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REVIEWER BOARD

Message from Vice Chancellor's Desk

Dear Esteemed Readers,

I am delighted to address you on the occasion of the release of the second edition of our esteemed multidisciplinary international journal. As the Vice Chancellor of Mahatma Jyotiba Phule Rohilkhand University, I take immense pride in witnessing the continuous growth and success of this publication.

Our journal serves as a platform for scholars, researchers, and experts from various fields to share their valuable insights and contribute to the advancement of knowledge. It provides a unique opportunity to explore diverse perspectives and foster interdisciplinary collaborations, promoting innovation and intellectual exchange. In this edition, we are thrilled to present an array of thought-provoking researches that cover a wide range of topics spanning multiple disciplines. From ground breaking research findings to critical analysis, each contribution exemplifies the commitment to excellence that our institution stands for.

I would like to express my heartfelt appreciation to all the authors who have dedicated their time and expertise in producing exceptional scholarly work. Your contributions are invaluable in shaping academic discourse and pushing boundaries in your respective fields. I encourage you to delve into this edition with curiosity and an open mind. Explore the pages filled with knowledge that has been rigorously vetted by our expert reviewers. Engage with these articles, challenge assumptions, and let them inspire you on your own intellectual journey.

Lastly, I would like to extend my gratitude to the editorial team for their tireless efforts in ensuring the quality and integrity of this publication. Their dedication is instrumental in upholding our commitment to academic excellence.

As we celebrate yet another successful edition of our multidisciplinary international journal, let us continue striving for excellence in research and scholarship. Together, we can push boundaries, break new ground, and make a lasting impact on society.

Wishing you an enriching reading experience!

Prof. K. P. Singh

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Content

Editorial Board

Editorial Message

A Brief History of Fundamental Rights in the Soviet Union: Tsarist Rule to Stalin Era

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Abstract

This paper aims to comprehend violations of fundamental rights during the Stalin period. The research seeks to grasp the overall impact of Stalin's policies on the fundamental rights of the people. From 1929 to 1938, Stalin's policy of excessive concentration of power had a profoundly devastating impact on the lives of Soviet citizens. He played a leading role in rights violations, with issues such as widespread torture of those arrested, suppression of freedom of speech, exploitation in labor camps, illegal detention, and murders dominating the discourse. The purpose of this paper is to delve deeply into the contradiction between the laws established within the Soviet Union and the actual practices concerning fundamental rights. It also aims to understand how a constitution that aimed to empower the workers ended up violating their basic rights and depriving them of the fundamental rights established under the Soviet Constitution of 1936. The research endeavours to establish how the purges during the Stalin era amounted to a violation of the Right to Life for the people of the Soviet Union.

Key words*: Tsarist rule, Soviet Union, Bolshevik Revolution, Fundamental rights, Stalin, constitution 1936, Law, Violations, and Suppression*

Introduction

Certainly, it is widely acknowledged that a constitution is made up of guidelines governing both the structure and operation of government authority and the interactions between the government and its citizens. These guidelines, which pertain to the relationships between the government and its citizens and more broadly, between those in power and those being governed, are commonly referred to as public freedoms, fundamental rights, or human rights. Fundamental rights play a crucial role in determining the extent of personal freedom individuals within a society enjoy in relation to government authority, thereby setting the boundaries for the autonomy and self-determination of every individual. Plato, who viewed rights as inherent, categorised citizens into various groups with distinct sets of rights. In 18th century Europe, the idea of "natural law" emerged, rooted in a universal order that defined these rights as applicable to everyone (e.g., Plato 427—347 B.C.E). Since then, the concept of Fundamental Rights has been defined theoretically by several schools of thought including Liberalism, Realism, Marxism, Relativism,

and Universalism. The Soviets held a distinct perspective on Fundamental Rights, contrasting with the Western notion. In Western legal thought, Fundamental Rights are seen as protections for individuals against the government's actions, as noted by Towe in 1967. In contrast, Soviet theory posited that the entire society benefits from these rights. In the Soviet Union, the focus was on economic and social rights, encompassing aspects like healthcare access, proper nutrition, education at all levels, and guaranteed employment. The Soviets also considered these to be the most important rights, without which political and civil rights were meaningless. (Wassertrom, 1999)

According to Marx and Engels' Communist Manifesto, the foundation for the control of the proletariat rests on the violent defeat of the bourgeoisie. They put in German Ideology (1845-46) "that revolution is essential for the overthrow of the ruling class, it can only succeed in expulsion of itself of all the mess of ages and become set up to found society anew" (Marx & Engels 1848: 18). Joel Ferinberg calls it right in a "Manifesto Sense", which aims to change the politics through the manifesto. Human rights as demanded by a group of people which share the right as legally approved. On the same line, Lgnatieff stated that

human rights are "a shape of politics", because they reflect conflict between the holder of power and the holder of the rights (Palombella 2006: 2).

It also covers various perspectives like political, sociological and philosophical. Human rights come from ancient thought and are expressed in the philosophical concept of Natural right and Natural law. Roman and Greek philosophers have given their ideas about human rights and explained them in their manner. Philosophically, the term right was used first by Plato (427-348 BC) who introduced the rights as a natural right guaranteed by natural law. However, Aristotle (384-322 BC) wrote in his book "Politics" that under different kinds of institutions and circumstance, justice, virtue and rights were changeable. Thus, the origin of the human rights concept is entrenched in the Greco-Roman era. Furthermore, it entered into Roman philosophy at the beginning of the emergence of the idea of social contract; when Hobbes cited that 'Man is born free', but everywhere he is in chains. Thus, according to Cicero "the law of nature applies to all men equally." (Waldron 1984: 25-27) Right claims concentrate on the right holder and draw the obligation of the carrier's regard for the right holder's uncommon title to make the most of his/her privilege. Rights in this sense are

something many refer to as "subjective right which concentrates on the subject (who holds them) as opposed to a targeted standard to be taken after or a state issue to be figured out in the same manner." (Freeman 1994: 491)

But the general understanding of human rights is different from fundamental rights. A fundamental right is the one given by the state and recognized to be protected by the law. On the other hand, human rights are given to us as human beings. Therefore, human rights are universal and equal; everybody has the same rights as others have. There is no discrimination, and they are inalienable rights. It is not a matter of how many people badly behave with their own rights, and it is a common understanding that all members of the species 'Homo Sapiens or human beings' are holders of human rights. J.J. Rousseau has stated that the concept of human rights and citizen rights resists the duality of the Constitution. The role of the state would predominate over its citizen's rights protection. The socialist doctrine of national and international focuses on the element of protecting human rights. (Wassertrom, 1999)

The open door of the declaration of rights is the result of a revolutionary movement. Rights would not have been self-imposed and inalienable if human rights did not result from the revolutionary process from the past. The English law, "the Bill of Rights of 1689" established that ancient rights and liberties, which declared the universality, equality, and the naturalness of the right, were necessary for human rights. The American Declaration of Independence of 1776, French declaration of right of man and citizen of 1789 claimed natural, equal and universal rights of the individual which was legitimated on individual, natural rights. (Sidney & Webb 1942)

The concept of the right of man was a major phenomenon in the 18th and 20th century of the Second World War; it became the political thought at that time. There are four points to be examined briefly. (1) Abolition of slavery was the sign of the rise of human rights like England (1787), France (1848), America (1865) during the civil war, 1861 end of serfdom in Russia, Central and South America had completely abolished the slavery. (2) Constitutionalism and Citizenship in the 19th century in European countries was a struggle between human rights and social rights. (3) Late 19th-century human rights expanded with the growing nationalism in Turkey and new nation states of Balkans, Central and Eastern Europe, Middle East, Asia and Africa after 1945. Thus, these three points

elaborated the human rights problem and led to its rise. (Hoffman 2011: 6-13)

Human rights are also rooted in Constitutional history "The Magna Carta" of 1215 gives the people of the United Kingdom their civil rights and liberties, though limited, it was a result of the realization and recognition that individuals had certain rights and could claim these rights against the state. The Magna Carta was granted by King John of England to the English. Another historical example was the French Revolution which led to the development of the universality of rights at the world level. While explaining human rights, a French deputy remarked that "the Americans have set an example in the new hemisphere. However, the French were given one to the universe sphere." (Sidney & Webb 1942)

Moreover, Fundamental human rights found their way into the constitutional documents and declarations of numerous states. For instance, in 1776, the "Declaration of Independence" of the thirteen American colonies (including the Virginia Declaration) and the United States Constitution of 1787, later amended in 1789, 1865, 1869, and 1919, outlined a range of rights. Subsequently, inspired by these advancements, other states also adopted similar approaches, as seen in the French declaration of the "Rights of Man and Citizen" in 1789. Other states brought human rights protection in their Constitution; Sweden adopted it in 1809, Denmark in 1849, Prussia in 1850, and Switzerland in 1874. They all made provisions for the Fundamental Rights of man.

But the concept of Rights of Man was unsuitable in the world scenario, thus the term human rights took shape under Thomas Paine, and it became the first precondition for international peace and security. The American President Franklin D. Roosevelt in 1941 declared the four freedoms in which he stated that "Freedom means the supremacy of human rights everywhere". The focus on human rights also increased when Germans were alleged to have violated international law. The confirmation of Nazi violation in Germany and Europe came forth after the Holocaust against Jews as well as the targeting and murder of Gypsies, Slav intellectuals, professional socialists, homosexuals and many others. Before establishing the United Nations, numerous meetings and conferences were held such as United Nations Declaration, 1942; Moscow Declaration, 1943; Tehran Declaration, 1943; Dumbarton Oaks Conference, 1944 and San Francisco Conference, 1945, where a number of states participated to form UNO. The United Kingdom and the

United States also signed the Atlantic Charter 1941 and was the first to use the term "Right" in the document. (Wassertrom, 1999)

History of Tsarist Russia and Fundamental rights

Ivan IV was the Russian Emperor preceding Peter the Great, and his rule ended when he was toppled during the February Revolution in 1917. The Russian Empire spanned from the Arctic Ocean in the north to the Black Sea in the south, and from the Baltic Sea in the west to the Pacific Ocean and Alaska in the east. As per the 1897 census, Russia had the world's third-largest population, trailing behind the Qing Dynasty in China and the British Empire. (Rauch 1957) In the era of Tsarist rule, Russia operated as an autocratic nation, and this autocratic empire expanded not just into Asian regions like Central Asia, but also into Trans-Caspian, Trans-Caucasus, and Eastern Europe. Compared to other autocratic rulers such as Louis XIV in France, Tsarist autocracy was notably harsh. Nevertheless, there was no national uprising in Russia during the 18th and 19th centuries because the Tsar exercised absolute control over all aspects of life, and there were no challenges to the Tsarist decrees. Russian Tsars adhered to the Divine theory of the state, viewing the king as God's representative. Throughout the history of the Russian Empire, the Tsars displayed no inclination to grant social, political, or economic rights and freedoms to the populace.

