware of how long we have disregarded our rich mathematical legacy and how it is our responsibility to understand it, learn from our mistakes, get rid of dead wood, and continue where our forefathers left off. I'm aware of only one significant attempt. He claimed that Swamiji's book has served a particular purpose in this regard. It brought to mind the contributions made by BibhutiBhushan Dutta, AvadheshNarain Singh, and Kripa Shankar Shukla to the still-incomparable Hindu Mathematics in the first two volumes. At the university established by the Department of Mathematics and Astronomy, the big effort begun in Lucknow is still ongoing.

4. Operational Techniques

C. Santhamma

The computer scientist should research Vedic mathematics in order to create a Vedic computer. And also explained how many mathematical problems that seem to be innovative in their simplicity, less laborious, less time taking, and the like can be solved elegantly. One might imagine how such a method might be incorporated in the curriculum at various levels. By using the urdhvatiryagbhyam approach, general multiplication Dhvajana-general sutram's division is the first way. In order to operate consistently, firstly assumes that the number of dividend digits equals the number of divisor digits, so it only divides the non-flag digit first.

Quotient, reminders, and a portion of the original dividend are combined to create to new dividends that are flagged under various process.

5. Mathematics for Joy

Ishwar Bhai Patel

The simplicity with which two sutras might be applied and the speed with which results could be acquired additionally to boosting their self-confidence, this inspired the student to take on new challenges. When using the Sutra method, the joy and satisfaction of writing down the solution and its immediate verification of thirty to forty numbers had its own sense of satisfaction. These sutras encouraged a certain level of self-assurance in one's capacity to solve mathematical puzzles, which is essential for maintaining interest in mathematics. Vedic Mathematics is in a class by itself due to the quickness, clarity, and directness with which one arrived at the solution.

Einstein, a famous scientist, acknowledged the importance of intuition in all epoch-making scientific and other discoveries in his book science.



Ramanujan himself the 4000 mathematical formulae that the mathematical genius who lived only 32 years ago and was born just a century ago has left behind are being deciphered by mathematicians around the world. His solution of pie (π) baffled many up until recently, and they worked on a computer to figure out how to fix the answer out to 17 million digits.

People at Idar wondered how he would keep the secondary math instructors seated when he began teaching Vedic mathematics to them. He kept the math professors engaged for three hours as he presented Vedic mathematics to them.

6. Synthesis of scientific understanding of the human personality

Ashok Sharma

The Heisenberg uncertainty principle governs the uncertainty of naturally occurring inanimate objects, whereas the stimulus response connection with undefined uncertainty determines the behaviour of the human body. These two categories describe how the men reacted to a particular stimulus:

1 Automatic or Instinctual Response.

2 Thoughtful or deliberate reaction.

The achievement of authentic knowledge is the aim of human individuality.

Yoga Darshana is based on response-based behaviour Traditional science on cognition, nyaya on evidence, and sanghya on knowledge of an unchanging element.

He also provided a description of a table that lists five knowledge creation processes. The VaisesikaDarsana approach is incredibly thorough and an exquisite study of cognized information elements produced by the information processing part of the human psyche.

Moreover, he described a flowchart that illustrated the viewpoint.

7. Leading Mathematicians of ancient India

J.L. Bansal

Some of the sutras (330–275 BC) nearly correspond to Euclid's first two books and sixth book. The sulbas have simple fractions, like $3/8$, and operations on them. The Jainas considered mathematics to be a fundamental component of their religion. Ganitanuyoga referring to a calculation system. He started along with the formula for extracting the square and cube roots, areas of triangles trapezium, the alphabetical system and decimal numbers tables of astronomical constant trigonometrically sine and other numerical data are also provided volume of the pyramid and the sphere, mathematical value of the pie series progression summation, Construction of the sine table using the interest rule of three, the proportional rule of fractions, and the first-degree indeterminate equation.

8. Structural frames and system of Ganita sutras

S.k. Kapoor

Using the following assumptions as a foundation, we have created some point strategy.

1 The Vedas are not compositions but rather Srutis.

2 The Vedas are a collection of knowledge that is universal and were written using the sun's beams.

3 Grammar principles are developed from the Vedas, not from the Vedas themselves.

4 All human languages can be traced back to the Vedas.

5 Man may process out while interacting with the universe at any time, and he will discover that the Vedas have already been processed.

6 The Vedas were used to create the names of the objects and other elements of our universe.

7 By reflecting deeply on Anahata Nada during meditation, it is possible to understand the Vedas.

8 The Vedas easily understood by Trataka on the sun.



Consequently, the current generation needs a suitable processing paradigm to address Vedic claims. Vedic statements can be investigated scientifically rather than mathematically. Vedic claims would entail starting with the Vedic alphabet. In Vedic literature, OM serves as both the beginning and the finish. Additionally, according to the Srimad Bhagavad Gita, Manu received the eternal yoga from the sun after receiving it from Lord Krishna. This, the Divya-Ganga, flows as an endless florescence.