The first Tsar, Peter the Great (1725), replaced traditionalist values in social, cultural, and political life with modern, scientific, Europe-oriented, and rationalist values. This was the reason why Peter the Great was known as a great reformer and ruler of Russia. Catherine the Great ruled over a Golden Age, and she continued Peter the Great's policy of modernization. During Catherine's period, the Pugachev revolt (1773-1775) was carried out among the Yaik (Ural) Cossacks to force the approval of demands like suitable wages and working hours. But on Catherine the Great's orders, the Russian army successfully suppressed this revolt. As a result of the Pugachev revolt, several changes took place in Russia, such as an increase in the provinces, division of political power among the agencies, and the introduction of elected officials.

Alexander I frequently employed liberal rhetoric in his policy declarations; nevertheless, in practice, he adhered to Russia's absolutist approach. At the onset of his reign, he made assurances of implementing constitutional, liberal, and educational reforms. Regrettably, these pledges remained unmaterialized in reality.

In contrast, Alexander II emerged as the most accomplished Russian reformer subsequent to Peter the Great. His paramount accomplishment materialized with the Emancipation of Serfs in 1861, an achievement that earned him the moniker Alexander the Liberator. Beyond serf emancipation, Alexander the Liberator orchestrated an array of additional reforms. These encompassed the restructuring of the judiciary, the elimination of capital punishment, the institution of universal military conscription, and the advancement of the Zemstvo system, which fostered local self-governance. The era of Nicholas I witnessed Russia's harrowing defeat in the Crimean War (1853-56). His governing approach was rooted in religious orthodoxy, governmental autocracy, and Russian nationalism. Nicholas I's reign, fundamentally marked by reactionary policies, proved to be a calamitous failure, both on the domestic and international fronts, attributable to his ill-advised decision-making. Subsequently, the Bolshevik revolution established a socialist framework in Russia, with Lenin assuming the role of the inaugural General Secretary of the Communist Party of Soviet Russia. Nicholas II gained recognition as a political traditionalist, overseeing a rule marked by territorial expansion, suppression of opposing views, economic stagnation, inadequate administrative strategies, and a system plagued by corruption. Throughout the Tsar's reign, economically, religiously, socially, and politically marginalized peasants bore the brunt of discrimination, prompting them to initiate uprisings against the ruling regime. Despite maintaining his hold on power, the Tsar embarked on reform initiatives. From the era of Peter, the Great to that of Alexander II, Russia's monarchs exhibited a penchant for reform. They eradicated penal laws and abolished both capital and corporal punishments. However, upon Nicholas II's ascension, he struggled to effectively steer Russia's course. Evident dissent against the government surfaced, with the 1905 revolution marking a significant victory for the working class. The 1917 revolution signalled the demise of the Romanov dynasty, paving the way for Lenin to establish the Soviet Government. Lenin enacted the 1918 Law, which extended rights to Soviet representatives, labourers, and soldiers. In Russia, he introduced ideologies such as the transition from 'capitalism to socialism' and the concept of 'full power vested in the Soviet' (Gray 2004). Russia was a multi ethnic empire based on both invasion and law. Meanwhile Moscow emerged as a spreading centre of political control through gradually, often violent integration of bordering territories.

Empires were controlled over the territory and labourers in order to secure them by the administrative rather than law. Law defined the rights and obligations of people living in its land.

Thus, the Muscovite legal system was established to govern the relationship between the state and its subjects. Consequently, a portion of the imperial legislation outlined the privileges and duties of local elites. The language used in these decrees underscores the Tsar's overarching authority concerning property rights and the state's consolidation of privileges previously granted by other rulers. These edicts embodied the fundamental agreement of noble politics, where elites were granted, specific rights based on their contributions to the state. As time passed, the empire generated a series of regulations and proclamations that delineated the specific rights and responsibilities of various groups, categorized by geography, religion, ethnicity, or occupation. This accumulation of legal measures corresponded to genuine variations in social customs and legal procedures across the empire.

The diversity of legal systems sanctioned across the empire served to validate the supremacy of Russian governance, enabling local populations to actively engage in self-governance. The dominions adhered to the Russian Law as the governing authority, with all rights stemming from this Law and devoid of inherent or natural rights. Varied rights, responsibilities, and rewards were apportioned to distinctly defined groups. The specifics of laws that governed various facets of societal existence were contingent upon the 'customs' and 'laws' of different groups, which were perceived as products of shared historical experiences. The Russian concept of legal norms deemed social regulation by groups, rather than individual rights, as the intrinsic facet of 'natural' law (Chalidze, 1975). In the expanse of the Russian Empire, rights held the nature of privileges, intimately tied to specific groups within the state. The Empire extended privileges not to individuals but to particular segments of the population, thereby linking rights to group membership. Thus, to understand the rights "imperial law was a source of rights for ordinary people, as well as elites. Rights could define obligations and were prescribed to people by their status as an image as a member of collective bodies". Furthermore, the steady improvement of peasants' rights after the emancipation took place in a gradual and politically measured way. After 1864, the Polish peasants were given extensive land rights and freedom from all obligations to the former owner. In

short, peasant's new rights were entering into a new phase of the society, in which noblemen had lost their rights (Ibid.). Risanovsky (1923) presents the argument in his work 'A History of Russia' that following the year 1917, when the Duma assumed authority, Russian education underwent expansion. Schools evolved beyond outdated institutions, and there was a noticeable shift towards a more liberal atmosphere in both the press and the government. This newfound liberalization allowed them to present their political perspectives on a national scale. In a different viewpoint, Riasanovsky (1963) contends that the monarchy's stability had eroded towards the end of its rule. Simultaneously, various social and political issues had arisen, stemming from deep-rooted inequality and a considerable absence of remedies, primarily arising from the unequal distribution of land (Micheal, 2007). The abdication of Nicholas marked the conclusive end of the monarchy. Some historians expressed concern over the necessity of Nicholas's abdication, as well as the timing of the end of autocracy. Conversely, the government's stance clashed with the growing agitations, as the army aligned with the landholding peasants. Amidst these complexities, Russia grappled with a dual dilemma: one

between the Provisional Government and the Petrograd Soviet.

Bolshevik Revolution and Lenin's Reign in Russia

The year 1917 marked the inception of the Russian revolution. Tsar Nicholas, the final ruler of the Russian Romanov empire during the late 19th century, ascended the throne amidst a transformative global landscape demanding robust leadership to navigate Russia through its turbulent times. However, Nicholas faced a series of challenges due to his ineffective policy-making abilities and the inadequate structure of his government. Despite acknowledging the necessity for reforms, he failed to implement meaningful changes, ultimately leading to the soviet union's involvement in an unsuccessful war and occurrence of two revolutions during his rule.

The dissatisfaction with the reforms spread through different segments of society, encompassing peasants, intellectuals, and labourers. The surge of revolution initiated within the educated class, coinciding with the epoch of the Great Reforms, a phase characterized by notable liberal transformations. This movement attracted participation from the middle class and students who were discontent with Alexander II's policies. During the years 1869 to 1882, there was a significant rise in

the number of students. The educated elite played a pivotal role in influencing the younger generation through literary works, including influential publications like 'The Bell,' authored by Herzen in London in 1850. Another significant publication, 'The Russian Word,' renowned for its radical viewpoint, was penned by the eminent critic D.L. Pisarev, alongside 'The Contemporary' (1836-1866). Eminent writers of the era included N.G. Chernyshevsky and N.A. Dobroliubov.

During the reign of the Tsar, the Soviet Union was a diverse amalgamation of ethnic groups. The rise of the intelligentsia movement also spurred the Soviets to demand recognition and self-worth. Nicholas II's introduction of serfdom emancipation failed to satisfy rural peasants, who were plagued by low living standards, landlessness, limited economic progress, and lack of education. While the population grew, productivity remained stagnant in the 1880s. The workers' plight was further exacerbated by governmental regulation. Industries thrived on cheap labor, but the working conditions were deplorable, characterized by long hours, meager pay, insecurity, and unhygienic environments where families lived together, facilitating the spread of diseases. Factories naturally evolved into centres for revolutionary activities in the lead-up to

and during 1917. By the 20th century, workers gained better education and skills, which gave rise to a burgeoning middle class. This middle class focused on elevating rural peasants by providing them privileges. They engaged in discussions on social and political issues, education, and laid the foundation for a liberal political movement advocating for political rights and constitutionalism. Key players in the 1917 revolution were the Socialist Revolutionaries (SRs) and Social Democrats (SDs), whose support extended to peasants, laborers, and the working class, collectively referred to as 'toilers' with the advent of industrialization, G.V. Plekhanov argued that Russia was transitioning to capitalism, setting the stage for the Socialist Movement that targeted the industrial working class rather than peasants.

Lenin's approach to the 1917 revolution centred on utilising terror as a tactic for driving the revolutionary agenda. He maintained that two prerequisites were needed to employ terror effectively: a directive from the central authority and the presence of a robust local revolutionary organisation (Singh 1990). In his publication *"What Is to Be Done?"* Vladimir Lenin suggested the creation of a revolutionary party within the educated elite to cultivate revolutionary consciousness among industrial laborers

and furnish them with leadership. After the legalization of socialist parties subsequent to the 1905 revolution, various smaller factions emerged; nevertheless, Lenin turned to the Bolshevik party to propel the proletarian revolution. The divergence in ideologies between the Mensheviks and Bolsheviks was stark, with Lenin's faction advocating for radical transformation while the Mensheviks adopted a more moderate position. As a result, a coalition government materialized in 1917 (Lenin 1902). The 20th century witnessed the rise of revolutionary socialist, liberal, and reformist political movements. The Kadets party, standing for liberal values, contrasted with Lenin's radical group. Led by Paul Milyukov, the Constitutional Democratic Party (Kadets) was established in 1905. German historian Oskar Anweila critiqued the Bolshevik party, attributing its popularity to its larger membership. This popularity led to the transformation of the party's base into a fortified town for soldiers. Berry Willianres assessed the October revolution and contended that the masses perceived Soviet power as the solution to their ongoing predicaments, causing Soviet power to garner more public support than the party and the constituent assembly.

During the planning of the Petrograd revolution by the Bolsheviks, the backdrop of World War I in 1914 provided a tumultuous setting. Throughout this period, the labor movement grew in strength, with over a million workers engaging in strikes. In a bid to support the war endeavor, workers enlisted in the armed forces. Amid the ongoing conflict, even as the war persisted, 14 factory workers initiated a strike, which had the effect of weakening the Soviet both economically and politically. Lenin stood in opposition to the Soviet's fixation on the war effort. The government aimed its efforts at factory workers, leading to more than 60 casualties among them. The number of striking workers escalated to 27,000. Bolshevik representatives were sent into exile, and the freedom of the press was restricted. Come September, another revolution unfolded, involving 64,000 workers who echoed similar demands. Petrograd bore witness to a strike involving as many as 500,000 workers. By 1916, the count of strikes and participating workers surpassed the figures recorded in 1915. Several newspapers leaned towards the government's perspective, accusing the Bolsheviks of fanning the flames of civil unrest. In response, Lenin vehemently denied this claim, labeling it a 'repugnant falsehood' He countered the ironic invitation extended by the newspaper Dyen to the Bolsheviks to 'assume power,' emphasizing the

importance of the proletarian party establishing its influence within the Soviet (Singh 1990).

In July, the culmination of strikes and the ongoing war came to a head as soldiers and workers initiated a potent uprising. Petrograd emerged as the nucleus of this movement, where enraged masses directed their anger at Soviet leaders. The government accused Bolshevik leadership of fomenting this unrest, leading to their apprehension. They even levelled allegations of treason against Lenin himself. Workers and soldiers orchestrated protests against the provisional government, pushing for full authority to be vested in the Soviet. Lenin lent his support to the orchestrators and leaders of these protests. The Socialist Revolutionaries (SRs) and Mensheviks endorsed punitive actions against the rebels. The military intervened to restore control, quelling the July protests. These occurrences laid the groundwork for the October revolution of 1917. The era spanning from 1905 to 1917 witnessed the Russian Revolution as a notable contest between the working class and the capitalist class, signifying a crucial juncture in history.

The revolution in Russia stemmed from the populace's dissatisfaction with the Kerensky provisional government. In September, the strikes escalated to a new level. Over a span of three days, around 700,000 railway workers joined the strike, effectively paralysing Russia's transportation system. Subsequently, in mid-October, a strike involving 300,000 workers erupted at textile factories in Ivanovo, extending to neighbouring communities such as oil workers. This disruption led to chaos and disorder. Scholars Koenker and Rosenbrg assert that the Bolshevik revolution was rooted in worker strikes, becoming the primary form of political engagement for workers on a large scale. During this time, the Petrograd Soviet established the Military Committee, ostensibly to defend against the Germans. However, the Bolsheviks took control of this body, operating under the guise of Soviet legitimacy. Meanwhile, the Soviet Union grappled with economic challenges and backwardness.

Exercise of Fundamental Rights during Lenin era

Nicholas II established the fundamental Law in 1906 threatened by a revolution in 1905, Sergey Witte called the October manifesto which restricted unlimited power of monarchy and ensured the civil liberties, legislative body, and military dictatorship. Fundamental law of 1906 ensured the rights in chapter II that mentioned rights to the Russian subjects. This was reflected in the 1918 Constitution that was enacted soon

after Vladimir Ilich Lenin (1870-1924) successfully led the Russian Revolution of 1917 to lay the foundations of the Soviet Union. This Constitution granted the classical freedom of conscience, expression, assembly, and association exclusively to "toiler's", a term meant to include urban workers as well as the rural proletariat of poor peasants. From the outset, the realization of civil rights was constructed as depending on a certain economy to "toiler's" The 1918 Constitution in effect redefined the inherited distinction between "active", or "passive" citizenship. "It similarly received categories of political rights, which were granted exclusively to those who obtain their livelihood from productive and socially useful labor" as well as "soldiers of the Soviet army and navy." (Szymanski, 1984) "Further, the 1918 Constitution gave the fledgling Soviet state the authority to deprive any individual or group of rights used to determine the socialist revolution, thereby sanctioning the use of rights as a weapon against political opponents." (Tbilis, 2010)

By the early 1930s, approximately four million "lishentsy" had their civil and political rights revoked, though they retained Soviet citizenship. A smaller group of people also lost their citizenship, were expelled from the USSR, or became stateless within its borders. Stalin's 1936 Constitution included a section titled "Fundamental Rights and Duties of Citizens," which outlined a set of rights. This reflected an unspoken agreement where the enjoyment of rights was contingent not only on state support but also on citizens fulfilling their duties. In the 1936 Constitution of Soviet Union, Fundamental Rights of the USSR citizens were defined as follows, Article 121 was Right to Education for all the citizens of USSR, Article 123 gave the Right of Equality to all, irrespective of their nationality or race, in all spheres. (Szymanski, 1984)

Although the Constitution outlined numerous fundamental rights for the Soviet Union's citizens, Stalin's regime saw widespread disregard for these rights. It's important to note that Communists rejected the concept of inherent human rights, largely because they were seen as purely political. However, Stalin's transgressions weren't driven by ideological opposition to bourgeois political ideas but were aimed at enhancing the authority of the Soviet state. He orchestrated the elimination of his ascending rivals, purged the Party to strengthen his control, and imprisoned or executed thousands of loyal former Bolsheviks without legal proceedings. His most significant transgressions against

fundamental rights occurred during the early 1930s due to the collectivization campaigns. Countless Russian and Ukrainian peasants were forcibly removed from their land and placed onto collective farms. The small landowners, known as Kulaks, were essentially eradicated. Additionally, the quotas set for these collectives remained unchanged despite poor harvests, resulting in millions perishing due to both famine and deliberate policies by the USSR. Once firmly in control, Stalin established a formidable police state, employing secret police to surveil civilians and imprisoning those accused of dissent. Thousands of intellectuals, artists, and other dissidents were sent to the infamous gulags (labor camps) in Siberia and elsewhere. In summary, Stalin's rule, as highlighted in his successor Nikita Khrushchev's "secret speech," was marked by blatant violations of human rights.

Szymanski (1984) gives the idea of the status of rights in the Soviet Union and historical background of the Soviet regime. Citing Lenin, the author explains how the Marxist leader declared that civil rights had little meaning for the working class who are poor and oppressed. He also cites the Soviet Constitution to argue that under its provisions, the individuals were sacrificed to serve the interests of the people. He pointed out that the focus was on social rights, securing education, health and work for all instead of political and civil rights, which dominate the western thought on human rights discourse. While acknowledging repressions, Szymanski believes the acts took place due to domestic tensions and threat of external invasion. Explaining the purges, the author believes that besides being paranoid 'about spies, traitors, and wreckers,' the actions could also be ascribed to anti-bureaucracy campaigns and a general screening of party members. He also described labor camps till 1937 as being 'relatively liberal and humane,' after which they were transformed into hard labor camps. This resulted in deaths in these camps due to overwork, malnourishment and diseases as torture was recognized as a permissible police technique. The spy mania, which resulted in the arrest of several people, was described by Brzezinski as being 'directed at Communist party itself.' Arguing against the figures that millions of people were imprisoned in the labor camps, Szymanski says these were based more on speculation rather than the truth.

However, Agotti (1988) disagrees with this view and points out that there was a systematic violation of fundamental rights in the Soviet Union. He believes this was due to a contradiction in the law which

caused this violation of rights. The author argues that Russian law traditionally emphasised duties rather than rights. Besides this, there were also problems regarding implementation of the rights that were in fact granted to the citizens. The author cites that, in the Soviet Union the freedom of speech, press assembly, association and freedom of movement are less useful because there was the restriction for all Soviet citizens through the ubiquitous passport and propiska or residence permit.

Practice of Fundamental Rights during Stalin Era

Albert (1984) explains that the Stalin Constitution which was adopted and passed on the 5 December 1936, can be analyzed in three aspects: the historical background and the various crises emerged in 1930 that motivated the Soviet authority to amend the Constitution, the analysis of the content of the Constitution and finally a brief summary of the ideology of Marxist theory and its relation to Soviet policy.

While he explains the implementation of the 1930 Constitution as a certain result caused by the cohesive effort of multiple prevailing social forces, it believes its provisions failed to protect the rights of the people. Albert, for instance, points out Article 135 that described the duty of citizens to include maintenance of labor

discipline, perform public duties and respect rules of socialist intercourse. He further adds that none of these terms was well defined, making them instruments in the hands of the state to be used for suppression. He adds that Soviet citizens only had the 'rights of conformation' but not 'resistance.' This, in his understanding, exemplified how an 'authoritarian government legitimized its suppression of individual members of society.' Pointing out another problem area, Albert says, the acknowledgment of 'proletarian dictatorship' in the Constitution meant anyone in opposition to this idea could be suppressed. This in future helped Stalin to justify his purges in the name of 'eliminating class enemies' because they were perceived to be working against worker's rights.

On the same ground, Smith (2014) looks at the development of the Soviet Constitution from the Stalin to Brezhnev era. In his view, the Constitution divided rights in three categories: socioeconomic, political and personal. However, despite their existence in the Constitution theoretically, they began to be implemented 'in practice' only after the end of Stalin's era. Before that, rights to citizens were available only 'partially.' In short, Smith describes the entire system of personal rights as being 'inconsistent, problematic and especially vulnerable,' one

that curbed citizens' freedom. It points out that Soviet citizens entirely lacked rights and lived in an arbitrary and coercive dictatorship, concluding that the Soviet Union under Stalin was not a welfare state, and Soviet citizen's socioeconomic rights became increasingly meaningful only after his death (Smith,2014).

Thomson (1943) argues that the Constitution of 1936, in theory, expanded the ambit of civil rights by making certain rights available to all 'citizens' instead of just 'toilers.' There was also in article 127 an 'inviolability of the person,' an idea that encountered stiff resistance from several quarters in the Soviet Union. However, in practice, the Stalin era led to 'violent intrusion' by the government into people's lives. The author is of the opinion that in the USSR, rights were seen as being conferred by the state upon its citizens, rather than being inherent by virtue of being a human entity. This was reflected in the statements of Soviet citizens as well, who declared that there were no rights without duties and vice versa. Besides the theoretical framework, experts also looked into the actual conditions on the ground during Stalin's period concerning fundamental rights.

Avalishvili (2010), while discussing Fundamental rights during the Stalin era, looks into the great terror of 1937-38. Under Operation Kulak, thousands of people became victims of the government machinery. This continued in the coming years and the OGPU-NKVD collaborated to execute prisoners in large numbers. Tucker (1968) blames the rapid rate of industrialization by Stalin for repression of peasants, forced collectivization and liquidation of the kulaks. The policies of the government ultimately led to declining agricultural production and hunger leading to the death of millions of people. Further, the regime was characterized by mobility restriction, travel restriction, and censorship. Between 1927 and 1936, a large number of people also died due to bad work conditions in labor camps (Avalishvili, 2010).