9. Propagation of Vedic Mathematics

Dileep Kulkarni

Thus, it becomes crucial to have some non-technological ways to accomplish mathematical computations, even in the age of computers. It is a useful method for performing computations mentally because it maintains multiple options in front of us. The second characteristic of Vedic mathematics is that it frequently searches for patterns in numbers rather than single digits. In Vedic mathematics, the relationships between the digits are given more emphasis than the individual numerals. The features of multiplication and repeating decimals are suitable examples. Particle physics has shown us that everything in the cosmos is connected. A complete ecological perspective of life will be developed with the aid of Vedic maths.

They can be completed in less time and with less mental effort, but there is also complete involvement. On the other hand, Vedic Mathematics help improves our capacity for calculation.

At the academic level: By incorporating Vedic math into the curriculum starting in the first standard, students' current attitudes toward mathematics will surely alter. These techniques have been taught for a long time at St. James Independent School in London.

For anyone interested in conducting this kind of study, scholarships may be made available. Computer applications:

- A technique for determining our common decimal of $1/19$ was tried.

One of the Sulabh Sutras serves as its foundation, with these being H.H. Swamiji refers to the subject as Vedic Mathematics, which is a component of Vedic literature.

Vedic mathematics is more than just a shortcut for computing with algorithms. It goes far further than this and develops into a science unto itself, important in the solution of algebraic equations in courses like simple and solid geometry, trigonometry, and other higher math topics. Thus, it is crucial to present Vedic mathematics as a science rather than a collection of tricks or magic.

10. Vedas as science a brief introduction

KC kulish

Vedas cover every facet of the universe and are nothing but science. In Vedic science, pranas are the elements that exist beyond of the physical world and matter. Our senses are unable to perceive them through sight, touch, sound, or smell. Despite being the origin of all motion or movements in the universe, they are themselves immaterial and abstract. No material tool or gadget can detect them. The Vedas provide a highly detailed and vivid understanding of pranas. They serve as the foundation for all life. Although Yajnas are used as laboratories to test theories, the core of science is unadulterated knowledge. Planets are referred to in the Vedas as Grahas, and stars are called Naksatras. Definition of graha is stable and nakshatra is something that doesn't deteriorate. The Yajna is the Vedic science's application lab, where each theory is tested. Yajna involves synchronising and harmonising the human body with the cosmic body, not just burning ghee and grain in fire. According to the Vedic idea, the human body is a miniature or reproduction of the world.

They made it a cooperative endeavour to study the various branches of science and had a fundamental understanding of accepted modern scientific notions. He was aware of hydrogen's function while interacting with Anahata, he briefly mentioned the big bang idea in his own unique



style. Nada has authored a sizable book on meteorology, covering a wide range of obscure aspects of the subject. Detailing all the work done by these two outstanding scholars would be exceedingly difficult, if not impossible. This is only a brief view of its size and scope. This is advantageous to everyone and harmful to no one.

11. Vedic Mathematics some ramification

Abhay Kashyap

In keeping with the vedic tradition of intuitive thinking, Vedic Mathematics is the study of mathematical relationships. Vedic mathematics is not a complete branch of mathematics in its current state. Students believe that arithmetic in schools is burdensome and challenging. Those with an artistic background must take competitive tests, such as M.B.A. banks, etc. To develop a proper scientific spirit and study science at the graduate and postgraduate level, one needs analytical ability. Exam boards from various states and centres may permit Vedic Mathematics to be used in exam paper solutions.

12. Vedic Mathematics an appraisal from the perspective of modern Mathematics **SN Pandey**

The Vedas are the world's oldest repository of knowledge. The development and expansion of modern mathematics have been greatly aided by this innovation of counting number expression by the Indians. The creative arts of music, poetry, and painting are all included in Vedic Mathematics. Swami Sri Bharti Krishna Tirthaji appears to have reorganised a system Of 16 sutras known as Vedic Mathematics. It would be very appreciated if our math-trained Sanskrit scholars focused on these sutras in partnership with math professionals and continued Swamiji's efforts.

13. Glimpse of mathematical heritage of ancient India and its transmission to other countries **SA Paramhans**

A country's progress in mathematics can be used as an effective indicator of a race's or nation's development over time. He explains how useful Vedic mathematics is. to ascertain the history and power of automatic counting. He also explained the Diophantine equations and how to use them to quickly and easily solve problems. Also, he provided a quick explanation of how to solve an algebraic problem by finding its square roots, integral, and rectangular function forms. Additionally, he suggests that a required course on mathematics history should be offered by every university in our nation.

14. Planetary Theory in the Panchasiddhantika

George Abraham

He summarised the various mathematical techniques employed at the time by Indian astronomers. Also, he talked about the Epicycle model, algebraic formulas, and algebraic theories that explain the movements of the sun, moon, and planets.

Literature Review:

BB Datta and AN Singh described that the natural numbers that are familiar to everyone today, or the Indian sages' blessing. It is noteworthy that the Hindu intellect gave it perfection at every beginning, which is a startling reality.⁽¹⁾

G. Sarton studied that this is not a situation like the formation of Hindu numerals, which were nearly flawless from the start.⁽²⁾

Ginsburg investigate that A Hindu scientist by the name of Kanka, who was invited from Ujjain to the renowned court of Baghdad by the Abbaside Khalif AL- Mansur, brought the Hindu notation to



Arabia about the year 770 AD. The Arabian intellectuals were taught Hindu astronomy and mathematics by Kanka, and with their assistance, they translated Brahma- Sphuta- Siddhanta of BrahmaGupta into Arabic. The Hindu number were extensively known and highly regarded in Syria around the middle of the 7th century A.D., according to a recent finding made by the French mathematician M.F. May.⁽³⁾

BB Datta studied about the numerals slowly marched westward from Arabia through Egypt and northern Arabia, arriving in Europe in the eleventh century. Because they were given to them by the Arabs, the Europeans refer to them as Arabic notation. However, both Eastern and Western Arabs have universally referred to them as the Hindu figure (AL- Arquan- AL- Hindu).⁽⁴⁾

In addition to numerals, an Indian savant gave us zero, one of the most crucial tools in mathematics, as is evident from Datta, Singh, and Halsted.^(5,6)

TaittiriyaSamhita described that In the distant past, India utilised it as a number. How else could Indians have created the decimal place value system, which is the foundation for a significant portion of the Taittiriya- Samhita and Valmikiya Ramayana? Possible to build? Here, it's important to note that the Taittiriya- Samhita Give such language four the order number 10^{19} .⁽⁷⁾

S.A. Paramhans studied about the middle ages, the vocabulary used to refer to the numerals 109 through 1019 changed a little.⁽⁸⁾

Valmikiya Ramayana deals With several examples. Valmikiya Ramayana has provided terminology for phone numbers in the range of 10^{60} .⁽⁹⁾

It should be noted that Samudra, which was used for 109 in the Taittiriya-Samhita, has been utilised for 1050 in this instance. Additionally, none of the other phrases for large numbers in the screens correspond to those in the Taittiriya- Samhita. It is noteworthy that, when taken in context, the numerical phrases from the Valmiki Ramayana or the Taittiriya- Samhita can be found elsewhere. For instance, Niyuta and Nyarbuda, Arbuda, Madhya, Antya, Samudra, and Paracha all have the same meaning.^(10, 11)

Yuddha Kanda described the numbers above Kota, as has been mentioned, were hardly ever used at any other place in the Valmiki Ramayana itself. it appears that the terminology of the Valmiki Ramayana used for large numbers was not common and was restricted to experts who were highly specialised in the counting process. Due to this, Sula and Sarana Head first defined the terms before providing a description of Rama's army.⁽¹²⁾

Bhola, Samaranganasutradhara tells us about vedic mathematics is very limited use of the terms of the screens of very large numbers, some of the terms disappeared in later literature, and those that were found did not carry the same sense as over: the Samaranganasutradhara uses Venda for 10^9 , Kharva for 10^{10} , Sanku for 10^{12} , and Padma for 10^{13} .⁽¹³⁾

Valmikiya Ramayana defined that the use of vedic mathematics is very typical for these people to reject the passages they do not like by claiming that they were added later. Assume this is correct. Then, instead of utilising numerical terminology in this paragraph, Valmiki could have revealed the count of Rama's army. If this had been the case, Valmiki would not have concluded in the previous reckoning as with their immeasurable force.⁽¹⁴⁾

According to J.N. Crossley, individuals who are ignorant of the accomplishments of the ancient Hindus have wrongly attributed them to a later scholar (Nicholas chuquet, A.D. 1494) using four enormous numbers (such as 1012 and 1018).⁽¹⁵⁾

According to Al-Biruni, only Hindus are capable of counting past a thousand.⁽¹⁶⁾

Mr. M. S. Khan emphasised that in the field of numerical science, we have their (i.e., Indian's) "hisab al- ghubar." that Al-Khwarizmi clarified It is a very thorough and speedy calculation procedure that is unusual in its design, easy to learn, simple to use, and bears testament to the Indians' sharp intellect, creative prowess, and remarkable ability of innovation.⁽¹⁷⁾



JawaharLal Nehru investigated that India gave us the clever method of expressing all numbers using ten symbols, each symbol receiving a positional value as well as an absolute value. This is a profound and important idea that appears so simple to us that we ignore its true merit, but it's very simplicity. The great each which it has lent to all computations, places our arithmetic in the first rank of useful invention, and we sell appreciate.⁽¹⁸⁾

However, in the past year, a Greek work in his field was rediscovered in the Vatican's library by a certain Diophantus of Alexander, a Greek author who lived in the time of Antoriuspius. After Antonio Maria PazziReggiano, a professor of mathematics in Rome, had shown it to me and determined that the author was knowledgeable about numbers (even though he did not address irrational numbers, but We were unable to finish the task), we were able to We uncovered a lot of material in the book, including numerous quotations from Indian authors, from which I discovered that this field was known to the Indians before the Arabs.⁽¹⁹⁾