Status of Fundamental Rights after Stalin

Towe (1967) in his article covers the period when Khrushchev came to power after the death of Stalin. He studies Khrushchev's policies of "de-Stalinization" and the secret speech, which was a criticism of Stalin's political terror over the citizens. A key aim of de-Stalinization was to break away from the Stalinist era while simultaneously rehabilitating those who were unfairly purged. During Khrushchev's era, many ordinary Soviet families saw their living standards rise. This was in part due to the delayed benefits of rapid industrialization, but Khrushchev was the first Soviet leader

to attempt to address many of the pressing social problems that had developed as a result of the central planning of the Stalinist system. Howell (1983) also argued that the defense of rights of citizens was blurred in the Soviet Union and for the first time, the US administration under President Jimmy Carter made a pronouncement in 1977 on human rights violations in the USSR. Explaining Carter's policy towards the Soviet Union, the author discusses the signing of the Helsinki Act – containing provisions on human rights among other things – after which the US administration kept a close watch on the implementation of the policy while aiding the dissident movement. One of the most prominent leaders of this movement was Soviet physicist Andrei D. Sakharov, who campaigned against violations of human rights in the USSR, and was aided by the West in his efforts. However, the Helsinki Act failed to help the maintenance of human rights in the Soviet Union, which continued to be violated.

Fryer (1979), while also discussing the Helsinki Accord, looks into the socialist approach of human rights in the USSR. It must be noted that the Helsinki Act was a political undertaking and not a binding arrangement under international law. It, however, declared the importance of respect for the rights and fundamental freedoms of all including the freedom of thought, conscience, religion or belief. It was closely connected to the Universal Declaration of Human Rights of 1948 and accepted its policies. Even he concludes that the Soviet Union failed to implement human rights guaranteed by the UN.

Towe (1967), who based his analysis on comparing the different approaches of the USSR and US in dealing with the problem of fundamental rights guaranteed by the Constitution, insisted that there was an enormous difference in the attitude of both countries towards individual rights, economy, and judiciary. He believes that this difference of understanding is behind the disparities in the interpretation and application of similar fundamental rights in the two countries. Looking into the same issue, Berman (1979) argues on the USSR and US perspective of human rights when the violation of human rights of their citizens was involved. To resolve this conflict, he believes that it was necessary to overcome the impasse that existed between American and Soviet perspectives on human rights. Further, he feels encouraged by a new kind of international humanitarian law that has emerged, under which states have agreed to be internationally held accountable for the violation of rights of their citizens.

Conclusion

In 2007 the Putin government decided to teach school children that "Stalin's actions were entirely rational" Stalin was not put totally in a negative image and was praised for doing some welfare works for the poor, backward and ill state. Thus, it meant that Stalin was shown as working for both "equality and welfare" as the central aspect of his policy. Stalin ensured welfare rights for the citizens as per the Constitution of 1936 through articles 119 and 120 (Soviet Union Constitution, 1936). Between 1931 and 1932 the workers' living standard developed; besides, employment, education, health care, and women's pregnancy care were enjoyed by the proletariat. While industrialization and agriculture were at the peak, some groups were deprived of social and economic rights including kulaks, non-Russians and Jews. These groups of persons were violated by the Stalinist policy of repression, starvation, sabotage, exile and deportation during great purges, open trials and Gulag labour camps. These tools were also used by Stalin for rapid industrialization and collectivization to achieve growth. In the camps and purges, millions of people were killed, arrested or punished. But on the other side, working people enjoyed their work. Stalin made an effort to present a good image in front of his countrymen and foreigners through control over the media and newspapers, in which he was portrayed as a great leader of the world. In short, Stalin largely achieved his dream of socialism in one country, making it a united, modernized, welfare state.

Towe (1967) defines the USSR's perspective as differing from the Western viewpoint in several key aspects. Firstly, the idea that "Policy and not the constitution are supreme" set Soviet law apart, linking it closely with economic foundations. In contrast, Western countries like the US adhere to the supremacy of their constitution. For example, the 1936 constitution enacted a decree mandating higher education for students in advanced levels of secondary schools. Secondly, the notion of 'Fundamental Rights as a Statement of Achievements and Intentions' was prevalent in the Soviet constitution's section on fundamental rights. Here, these rights were seen as reflections of accomplishments and future aspirations. For instance, Article 119 affirmed the "right to rest," achieved by reducing the workday to seven hours for the majority of workers.

Thirdly, the emphasis was placed primarily on the State and not on the Individual. Contrarily, in the USA, individual rights hold greater protection than the state. In socialist nations, the state's supremacy

prevails over individual interests, aligning them with collective interests. Fourthly, each right was conditioned by its non-interference with the progression toward Communism. Fundamental rights were acknowledged, with the caveat that their exercise should not hinder the advancement of communism. Articles 125-126 elaborated that these rights should not undermine the understanding that law serves as a tool for mobilizing and organizing the people to effectively realize the task of building communism. Fifth; A major focus is given to economic rights: In the Soviet Union, the central emphasis was on economic rights, which in turn forms the foundation of Soviet law. Economic rights, particularly the right to employment, were given more prominence than personal and political rights. According to socialist ideology, freedom entails being "free from exploitation, oppression, and deprivation as the fundamental basis for all other forms of freedom." For Soviet citizens, the most vital entitlement was the "right to employment," surpassing political rights and liberties. Sixth; The Judiciary lacks true independence: Judicial freedom was constrained. "The constitution stipulated that judges are independent and bound solely by the law." Article 112 of the 1936 Constitution declared that "Judges are independent and bound solely by the law."

Stalin implemented judicial reforms in 1938. Meanwhile, while Stalin introducing the five-year plan, it was characterized with years of mass killing which could be classified as genocide, in the Stalin case, the act of genocide in the Soviet case had series of organized attack on "class enemies" and "enemies of the people."

Such actions encompassed large-scale executions, the establishment of gulag camps and special settlements where thousands of individuals were apprehended and subjected to interrogations. In instances like the Soviet offensive against the so-called kulaks, social and political groups of victims were "ethnicized," a method employed to make the assault on their existence more understandable to both society and the state. The phenomenon of genocide emerged within the communist societies of Stalinist Russia. Some argue that because Stalin committed these acts in the name of loftier ideals such as socialism and human progress, his genocide differs from the more based on motivations behind other twentieth-century genocides, where killings were driven solely by the perceived "otherness" of ethnic or religious groups. Furthermore, improved relations with groups like Ukrainians, Baltic peoples, Poles, Chechens, and Crimean Tatars, all of whom claim to varying degrees to be victims of Stalinist genocide, can only

occur if Russians openly acknowledge and thoroughly investigate the crimes of the past.

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A Technical Review on Visible Light Communication System

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Abstract

The implementation of communication system using visible light is the new fascinating trend in the communication field, where different colours and intensities are used to communicate. Since in late 1990s, communication has gained wide popularity and growth. Although communication had previously been hampered by interference and pre-existing difficulties, most of them use radio frequency (RF) communication, where information such as images and sounds are carried by radio waves. Radio frequency communication suffers from high latency and interference which added more to the arguments against communication technology and ultimately demanded a new method of communication by taking into consideration the advantage of the fast-switching characteristics of LEDs. To overcome the drawbacks of RF communication, Visible light communication (VLC) is adopted. This review article summarises the components, limitations, architecture, modulation techniques, and conclusions regarding the application of VLC.

Keywords: *Visible Light Communication (VLC), 6G, 5G, terahertz, Light-Emitting Diode (LED) & Optical Wireless Communication*

Introduction

In recent years, there has been a tremendous growth in the number of mobile phones around the world [1]. People are increasingly using smartphones, tablets, and sensors in their daily lives as they require constant communication, Internet access and sensing [2]In addition to the widespread adoption of powerful mobile phones that are always connected, the major computing revolution in this era is internet of things (IoT) [3] in which every gadget will have connectivity and processing abilities. Everyday appliances like televisions, microwaves, refrigerators, and automobiles will be connected round-the-clock, necessitating even more sources, either from the appliances themselves or from the network framework that supports them. Given this scenario, the growing crowding of the Wi-Fi-allocated EM spectrum band is a serious issue that has sparked interest from academia and industry alike. When there's a high demand for wireless resources, Wi-Fi Spectrum [4] Crunch comes into the spotlight. As a result, the current framework does not have the capacity to support wireless communication. In fact, over the course of the past few years, the term "Wi-Fi Spectrum Crunch" has been used in the

media a number of times, alarming both the academic sector and the industrial sector [5]As a result, new technologies which are Wi-Fi compatible, have been developed to avoid this problem. VLC is one of the new technologies that has a lot of potential for addressing the Wi-Fi spectrum crunch problem [6],[7]. In fact, the chances of collaborating with RF systems have increased interest in this type of wireless optical communication [8]. The possibility of working with frequencies that are significantly greater than those utilised by Wi-Fi gadgets is another point that draws researchers to this emerging field of study. These frequencies enable wireless communication at theoretical speeds in the terabytes per second [9].
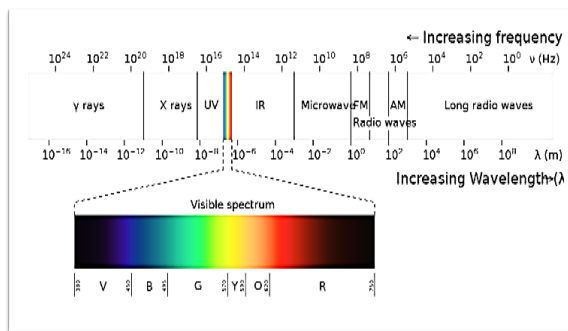
Fig.1: Visible Light Spectrum

In addition, new light-emitting technologies like LEDs [10] are gaining popularity and accessibility, opening up new avenues for OWC. Lastly, the growing attentiveness to and investigation of the visible light spectrum has resulted in many innovations that are currently available. One example is Li-Fi, which was introduced in 2011 and is currently being sold by VLC-focused businesses. A deep overview of VLC is presented in this paper. This review paper recalls the new applications of visible light communication for emerging regions also the open inquiries that may foster new research are been discussed here. In conclusion, we offer our contributions toward this technology. We go over the fundamentals of the optical spectrum and talk about how that part of the electromagnetic spectrum can be used for communication. We discuss the main factors that contributed to the rise in popularity of VLC over the past ten years and give a comprehensive understanding of how it came to be so. We provide an overview of VLC's architecture, which includes transmitters, receivers, and efforts to standardise it over the past ten years. In addition, we give a comprehensive description of the various modulation techniques and multiple access strategies used in the literature section. We also go into the area's application and difficulties. We provide a comprehensive analysis of the most widely used research platforms found in the literature. In the field of wireless technology, we offer a perspective on visible light communication's future. We have already observed many surveys about visible light communication in the past couple of years, from a wider angle to a more specific section, despite the novelty of visible light

communication and the growth of new research in the technology.

Historical Background of VLC

Over the past few decades, the amount of mobile data traffic required to support a variety of services and devices used both inside and outside, such as high-definition television, various types of Internet connectivity, audio and video conferencing has increased tremendously. Additionally, as wireless communication technologies advance widely, the fourth generation of wireless networks now includes an increasing number of devices. The fourth-generation (4G) or fifth-generation (5G) wireless networks [11] must enable numerous communication connectivity options and a wide range of services for a large number of devices. This will necessitate widespread connectivity, increased security, high data rates, high positioning accuracy, low latency, and low battery consumption.