Mahavir Acharya studied that the Calculation is useful in all transactions involving Worldly Vedic or otherwise related religious issues. The science of calculation is held in great regard in the science of riches, music and theatre, the art of cuisine, medicine, architecture, prosody, poetics and poetry, logic and grammar, and such other things, and in relation to all that constitutes the distinctive Value of the arts. It is used in reference to the movement of Heavenly bodies, in relation to eclipse and conjunction of planets, and in relation to tripasna (Direction, location, and time) and the course of the moon. The number, diameter, and perimeter of islands, the ocean, and mountains; The proportions of the dwelling rows and halls with Ganita's help, measurements of all different sorts belonging to the world's inhabitants, the interspace between the worlds of light and gods, Oh Hell, and other worlds, are all calculated. Ganita determines how living things are arranged, how long they live, their eight characteristics, and other related factors, as well as how they progress and how they stay together (For their due comprehension). What use does talking a much serve? The three worlds, which are populated by both moving and non-moving beings, may only be left by Ganita (Measurement and calculation).⁽²⁰⁾

Chandoya- Upanishad was studied that the country in the distant past, as evidenced by the chandoyapanisad. In the given scenario: Once upon a time, Narada approached the Sanatkumar and requested the brahmavidya, or supreme wisdom, from Him. SanatKumar instructed Narada to mention the sciences and arts that he had already studied so that he might judge them. On the phone, Narada listed the numerous sciences and arts he has studied. Astronomy and arithmetic were on the list. As a result, mathematical science was not regarded as an impediment to spiritual knowledge. In fact, aparaVidya (secular knowledge) was once thought to be a useful supplement to two para Vidya (spiritual knowledge).⁽²¹⁾

Wing field Petrie:-Ganita, Sara, and Sangria Is sufficient to tell us about the growth of science in our country during the ancient period. It is hardly surprising that the mention of vimanas In Indian scriptures, speculation about modern aeroplanes and rockets began. According to wingfield Petrie. In support of his assumption about ancient astronauts, Erich Von Daniken quotes from Dharma Bharat and the puranas.⁽²²⁾

Varahamihira, Brhatsamhita described about history of Vedic mathematics that a years ago, ordinary people, and even modern scientists, believed that Jupiter had no effect on the planet (or its inhabitants) since it was so far away. However, new scientific studies have revealed that it impacts both living and non-living things on Earth. Let us thank our ancient sages for predicting the impact of Jupiter's journey thousands of years ago. Jupiter, they believe, is in charge of the evolution of living creatures on Earth.⁽²³⁾

S.D. Sharma Gnomonicsinvestigate the oldest timepiece, it is a tremendous gift from Indian astronomy to the human race. Gnomon was used to determine the season and send some astronomical



parameters, as evidenced by the Surya Prajnapti (ajaina Canonical text tone lunisolar kinematics). The instrument can still be seen in Varanasi's ManaMandir Observatory. The author of the Grahalaughava, GaneshaDaivajna (A.D. 1522), describes this mechanism in the Pratodayantra.⁽²⁴⁾ Encyclopaedia Britannica remarks the science for which the Brahmins, however, were most famous, is that of astronomy and in this their advancement was so vast as even yet to provide Matter admiration to the moderns.⁽²⁵⁾

B.B. Datta and A.N. Singh described that vedic mathematics was just geometrically oriented algebra. The practise of dealing with and analysing unknown amounts may be traced back to the Sthanga-sutra (325 B.C.), where the phrase javantavati (= yavattavat) can be found in sutra 747. Indeed, the Sthananga-sutra mentions the following: simple equation (yavattavat), quadratic equation (varga), cubic equation (Ghana), bi-quadratic equation (vargavarga), permutation and combinations (vikalpa). Furthermore, the Bakashali Manuscript has yadrc and istakarma (rule of false position). Istakarma is an arithmetic method in which the answer is expected to be 1 or 100. istaKarma has a problem. The manuscript cannot be sold unless a simple equation is used.⁽²⁶⁾

Aryabhatta investigate that In the period of Aryabhata, the term Gulika was employed for an unknown quantity and thus the following verse of Aryabhata is considered to be the explicit foundation of Bijaganita :gulikantarenavibhajeddvayohpurusayosturupakavisasam/labdhamgulikamulyamyadyarthakrtambhavatitulyam.⁽²⁷⁾

Britannica defined that the circumstances of this treatise purporting to be just a collection and, furthermore, the first or be in work of the kind...an Italian trader transported it to Italy. He is said to have written two volumes of Scritti di Leonardo Pisano. B. Boncompagni, Ed., Rome (1857, 1862). It was because of him that al-jabrah, w' al-muqabala, could reach Europe. Gerard of Cremona and Robert of Chester (A.D. 1140) translated it twice into Latin in the 12th century as Liber algebraealmucabala. And they became so famous that the discipline was dubbed algebra, which is an abbreviated form of al- Jabra w'al- muqabala.⁽²⁸⁾

Crossley pointing out that the Arabs could know negative values at a much later period, Crossley writes: It is curious that this component of Hindu algebra did not pass to the Arabs. Nonetheless, it is widely assumed that algebra, including the radical solution of a quadratic equation, was passed down from the Hindus to the Arabs before the ninth century.⁽²⁹⁾

A. K. Bag tell us about the Vedic mathematics that It is quite astonishing that a country with such a rich heritage has no centre for the history of science, particularly the history of mathematics, whereas Moscow has a major Institute of science and natural technology devoted entirely to the history of science.⁽³⁰⁾

Discussions:-

This workshop has been planned with all of this in mind. During the workshop, lectures on mathematics, science, and Vedic knowledge will be delivered. The group will look at various parts of Vedic science and mathematics. It will be our endeavour to explore and recommend which aspects of this knowledge can be incorporated into our textbooks, to make it easily accessible, and to assist produce in the learner an awareness of Vedic science's accomplishments. The advice will be followed by a plan of action.

Conclusion:

1. The formation of a multidisciplinary Committee comprised of specialists from the fields of mathematics-Vedic, traditional and modern-computer science, government, and other fields is possible. The committee will create the foundation for the second workshop, which is deemed required before any action is made to apply Vedic Mathematics at various levels.

The committee will investigate the following concerns, either as a whole or through subcommittees, in order to provide a final recommendation on the following:



- (a) The acceptability of Vedic Mathematics for introduction at the school level, including all ramifications such as textbook inclusion, teacher training, and logically consistent explanations of Vedic Mathematics approaches, teaching aids, and so on.
 - (b). To investigate methods and means of encouraging research in Vedic Mathematics at the university level, in order to understand its potential and limitations.
 - (c). To propose a multimedia strategy for increasing overall knowledge of Vedic Mathematics and to investigate the function of volunteer organisations in this regard.
 - (d) Investigate the feasibility of providing centralised or regional training and information dissemination facilities, as well as fostering research in the field of Vedic Mathematics.
 - (e). To write to the Department of Electronics (Government of India) to support the development of Vedic mathematics educational software in India language, as well as to provide financial support to projects on Vedic Mathematics application in computer technology development, such as knowledge-based algorithms, Vedic Mathematics-based computer architecture, and so on.
 - (f). Any other pertinent concerns brought up throughout the deliberations.
2. The Ministry of Human Resource Development should offer all necessary assistance to the committee in order for it to function effectively.
 3. The ministry shall develop a timetable for the drafting of the above-mentioned committee's report and the organisation of goal-oriented workshops.

Recommendation:

Further research is needed to investigate the possibilities of its sutras in eliciting more information and making mathematical operations less tiresome than they are. When implemented correctly, each of these sutras produces fascinating effects. General multiplication and division are used as examples of such applications. Vedic Mathematics should be supported at various universities by actively encouraging students who want to utilise and inquire about Vedic Mathematics to prevent a restrictive definition of Vedic Mathematics and its scope. Must be kept as broad as possible in accordance with the Vedic spirit.



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QUICK SOLVING OF BASIC MATHEMATICAL CALCULATIONS: A STATISTICAL INTERPRETATION

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Abstract : In competitive examinations, there is a race against time and those having fast calculation ability are able to win the race. Time saved by speeding up the calculation process can be devoted to solve more problems and perform better. In this paper, the role of these sutras in speeding up the mathematical calculations has been studied using the questionnaire and the results are analyzed using statistical methods. Vedic Mathematics (VM), an Indian ancient system of mathematical working based on 'Vedas'. Vedic Sutras given in Vedic Mathematics are fast, efficient, and easy to learn and simplifies theory of numbers, calculus, squaring, compound multiplication, coordinate geometry etc. The findings of the study show that the concept of intelligence should not be situated in the narrow domain of traditional methods but also give importance to the sutras that increases concentration, reduces the burden of memorizing different concepts and elicit student performance.

Index Terms - efficient, questionnaire, statistical methods, student performance.

1. INTRODUCTION

Veda is a Sanskrit word which means knowledge. The Vedas are the most sacred scriptures of India and is considered as the earliest literary record of Indo-Aryan Civilization. These are the oldest written text on our planet.

Vedic Mathematics is a system of mathematics discovered by Swami Bharati Krishna Tirthaji Maharaj, a scholar of Sanskrit, Mathematics and Philosophy. It consists of 16 sutras with 13 sub-sutras, each describing logical steps to solve whole range of mathematical problems. The sutras of vedic mathematics having precise rules are helpful in solving mathematical problems related to arithmetic, algebra, geometry, calculus etc in a faster way, which are sometimes, complex and time consuming using regular mathematical steps.

Various competitive and government examinations like banking (IBPS, SBI, RBI, NABARD) PO/Clerk/SO/ RRB, SSC Exams, Insurance Exams, Railway Board Exams, CSAT, State Government Competitive Exams, MBA Entrance Exams (CAT, SNAP, MAT, XAT) etc have quantitative aptitude section and students face difficulty in solving these numerical reasoning questions. Vedic Mathematics general techniques and specific techniques simplifies the complex calculations involved in solving certain mathematical operations as addition, subtraction, multiplication, division, square root, cube root etc and time saved by speeding up the numerical calculations can be devoted to other sections of competitive examination.

In this paper, the role of sutras of vedic mathematics in developing the free and logical thinking in the students has been studied using the questionnaire I and questionnaire II. The paired t-test of statistics is used to analyze the scores obtained by the students in questionnaire I and it has been observed that the students will significantly gain the problem solving capacity. This piece of research work is directed to find some workable dimensions to highlight the fact that the numerical calculation speed of the students has been increased rapidly by the understanding of the sutras of vedic mathematics.