Modern RF-based wireless communication technologies (such as 4G and 5G) manage to maintain high levels of connectivity, offer high levels of location precision, and meet the varied quality of service (QoS) requirements of devices due to continually escalating bandwidth demands [12]Due to their extended lifespan and low power consumption, light-emitting diodes (LEDs) have received a lot of attention recently in

the lighting industry. Compared to fluorescent bulbs, which have a lifespan of just approximately 10,000 hours, LEDs have a lifespan of between 30,000 and 50,000 hours. Additionally, commercial LEDs' luminous effectiveness is xpected to each 200 lumens per watt by 2020, which is significantly more than that of incandescent bulbs. In addition to the benefits outlined above [13], LEDs are used as emitters for VLC because of their rapid switching capabilities. The visible light spectrum used in VLC systems spans the wavelength range of 375 to 780 nm, producing a large amount of unlicensed bandwidth that is substantially larger than the RF spectrum. This makes it possible for VLC systems to offer indoor communications using wireless data transmission at high speed. As a result, LEDs can provide fast data rates for communication services in addition to simultaneous illumination in interior environments. The first article on VLC was published in 2000 by Tanaka et al. from Japan. They created visible light links using white LEDs and employed an amplitude-modulated visible light spectrum to establish a data channel without interfering with the LEDs' lighting capabilities.

A fundamental analysis of white LED-based VLC systems was given in the literature [14], which also described the core system model, the effects of reflection, and inter-symbol interference (ISI). Since then, every

teacher and tradesperson has been watching the arrival of VLC systems powered by white LEDs with bated breath. The commonplace light ID system and, therefore, the commonplace VLC system were two specifications reported by the VLC association in Japan in 2007. The primary IEEE standard for VLC (IEEE 802.15.7) [15], [16], was adopted in 2011. To accommodate the assorted QoS necessities of devices, VLC has been highlighted as an achievable candidate technology for 4G or 5G networks. Because of the following key benefits [17], VLC can serve devices in indoor settings:

- high-speed transmission using the plentiful, unrestricted visible light spectrum

- cheap price because of the usage of the lighting infrastructure already in place

- ensure communication security as visible light signals cannot penetrate walls

- Using visible light positioning (VLP), high-accuracy localization for object tracking and navigation

- There is no interference with RF communications due to the different spectrum and no electromagnetic interference, making it suitable for use in electromagnetically sensitive environments (such as hospitals, airports, and gas stations)

- Using visible light as a source of energy to extend the battery life of low-power gadgets.

Given that wireless devices spend 80% of their time indoors, consistent with various studies, densely deployed light-emitting diode (LED) points are often utilised in access points (APs) to support high densities of indoor devices and supply a spread of services.

IEEE 802.15.7 specifically outlines three physical layer (PHY) modes that mix a spread of modulation techniques, like on-off keying OOK, VPPM, and CSK [18], which are samples of pulse position modulation techniques. The maximum supported rate for PHY II and PHY III is 96 Mbit/s. That may be an important increase on the far side of the most earned rate in laboratory tests. For example, a model was able to attain a knowledge outturn of 500 Mbit/s over a two-meter distance with outturn rates of 1.3 and 1 Gbit/s. The implementation included 3- and 10-meter distances. Furthermore, D. Tsonev and gallium nitride (GaN) LEDs [19] were used by et al. to create an approximately 3 Gbit/s VLC link over a 5 cm distance.

There are also a number of new standardisation initiatives connected to VLC, including IEEE 802.11b and ITUT G.9991 for high-speed indoor visible light communication, and others for several widely used standards and technologies in

short-range wireless communication networks. As can be shown, VLC can achieve substantially greater transmission data rates (up to several GB/s) than the existing Wi-Fi technology (around 350 Mbps for IEEE 802.11n), even while Wi-Fi achieves longer transmission distances than visible light communication. In addition, because competing technologies (such as Bluetooth and ZigBee) have far lower data rates, they might not be able to achieve the demands for higher-speed transmission. Visible light communication systems based on LEDs provide a number of appealing benefits over RF-based indoor communication systems [20], including affordable front-ends, low power consumption, the absence of electromagnetic radiation, an abundance of unregulated bandwidth, and high security. In accordance with the abovementioned studies, VLC could be a crucial component of 5th generation networks to ensure the various QoS requirements of devices.

Architecture of VLC

The visible light communication system's two most important components, the transmitter and receiver, generally have three common layers [21]. These three levels are the physical, MAC, and application layers. The Visible Light Communication system's layered model is shown in Figure 2. Only two layers, the

PHY and MAC, are specified in IEEE 802.15.7 for simplicity of usage [22].
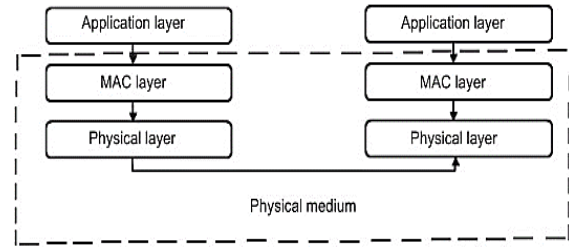
Fig. 1: Layered Architecture of VLC

A. MAC Layer

The Medium Access Control (MAC) layer [23] is responsible for the tasks, which include visibility, security, mobility, dimming, flicker mitigation techniques [24], colour function, generation of network beams if the gadget is a coordinator, and provision of a trustworthy link between peer MAC entities. Peer-to-peer, broadcast, and star topologies are supported by the MAC layer, as shown in Figure 3.
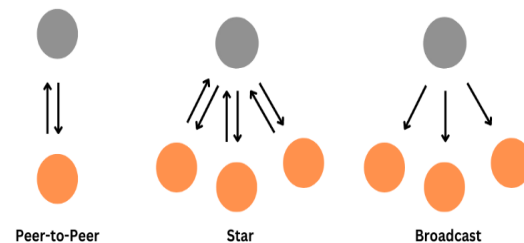
Fig. 2: MAC Topologies

Using a single central controller, the star topology's communication is carried out. As seen in Figure 3, the central controller serves as the means through which each node communicates with the others. As illustrated in Figure 3, one of the two devices interacting with one another is the administrator in the peer-to-peer system [25].

B. Physical layer

This layer gives the physical parameters of the node as well as its connection to the media. The main block design of the physical layer implementation for the VLC system is shown in Figure 4 [26].
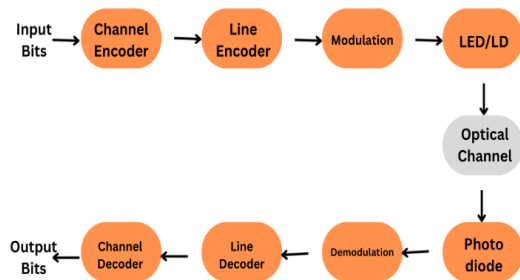
Fig. 4: Typical Physical Layer System model of VLC

In the first place, the channel encoder is utilized to handle the information bit stream (discretionary). Utilizing modern turbo codes, convolutional codes, and linear block codes can enhance the VLC system's performance. After the channel encoder, the encoded bit stream is created using the line encoder. Data is modulated using a variety of techniques, including ON-OFF keying, pulse position modulation, and pulse width modulation, among others, after line encoding. After that, it is sent to the LED for optical channel transmission. The bi-directional transmission is carried out using subcarrier multiplexing (SCM) and wavelength division multiplexing (WDM). In addition, Quadrature Amplitude Modulation (QAM) and Orthogonal Frequency Division Multiplexing [27] (OFDM) were used to boost the data rate. The light signal was captured by the receiver, which may be a silicon photo diode or a PIN photodiode[28]. Demodulation and line decoding were completed, and then the bit stream was routed through a channel decoder to create the output bit sequence. In IEEE 802.15.7, there are three different major physical VLC implementation types. PHY I, PHY II, and PHY III each have operating ranges of 11.67 and 266.6 kbps, 1.25 and 96 Mbps, and 12 and 96 Mbps, respectively. To address flicker reduction and DC balance difficulties, PHY I use convolutional and Reed-Solman (RS) codes[29] for outdoor usage, whereas PHY II offers run-length limited (RLL) codes for interior use.

C. Transmitter

LEDs have made solid-state lighting[30] a more recent technology. When it comes to reliability, power consumption, and luminous efficiency, LEDs have surpassed bright light sources. LEDs are 20 lm/W more energy efficient than incandescent bulbs. For visible-light communication[31], lasers and light-emitting diodes are used as the transmission sources. The LED should be used when a single device must perform both lighting and communication functions. One of the more appealing options for a source of visible light communication is white light generated by light emitting diodes and wavelength converters. The white light that the LEDs might produce can take on an assortment of spectra. The tetrachromatic, dichromatic, and

trichromatic modes utilised to produce white light are depicted in Figure 5.
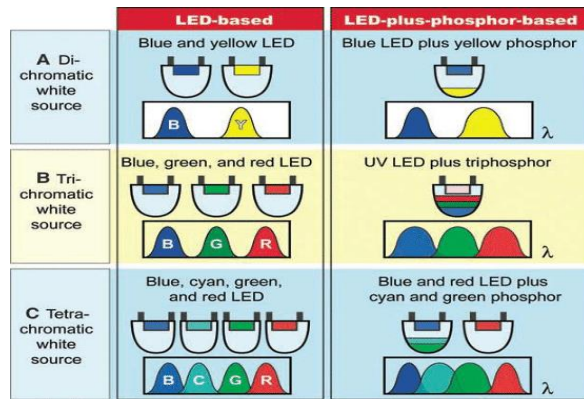
Fig. 5: White Light Sources based on LEDs

RGB (red, green, and blue) illumination is the most common method for creating white light from trichromatic LEDs. Utilizing an RGB LED for the production of white light is advantageous due to its large bandwidth and consequently high data rates. RGB LEDs' high-related complexity and challenging manipulation are disadvantages.

D. Receiver

An optical filter, an amplification circuit, and optical concentrators make up the standard VLC receiver[32]. The optical concentrator is a piece of equipment that is used to compensate for the attenuation caused by LEDs' beam divergence when they illuminate large areas. In the VLC receiver, a photodiode detects the light and converts it into photocurrent. The parameter specifications for VLC and infrared communication will change because of the different wavelengths. PIN diodes, silicon photodiodes[33], and avalanche photodiodes are utilised in VLC. A more prominent

increase than a PIN photodiode is accessible with the torrential slide photodiode, yet at a massive expense. Since other sources of interference, such as sunlight and other lights, might interfere with the VLC, it is important to minimise the DC noise components in the received signal with optical filters. A photodiode in a VLC receiver normally receives VLC signals. A photodiode is preferable for a stationary receiver. However, in the case of mobility, an image sensor is utilised in place of a photodiode due to the increased field of view. Imaging sensors operate slowly and consume a lot of energy. As a result, when looking at photodiodes and image sensors, price, speed, and complexity should all be taken into consideration.

LEDs for VLC

The popularity of VLC has increased as a result of many factors. Among all of these, the use of LEDs to manipulate light waves stands out the most. LED bulbs have taken over as the primary visible light communication medium because of features like affordability. Additionally, the usage of LED light bulbs increased, incorporating a variety of settings that would make it useful to use light as a means of communication. As a result, this type of light source is commonly used in visible light communication systems. The LED is a node that produces light using

electroluminescence and semiconductors. More precisely, materials that can partially conduct electricity are used to make LEDs. Additionally, a phenomenon known as electroluminescence occurs when an electric current flow through a substance. Between two semiconductors [37], there are electron holes, which occur when an atom is deficient in electrons. As a result, as electrons go through it, they cover the electron holes and, as a result, release photons. A particular hue is represented by the emission of light in the visible range, ranging from low to high frequencies. For example, red LEDs are typically made of GaAsP and have wavelengths in the range of 630 nm to 660 nm. The exponential expansion of LED lights nowadays has a variety of causes. This kind of light source has a number of well-known benefits, including low cost, durability, and energy efficiency. Residential LEDs can last 25 times longer and consume at least 75% less energy than an incandescent light bulb. Additionally, an LED bulb's light may be directed in only one direction. These benefits have led to the widespread usage of LEDs in a variety of products, including cell phones, cars, video displays, signage, and applications like visible light communication. The industry has benefited much from using this technology, and LED lights are clearly the way of the future for household illumination. The white-light LED is now the most widely used type of commercial LED light bulb. White LEDs are manufactured using two conventional processes, unlike other hues that are tied directly to semiconductor materials. The first technique creates white light using phosphor. A blue LED bulb coated with phosphor is used for this. A portion of the photons produced by the blue LED are transformed into yellow as they pass through the phosphor layer. White light is created by the combination of yellow and blue photons. The second way involves mixing the blue, red, and green outputs from RGB LEDs to create white light, which is accomplished using this technique [38]. The colour that is emitting from this kind of white LED may be changed. These two approaches differ in a number of ways, and each has its own set of benefits and drawbacks. Because it is less expensive and more effective than the RGB approach, the phosphor method is often more prevalent among LED light bulbs. However, the RGB LED tends to be more practical for Since visible light communication is controlled via light, the IEEE standard for visible light communication specifies a modulation technique that relies solely on the intensity of RGB LEDs [39]. A light-emitting diode is a semiconductor that was designed to serve as an optical source, as is common knowledge. LEDs may also convert light from an optical source into an electric one,

though. In other words, a little-known fact that is becoming more and more common among VLC researchers is that an LED may also be used as a sensor. Because a little current that is proportionate to the light's intensity is created when the light is provided to the light-emitting diode, these light-emitting diodes can function as receivers. The term "photocurrent" refers to this phenomenon. An LED may be thought of as a selective photodiode since it detects a restricted wavelength range, unlike a photodiode, which has a wide spectrum response and can detect ultraviolet and infrared light. It is generally believed that an LED can detect light frequencies that are equal to or greater than those it emits. To put it another way: Blue LEDs can only detect blue light, while red LEDs can detect red, green, and blue photons. The spectral response often changes slightly toward the colour blue in the visible spectrum (higher frequencies). In contrast to the frequency of the emission, the spectral response of, say, green has a fairly narrow band. So, a green LED might not be able to detect green light. LEDs come in a variety of varieties, each with unique characteristics that make them suited for VLC applications. The area of the visible spectrum in which light is emitted depends on the material used to make the chip. The photon will consequently radiate at a certain wavelength, giving rise to a color. Compounds used in LEDs include gallium arsenide (GaAs) and gallium phosphate (GaP)[40]. The main categories of LEDs and their specifics are described below.

A. pc-LEDs (phosphor-converted LEDs)

They have a minimal level of complexity and are inexpensive. It has a blue LED chip with a phosphor coating covering it that emits some of the blue energy as white light while converting some of the remaining blue energy into green, yellow, and red. This type of LED's restricted bandwidth is a result of the delayed phosphor response [41].
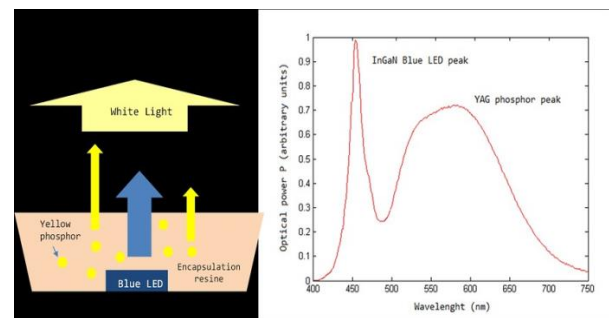
Fig. 6: pc-LED [41]

B. Multi-chip LEDs

These LEDs have a structure made up of three or more chips, each of which emits a different hue of light [42]. The various chips generally emit the RGB colours to produce white light. The flexibility to adjust the intensity of each chip to change the colour that is emitted is this sort of LED's primary benefit. It is significant to note that colour-shift keying, a sort of modulation, was developed specifically for this kind of LED.
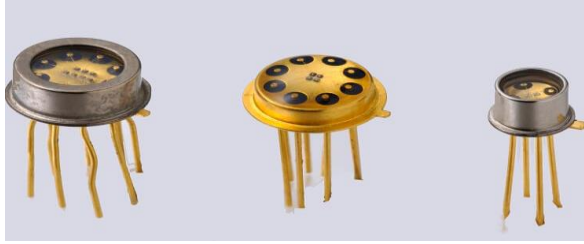
Fig. 7: Multi-chip LEDs[42]

C. Organic LEDs (OLEDs)

These LEDs are made of two conductors and a number of thin organic layers [43]. Light is produced when electric current is applied. They are frequently used on smartphone screens. The ability to create transparent and flexible gadgets is a major benefit of this kind of technology. This sort of LED is nevertheless less effective than other varieties in terms of frequency and endurance.
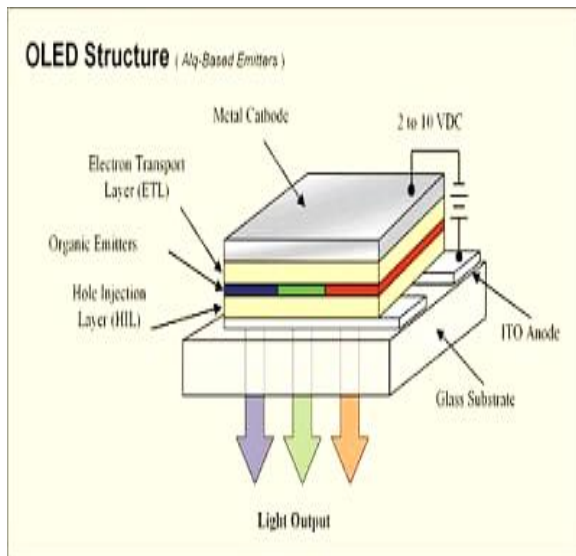
Fig. 8: OLED structure [43]

D. µ-LEDs

The µ-LEDs are typically connected in displays, allowing for high-density parallel communication that can reach extremely high speeds [44].
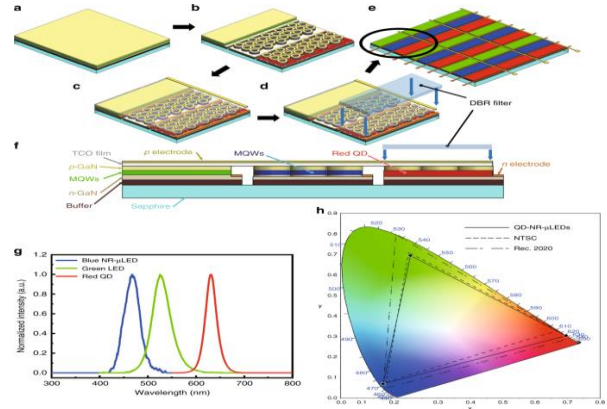
Fig.9 µ-LEDs [44]

Benefits of VLC

VLC is an intriguing technology to supplement radio-based systems because of its various benefits [50]. These benefits result from the use of LEDs as transmitting devices as well as the utility of visible light as a high frequency carrier signal, on the one hand:

- It supports a wide bandwidth that goes beyond the bandwidth limitation of RF transmission.

- When the sender and destination are both in the same room's LOS, VLC communication performs best. A person in the adjacent room cannot eavesdrop on data being transmitted through VLC. It provides encrypted communication, in contrast to RF transmission.

- VLC sources are used for both communication and lighting due to their low power consumption. As a result, Visible Light Communication is a power-efficient technology.

- Light-based communication is used in VLC. As a result, Electromagnetic

radiation from Radio Frequency systems has no effect on it.

- It is simple to install and carries no health hazards for people.

Limitations of VLC

The limitations of VLC communication are as follows:

- Other light sources can interfere with Visible Light Communication

- Small coverage ranges are supported using VLC communication.

- The integration of Visible Light Communication with a wireless setup is difficult.

- The VLC system also has other issues, such as air absorption, shading, beams cattering, etc.

- Source and receiver must be direct to each other. As a result, non-LOS communication is difficult.

Additionally, the outside FSO channel adds significant attenuation, which inevitably reduces the power gathered by the sensor and, as a result, the transmission range of the Visible Light Communication system.

Applications of VLC

VLC has been seen as an appealing alternative for a wide variety of applications, whether indoor or outdoor, given all the benefits and limitations mentioned above [51]. Indoor positioning is a pioneering application of VLC from an industry standpoint [52]. The position may be determined with a centimetre of accuracy by employing the number of sources used for lighting the various rooms and hallways of a building as Visible Light Communication transmitters. This makes VLC an intriguing addition to Global Navigation Satellite System, which is typically unable to provide positioning in buildings. Additionally, VLC can guarantee the coverage of areas that would otherwise be impossible to cover due to restrictions on RF systems, such as those found in hospitals or mines, or because they are inoperable, such as those found under water. Beyond these specialized industries, the VLC community's main issue right now is creating a VLC-based home network solution. Few applications of VLC are discussed below:

A. Vehicle-to- Vehicle Communication

VLC can be utilized for vehicle communication for proper forward collision warning, pre-collision detection, computer-controlled brake lights, lane change warning, sign moving partner avoidance, right hand traffic sign violation warning, cornering speed warning, etc [53].
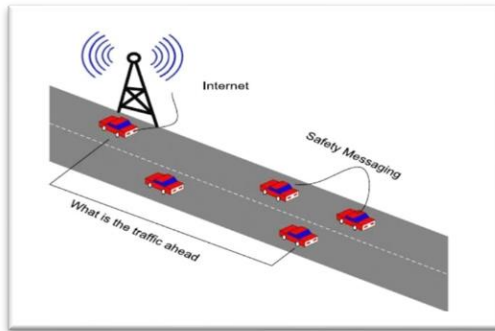
Fig.10: VLC for vehicular networks

B. Li-Fi

In 2011, Harald Haas first coined the term "light fidelity" (Li-Fi). Similar to Wireless Fidelity, Li-Fi is a two-way, fully integrated, high-speed VLC that communicates using radio waves [54]. Other radio frequency transmissions, such as those from pilot navigation systems, can interfere with wireless fidelity signals. Li-Fi could thus be a preferable choice in areas that are susceptible to electromagnetic wave radiation (such as aeroplanes). Internet of Things support is also provided via Li-Fi. Li-Fi is 250 times faster than ultrafast broadband, with rates up to 10 GB/s.