2. SUTRAS OF VEDIC MATHEMATICS USED IN THE STUDY

This study considers some of the sutras of vedic mathematics as

- Ekadhikhen Purvane
- Nikhilam Navatas, Charamam Dasatah
- Urdhva Triyakbhyam

2.1 EKADHIKEN PURVANE (ONE MORE THAN THE PREVIOUS ONE):

This sutra is useful in finding the square of numbers (like 95×95 , 105×105) and also in solving special divisions like 1 divided by 19, 29, 39, 49, 199 etc in just one step.

To find squares of numbers ending in 5, the sutra is $PQ \times PQ = P(P+1)(Q \times Q)$. This method can also be applied to other numbers PQ and PS where $Q + S = 10$ and digits in the tenths place are same, using $PQ \times PS = P(P+1)(Q \times S)$. It can be extended further to the numbers of type PQ and RS , using $PQ \times RS = (P \times R)\{(P \times S) + (Q \times R)\}(Q \times S)$.

Special divisions like 1 divided by 19, 29, 39, 49, 199 etc is a tedious process by conventional methods. Some of these numbers are prime numbers. e.g. 19, 29, 59, so cannot be factorized and the division runs many pages with chances of mistakes. Vedic solution can be obtained using this sutra of vedic mathematics.

2.2 NIKHILAM NAVATAS, CHARAMAM DASATAH (ALL FROM 9 AND THE LAST FROM 10):

This sutra is helpful in cases of subtraction, when a number is to be subtracted from 10^n (example 10, 100, 1000 and so on...). This sutra is also helpful when multiplying numbers that are both near base 10, base 100 etc or dividing any number (regardless of size) by a number that is near a base 10, base 100 etc. (such as the numbers 9, 98, 996, etc.). The cube root of a perfect cube, square root of a perfect square, multiplication of numbers with similar digits in the multiplier, with a series of 1's in the multiplier, with a series of 9's in the multiplier can be solved surprisingly fast using this sutra.

2.3 URDHVA TRIYABHYAM (VERTICALLY AND CROSSWISE):

This is a general sutra applicable to all the cases of multiplication and also in the division of a large number by another large number. This sutra of vedic mathematics gives easiest multiplication method amongst practitioners, and is most popular.

3. TOOLS USED

For this study, sutras of Vedic Mathematics are implemented for the teaching of fast calculation to a sample of 30 students of Vikramsheela Academy, Bhiwani situated in Haryana who are preparing for different competitive examinations, having numerical ability section in the examination. This sample is marked as Sample 1 and the sample on which sutras of vedic mathematics are not implemented is marked as Sample 2.

The scores obtained by the students of both the samples in questionnaire I are analyzed with the help of paired t-test.

4. ADMINISTRATION

The teaching of sutras of vedic mathematics is administered on the sample I and the students are assured that the present teaching will help them in their daily learning and in solving the questions of numerical ability section of competitive examination.

The performance is judged by the questionnaire I having numerical ability questions based on cube root, square root, multiplication of numbers, division of numbers near to base etc distributed to the students of both the samples. The significance of these sutras using the paired t- test is obtained to provide a clear comparison of the effectiveness of the application of sutras of vedic mathematics in increasing the mathematical calculation speed.

After the completion of questionnaire I, questionnaire II has been distributed to both the samples to know about the methods adopted by the students in solving questionnaire I. Questionnaire II has open ended questions and is for review purpose only.

Questionnaire I

Objective: To check the capability of the students in solving the numerical questions to the highest degree of accuracy

Name: _____

Date: _____

Class: _____

Max. Marks: 20

Roll No. _____

Max. Time: 15 min.

Note: All questions are compulsory. Question no. 1 to 20 carry one marks each.

1. Square of 105 is
 (a) 11,025 (b) 11,235 (c) 11,035 (d) 11,125
2. $486 \times 26 =$
 (a) 12,336 (b) 12,366 (c) 12,636 (d) 12,666
3. $\frac{1}{19} =$
 (a) 0.052631578947368421 (b) 0.052632568947367421
 (c) 0.052631567847346421 (d) 0.052631789457368421
4. $4564 + 3469 =$
 (a) 8,003 (b) 8,033 (c) 8,333 (d) 8,123
5. Cube root of 3,28,509 is
 (a) 68 (b) 67 (c) 69 (d) 72
6. $23412 \times 1111 =$
 (a) 26,010,732 (b) 26,011,632 (c) 25,010,632 (d) 26,101,732
7. Subtract 679.64 from 1,00,000
 (a) 99,320.36 (b) 99,321.36 (c) 98,312.35 (d) 99,328.35
8. $444 \times 555 =$
 (a) 2,44,420 (b) 2,46,220 (c) 2,46,460 (d) 2,46,420
9. $684 \times 436 =$
 (a) 2,98,224 (b) 2,98,124 (c) 2,96,224 (d) 2,96,024
10. $706 \times 908 =$
 (a) 6,41,148 (b) 6,41,048 (c) 6,41,448 (d) 6,44,288
11. $6546 \times 9999 =$
 (a) 65,454,454 (b) 65,455,544 (c) 65,453,454 (d) 65,545,544
12. Subtract 29km 375m 46cm from 37km 467m 35cm
 (a) 8km 191m 79cm (b) 8km 091m 89cm
 (c) 8km 199m 99cm (d) 8km 099m 59cm
13. $64 \times 46 =$
 (a) 2,444 (b) 2,844 (c) 2,994 (d) 2,944
14. 1234 divided by 9 gives
 (a) Quo = 137, Rem = 1 (b) Quo = 136, Rem = 11
 (c) Quo = 138, Rem = 5 (d) Quo = 127, Rem = 11