C. Underwater Communication

Radio Frequency waves don't travel pleasantly in ocean water because of its high conductivity. In this manner, verbal trade has got to be utilized in submerged communication systems[55]. The Unrestricted Remotely Operated Vehicle is another use of the VLC in submerged communication (UTROV).
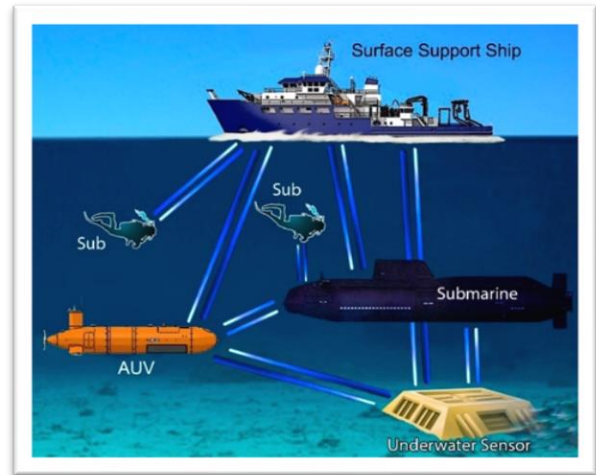
Fig. 11: Underwater communication

D. Hospital-s

VLC is a cutting-edge invention that uses visible light (400 nm–780 nm) as a transmission channel for data. Since transmitted light is constrained to the scope zone of the system, visible light communication poses less risk to human safety and is more secure against hackers. Additionally, it offers better data rates than traditional radio frequency-based developments in distant communication like Wi-Fi, Bluetooth, and WiMAX. As a result, the Visible Light Communication invention would be an excellent contender for clinical data transfer in healthcare. Furthermore, clinics are inside, where VLC would be ideal for proficient remote information administrations with no RF radiation.

Among the vital biomedical signal's ECG, EEG blood pressure are important.

- *HOSPI Robot*

In, a robot known as HOSPI was proposed to be used for transportation in hospitals

[56]. VLC does not interact with other equipment' radio waves; thus, it is likely to be converted to electromagnetic wave sensitive locations in hospitals (like MRI scanners). The robot's navigational sensor and a VLC connected to a building have been used to improve HOSPI's control machine.
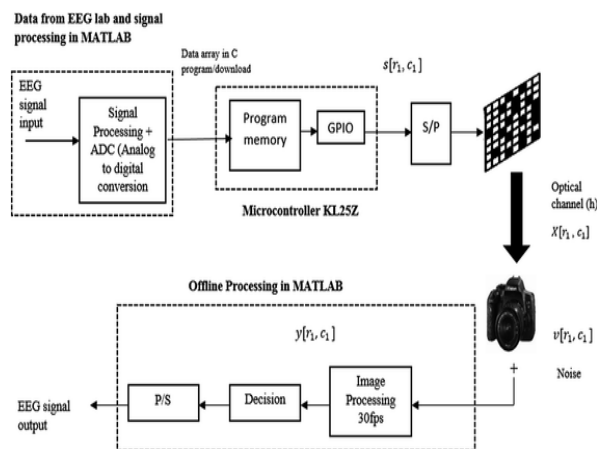
Fig. 12: Wireless EEG Signal Transmission Using Visible Light Optical Camera Communication

Conclusion and Discussion

This review paper presents the concept of visible light communication and its brief history. The basic architecture of visible light communication is described which includes transmitter as well as receiver section along with the importance of LEDs in VLC. Benefits, limitations and applications of VLC is also explained in this paper. This technology is harmless as compared RF and IR communication, so the future of communication is based on this technology only. Various advancements in this technology are being done by researchers so that results obtained could be better its limitations could be overcome in the future.

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Application of Expert System to Enhance Learning Program

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Abstract

Many expert system applications in the field of education are integrated into the Intelligent Tutoring System (ITS) using adaptive hypertext and hypermedia techniques. Most of the time, the system will help students learn by applying adaption strategies to tailor it to the surroundings, the students' prior knowledge, and their learning capacity. Expert systems in education have steadily advanced in terms of technology, moving from microcomputers to web-based and agent-based systems. Along with the technologies utilized, expert systems significantly altered how procedures and strategies were used. Starting with a straightforward rule-based system, expert system techniques have now embraced fuzzy logic and a hybrid approach. The use of expert systems in teaching basic data structures will be covered in this paper. Applications in engineering, technology, and earth science will follow.

Keywords: *Expert System, Artificial Intelligence, Knowledge Engineering, Decision Support System.*

I. Introduction

Expert systems are computer programmes derived from the field of artificial intelligence research in computer science. (AI). AI is concerned with the ideas and procedures for symbolic inference, or reasoning, by a computer, as well as how the information the computer will use to draw those conclusions will be represented internally. In contrast to knowledge gleaned from textbooks or non-experts, expert systems are programmes whose knowledge base contains the knowledge used by human experts. Knowledge engineering is the process of creating an expert system, and knowledge engineers are those who carry out this work. The computer must have all the knowledge required to solve an issue, according to the knowledge engineer. The knowledge engineer must select one or more representations—a knowledge representation—in order to store the necessary knowledge as symbol patterns in the computer's memory. He must also ensure that the machine can utilise the knowledge efficiently by selecting from a number of reasoning processes.

II. What Reasons do People Use?

Here, we may name a number of particular human thinking techniques that can be easily transferred to the world of expert systems and artificially intelligent computers:

1. **Categorization -** When we decide that a fact is significant enough to recall, we classify it using one or more categories or criteria. These categories are kept in our minds as a loose hierarchy where lower-level bits of data can "inherit" qualities from a higher-level category. The relationships between the categories can be used to derive rules through categorization.

2. **Particular Rules** - If a certain rule, or collection of rules, are known to exist and be true, we can utilise that knowledge to navigate a problem situation where the rules are involved. In order to achieve trustworthy conclusions, humans use rules by cascading them into their reasoning process.

3. **Heuristics** - Heuristics are general principles that can be used or stored for later use. We know that searches and judgements utilising well-formed heuristics can frequently reduce the time required to arrive at a solution, despite the lack of formality associated with a heuristic.

4. **Past Experience** - This strategy, which can be regarded of as a meta-categorization, involves humans attempting to compare a scenario to ones they have previously encountered. The necessary actions can be justified based on what was done in the past if enough traits or event sequences can be matched. This kind of reasoning is based on certain pretty broad assumptions, such as the idea that history will repeat itself and that the current condition is largely comparable to the past circumstances.

5. **Expectations** - After repeatedly encountering a similar circumstance or phenomena, we start to anticipate that it will manifest itself in a specific way or under a specific set of circumstances. If things happen as we anticipate, we can infer that everything is in order or that nothing is wrong. However, if something happened to alter the anticipated set of circumstances, we can infer that the event did not turn out as we had anticipated. Simply said, reasoning based on expectations is a type of pattern recognition.

III. What is Computer Reasoning?

The techniques utilised by AI system designers to build a computer-based reasoning system are based on the same principles and processes that people use.

1. Reasoning by rules -

The rule composition is represented by the following IF-THEN statement:

IF statement, THEN operator

A rule is said to have fired or instantiated if a condition is determined to be logically true, at which point the operator turns into an action that is permitted to be executed. The operator is disregarded and the next rule is accessed if the condition is logically false.

This process continues until the knowledge base's rules are exhausted or the problem space reaches the desired condition. Several different types of knowledge can be codified using a formal set of rules:

(a) Inferential knowledge: This sort of knowledge involves drawing conclusions from premises (facts) that have already been established.

For instance, IF... THEN conclusion

(b) Procedural Knowledge: In this case, the operator is an action to be taken when the stated circumstance is logically true, and the conditions take the form of a stated scenario. Example: IF circumstances then do.

(c) Declarative Knowledge: If it is determined that the antecedent is logically true, and then the consequent must also be true. For example, IF antecedent THEN subsequent

2. Framing

A semantic net, formalism for encoding knowledge, is logically extended by a frame. Concepts or things are represented as nodes in a semantic network, and the arcs that connect those nodes show their relationships. It is possible to compare the discrete structures known as slots to database fields. Each slot has one or more aspects inside of it. These attributes describe any information or particular methods connected to the slot. The daemon facet type is yet another crucial one. When a slot is created, changed, or merely accessed, a daemon, a brief function, may be launched. Two different kinds of items can be represented using the frame concept: instances and classes. Slot values that can be sent down the frame hierarchy are contained in the objects that frames represent. Subclass links (IS-A) and membership links are two constructions used to organise the frame hierarchy (INSTANCE-OF). The subclass links function as a taxonomy mechanism, and the membership links as a categorization mechanism.

3. Case-Based Reasoning

The goal is to apply solutions to issues that are comparable to the one at hand. Case-based reasoning incorporates two main steps: (a) locating examples in storage that have resolved issues comparable to the

current issue, and (b) tailoring the prior solution(s) to the circumstances of the current issue.

Using a set of criteria that gauges the degree of resemblance between the chosen case and the current issue, each potential instance is contrasted with it. Following this procedure, the enclosed solutions are examined and modified to fit the new circumstance. A number of adjustments are made to the existing solutions' parameters during the adaptation process in order to make them match the new problem environment. The new solution is then tested, and if it works, it is added to the case collection. But if the test is unsuccessful, then the adaption procedure needs to be changed, or a fresh collection of cases needs to be retrieved.

4. Pattern Recognition

Visual and aural patterns are both included in pattern recognition. Similar to humans, a computer's capacity to understand its environment and surroundings determines how intelligently it will behave when using a pattern recognition system. The computer's perceptive abilities are constrained if it can only be operated using keystrokes, mouse, and trackball movements. However, completely new opportunities for imitating intelligent behaviour open up if extra hardware and software enable the computer to hear noises and recognise patterns or objects. A distinctive human voice, a fingerprint, or even a person's image captured on camera or in a video can all be recognised by sophisticated pattern recognition systems.