15. Square root of 6241 is

- (a) 78 (b) 79 (c) 77 (d) 69

16. $\sqrt{3249}$ is equal to

- (a) 57 (b) 59 (c) 67 (d) 47

17. $212 \times 205 =$

- (a) 43,440 (b) 43,460 (c) 43,400 (d) 43,450

18. Square of 995 is

- (a) 9,09,025 (b) 9,90,055 (c) 9,90,005 (d) 9,90,025

19. $\sqrt[3]{110592}$ is

- (a) 44 (b) 45 (c) 43 (d) 46

20. $997 \times 999 =$

- (a) 9,90,003 (b) 9,96,003 (c) 9,96,033 (d) 9,95,033

Questionnaire II

Objective: For review purpose only.

Name: _____

Class: _____

Roll No. _____

Note: All questions are compulsory.

1. How you arrived at the answer of the question 11 ?
2. How you rate yourself in this test:
 - a) Genius ()
 - b) Intelligent ()
 - c) Average ()
 - d) Dull ()
 - e) Idiot ()
3. How much time you have taken in solving the question 3 ?

5. STATISTICAL INTERPRETATION

5.1 ANALYSIS OF QUESTIONNAIRE I

Let d stands for the difference between the scores obtained by the students of the two samples and \bar{d} is the mean value of the difference of scores. The scores obtained by the students of the sample 1 and sample 2 in questionnaire I are summarized in Table 5.1

Table 5.1: Scores obtained by the students of the sample 1 and sample 2 in questionnaire I

S.No.	Sample 1 (x)	Sample 2 (y)	$d = x - y$	d^2
1	18	14	4	16
2	18	15	3	9
3	17	13	4	16
4	17	12	5	25
5	17	11	6	36
6	20	15	5	25
7	15	12	3	9
8	17	12	5	25
9	15	13	2	4
10	16	12	4	16
11	18	15	3	9
12	17	11	6	36
13	16	13	3	9
14	15	13	2	4
15	16	11	5	25
16	18	13	5	25
17	19	14	5	25
18	17	12	5	25
19	17	14	3	9
20	18	13	5	25
21	15	11	4	16
22	14	12	2	4
23	19	14	4	16
24	18	13	5	25
25	20	16	4	16
26	18	14	4	16
27	15	12	3	9
28	15	12	3	9
29	16	13	3	9
30	15	12	3	9
Total			118	502

5.1.1 TWO TAILED T-TEST

A null hypothesis is taken that there is no significant difference in the performance of the students of Sample 1 and Sample 2. An alternate hypothesis is that there is a significant difference in the performance of the students of Sample 1 and Sample 2.

Null Hypothesis $H_0: \mu_I = \mu_{II}$

Alternate Hypothesis $H_a: \mu_I \neq \mu_{II}$

The statistic for t-test is

$$t = \frac{\bar{d}}{s/\sqrt{n}} \sim t_{n-1}$$

$$\bar{d} = \frac{\sum d}{n} = 3.93$$

$$s = \sqrt{\frac{1}{n-1} \left[\sum d^2 - \frac{(\sum d)^2}{n} \right]} = 1.1427.$$

Therefore

$$|t| = \frac{|\bar{d}|}{\sqrt{s^2/n}} = 21.097$$

The tabulated value of t for 29 (30 - 1) degree of freedom $d.f.$ at

- a) 1% level of significance for two-tailed test is 2.756
- b) 5% level of significance for two-tailed test is 2.045

Since calculated value of t (21.097) is much greater than the tabulated value of t , the difference is highly significant and H_0 is rejected. Hence, the performance of two samples differs significantly.

5.1.2 ONE TAILED T-TEST

For one tailed t-test (right tailed) $H_a: \mu_I > \mu_{II}$, the tabulated value of t for 29 (30 - 1) degree of freedom $d.f.$ at

- a) 1% level of significance for two-tailed test is 2.462
- b) 5% level of significance for two-tailed test is 1.70

As calculated value of t (21.097) is much greater than the tabulated value of t , there is significant increase in the scores of the students of sample 1 (Vedic Mathematics users) as compared to the students of the sample 2 (Non-Vedic Mathematics users).

5.2 ANALYSIS OF QUESTIONNAIRE II

Questionnaire 2 has open ended questions so the students are free to give the answers according to their views on the concerned question. These questions are not for evaluation purpose and the answers given by the students of two samples are summarized as:

5.2.1 SAMPLE I

1. How you arrived at the answer of the question 11 ?

Ans. I multiplied 8384 with 9999 by using sutra Nikhilam Navatas, Charamam Dasatah with following steps:

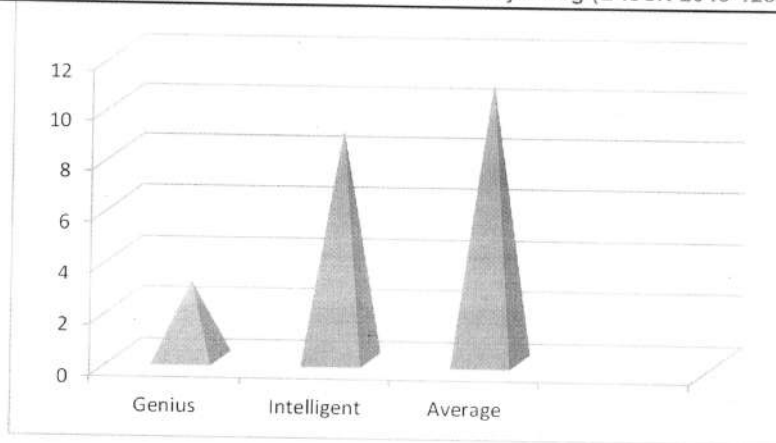
- a) Subtract 1 from 6546 and put it on left side of the answer
 - b) Subtract each of the digits of 6545 (obtained in above step) from 9 i.e. 3454
- So, $6546 \times 9999 = 65,453,454$.

2. How you rate yourself in this test:

- | | |
|----------------|-----|
| a) Genius | () |
| b) Intelligent | () |
| c) Average | () |
| d) Dull | () |
| e) Idiot | () |

Ans. The students rate themselves as:

Genius (Gen)	:	3
Intelligent (In)	:	9
Average (Avg)	:	11
Dull (D)	:	0



3. How much time you have taken in solving the question 3 ?

Ans. I took approx. 50 seconds in solving the question 3.

5.2.2 SAMPLE 2

1. How you arrived at the answer of the question 11 ?

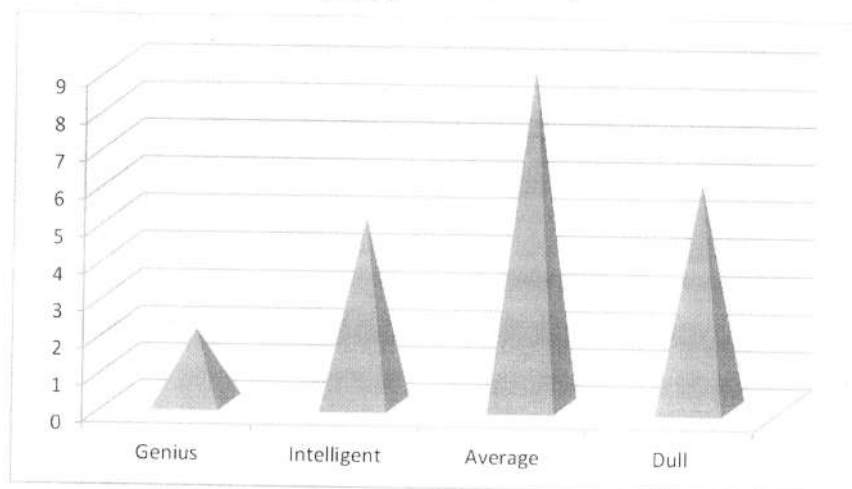
Ans. Multiplication of 6546 with 9999 has been done by direct multiplication method.

2. How you rate yourself in this test:

- | | |
|----------------|-----|
| f) Genius | () |
| g) Intelligent | () |
| h) Average | () |
| i) Dull | () |
| j) Idiot | () |

Ans. The students rate themselves as:

Genius (Gen)	:	2
Intelligent (In)	:	5
Average (Avg)	:	9
Dull (D)	:	6



3. How much time you have taken in solving the question 3 ?

Ans. I took 1 minute 30 seconds in solving the question 3.

6. DISCUSSION OF THE RESULTS

The analysis and interpretation of questionnaire I and questionnaire II gives some of the important results related to the study.

- From the results of both the one tailed and two tailed t-test, it is clear that the students of sample 1 (VM users) using sutras of vedic mathematics are performing much better in the questionnaire I as compared to the students of sample 2 (Non-VM users).
- Analysis of questionnaire II clearly reflects that the students using Vedic Mathematics reported more confidence in their ability to do mathematical calculations and gained higher level of understanding.

It can be concluded that the students become more flexible in their choice of solution strategies and increased their fluency in solving the mathematical problems. Students learned more using these sutras of vedic mathematics than the regular mathematical methods. The use of these sutras place more emphasis on the problem solving rather than the computational skills.

7. LIMITATIONS AND FUTURE SCOPE OF THE STUDY

1. Sample size is limited to 30 students only. Further, it can be extended with large sample sizes.
2. Ekadhiken Purvane, Nikhilam Navatas, Charamam Dasatah, Urdhva Triyabhyam are the few sutras of vedic mathematics considered in this study. It can further be extended for more sutras of vedic mathematics.
3. This study considers objective questionnaire to check the number of correct answers given by the students of both the samples irrespective of the method of solving the questions adopted by the students. So, it can further be conducted through summative questionnaire.

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