5. Rete Algorithm

The Rete algorithm takes use of the fact that the working memory's contents don't change significantly following the application of each rule, but rather show only slight modifications from the previous pass. The Rete algorithm specifically determines which rules from the previous cycle did not fire, which rules from the previous cycle will not fire in the following cycle, and which rules from the prior cycle that did not fire will probably fire in the following. By employing this technique, the algorithm can avoid starting each rule-cycling cycle of pattern recognition from scratch. It uses that internal representation as the foundation for repeating the cycle on each succeeding pass until the pattern is matched by keeping an internal representation of the state of each rule in working memory.

IV. Expert Systems: Concepts and Structure

An ES's fundamental structure is as follows:
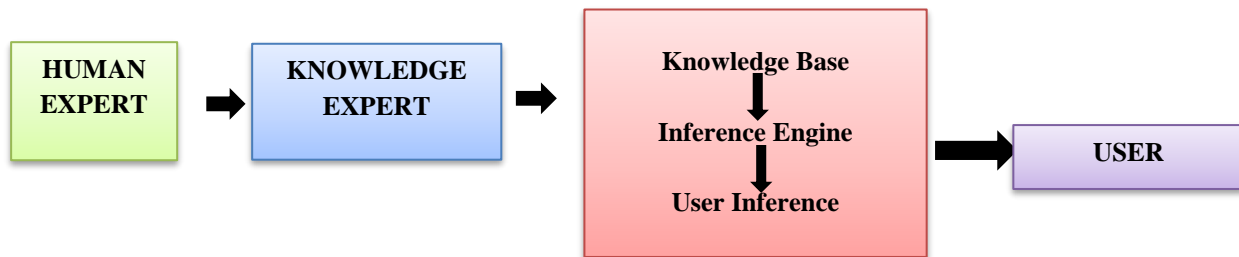
Fig. 1. Expert System Architecture

The following are the components that make up an expert system:

1. The User Interface - The following problems could be resolved with improved ES interface design:

(a) Users ought to be partners on an equal footing or in charge of the UI design.

(b) ES dialogues ought to be adaptable enough to permit user-provided information and easy changes of initiative.

(c) The explanation facilities must be very good and comprehensive.

(d) A natural language interface for an expert system might not be acceptable.

(f) Whenever possible, ES dialogues should prioritise images over words.

2. Knowledge Base - During the design phase, a sample of domain experts were used to compile the domain-specific knowledge that is contained in an ES's knowledge base.

This knowledge includes all sorts of information that the domain expert uses to solve problems connected to that domain, such as descriptions and relationships of objects, approaches to problem-solving, restrictions, heuristics, and uncertainties. The correctness and comprehensiveness of an ES's knowledge base are crucial to its success.

3. The Inference Engine

Here, the ES's processing takes place, and the knowledge is put to use to generate answers. Deductions or inferences are carried out by the inference engine (IE) using facts or rules. A control cycle is the name given to the fundamental IE procedure. An inference control cycle is categorised into three steps:

(a) Matching rules to facts

(b) Before choosing the rule to apply.

(c) Put the rule into action by introducing the omitted fact.

Chaining and resolution are the two fundamental methods that an ES employs to apply the modus ponens and modus tollens rules of deductive reasoning in order to reach the proper conclusions.

4. Chaining - This approach arranges the set of rules in a recursive fashion, using the conclusion of one rule as the basis for the next. In an ES, there are two possible

chaining kinds dependent on the search direction: forward and backward. Forward chaining involves starting with the workspace's initial content and working through a succession of inference control cycles to get a resolution.

Because the process entails moving from data to goals, this line of thinking is also known as being data driven. By using a backward chaining technique, the IE can verify a goal by working backward from the required data in the workspace. Backward chaining can be compared to a type of hypothesis testing where the conclusion is put forth and then the data are gathered to see if the hypothesis is supported.

5. The Workspace at Blackboard

When addressing a problem, calculations are done on the blackboard and intermediate hypotheses and conclusions are recorded in an electronic scratchpad or notebook. The system finishes its work, cleans the blackboard space, and makes it available for the subsequent session of problem-solving.

V. Constructing and Designing of an Expert System

a. Information (Knowledge)Engineering

Expert system design and construction are the arts of knowledge engineering, and knowledge engineers are its practitioners. A knowledge engineer learns what the experts know and how they use their knowledge by interviewing and observing a human expert or a group of experts. The engineer then converts the knowledge into a language understandable by computers and creates an inference engine, or reasoning structure, that makes the best use of the knowledge. The inference engine, tools for representing information, and explanations are then programmed, and domain knowledge is gradually incorporated into the programme.

b. Skeletons, instruments, and shells

Only a few AI techniques are known to be helpful in expert systems, compared to the huge variety of domain knowledge. That is to say, there are currently just a few ways to express knowledge, draw conclusions, or come up with explanations. Thus, systems containing these practical methods can be created without a thorough understanding of the relevant subject. These systems are also referred to as shells, skeletal systems, or just AI tools.

Development of an Expert System

Prior to formal design, a number of actions specific to expert system development must be carried out:

Finding the right experts-The time commitment required to complete the ES development effort must be made apparent to the expert. He or she must be prepared to dedicate a large amount of time and

effort in the project's early phases and to work on it from beginning to conclusion. In terms of productivity, performance, and quality, it is crucial that the expert thoroughly comprehends the proposed system's worth to the company.

The development group - Early in the process, the team is frequently split up into smaller groups that concentrate on particular system components. The creation of the rule set will be the responsibility of some members of the development team, while the user interface will be the responsibility of others. Knowledge engineers will play a special role in the ES design process. (KEs).

The Application Development Tool - Because prototyping, reviewing, and refining the ES occur iteratively during development, choosing the development tool is a crucial predesign choice. The tool must have the right capability for the issue domain being modelled and must enhance the abilities of the development team. The perfect development tool increases team efficiency while being adaptable and adaptive.

Hardware Selection - The chosen ES hardware platform should preferably support both the chosen ES development tool and the final ES product as well as the latter's expansion. This ensures that the prototypes created throughout the development process will function exactly the same way in the finished product and that a change in the hardware platform after development won't result in any modifications to the product's functionality or performance.

VI. An Expert System's Development Process

If success is desired, expert system design and development must be carefully programmed. Following are some of the key actions to take:

1. Outline Statement The concepts, boundaries, linkages, and control mechanisms that will be incorporated into the system are worked out by the expert and the knowledge engineer. Both user expectations and development strategies and limitations are investigated. An outline specification should contain the findings of this stage of evaluation of the system's prospective performance and advantages. This standard is valid for developing the initial prototype.

2. Knowledge Acquisition - The expert and the knowledge engineer engage often during this stage. According to the restrictions placed, the expert is precise in articulating his knowledge and tries to draw attention to the crucial elements that distinguish the material as knowledge. On the other side, the knowledge engineer

strives to understand the knowledge's core, its boundaries, and its intricacies.

3. Knowledge Representation - A successful system will satisfy user needs only if the expert's knowledge is communicated in a way that is clear to users and in a manner comparable to how a human expert typically approaches a problem.

The distinguishing factor between a good and a terrible knowledge engineer is the capacity to adapt the acquired knowledge to fit both the expert's and the potential users' frames of reference.

4. Development of prototypes - Building a prototype system first has the advantage of allowing the expert and knowledge engineer to determine whether the system is practical. Additionally, users get the chance to test the system out and determine whether it will likely fit their needs. Additionally, it gives the expert and knowledge engineer the chance to assess the value and functionality of the selected system.

5. Testing - Testing entails analysing the utility and performance of the prototype programme and making any necessary changes. Problems like missing concepts and relations in the representational scheme, knowledge represented at the incorrect level of detail, or cumbersome control mechanisms may be discovered as

a result of this examination. These issues could cause the developers to go back and forth between the different phases of development, reformulating the concepts, improving the inference guidelines, and re-testing the control flow.

6. Main Knowledge Acquisition - The first step in creating the real system is to determine how much knowledge is necessary to satisfy user needs. It can be decided to include multiple specialists in the acquisition process at this point. The specialists determine if the system should or can be connected with other systems already in place inside the company.

7. Specification with Detailed Information - During this stage, the expert and the knowledge produce a detailed system specification. The extended system's goals, the resources needed, the anticipated time needed for implementation, the anticipated expenses, system testing, and implementation planning are all covered in the detailed specification.

8. System Development - It is crucial that users understand exactly how the system is developing, as well as any issues that may have arisen and any indications of new constraints or opportunities. The expert and the knowledge engineer both benefit greatly from their assistance during this period.

This phase necessitates close supervision because it demands increased financial and time commitments.

9. Implementation - The user should carry out implementation operations, with professional support as needed. The "specification with detailed information" stage is when the implementation plan should have been written down.

10. Maintenance - To keep the knowledge it holds current and in line with the shifting environment in which organisations function, it necessitates ongoing modification and update. The obligation to carry out maintenance operations should be assigned in advance and should be formally documented.

VII. Expert Systems in Education

Many expert system applications in the field of education are integrated into the Intelligent Tutoring System (ITS) using adaptive hypertext and hypermedia techniques. Most of the time, the system will help students learn by applying adaption strategies to tailor it to the surroundings, the students' prior knowledge, and their learning capacity. Expert systems in education have steadily advanced in terms of technology, moving from microcomputers to web-based and agent-based systems. The use of web-based expert systems can offer a great substitute for private tuition at any time

and from any location where Internet access is available. Additionally, an agent-based expert system would undoubtedly assist customers by finding content on the web based on their profiles.

Expert systems are advantageous as teaching tools because they are outfitted with special capabilities that enable users to ask questions in the how, why, and what format? It will undoubtedly assist pupils much when utilised in a classroom setting because it prepares the response without consulting the teacher. Additionally, an expert system is able to support a response with arguments. This feature is particularly fantastic since it can increase pupils' understanding and level of confidence in their response.

Another element of expert systems that makes them harder for students is their capacity to adaptively modify the training for each individual student based on his or her unique rate of learning. It must to be able to assess students' development and choose the subsequent training step.

Expert System Application in Education

Expert systems are software packages or computer program packages intended to provide advice and aids in solving problems in specific areas of specialization such as science, engineering, mathematics, medicine, education and so on. The expert system is a subset of Artificial Intelligence

that seeks to adopt human knowledge into computers, combining knowledge and tracing data to solve problems that normally require human skills [1]. In the field of education, the application of expert systems not only help students in the learning process but also help teachers and also policy makers in supporting the achievement of educational goals implemented.

This paper demonstrates that, depending on the researcher's aptitude and interest, the application of expert systems in education differs significantly. Expert systems can be applied in education generally for the following domains: input, process, output, and outcome. Expert systems (ES) are used in the following areas of education as part of literature reviews: student characteristics [2], student performance analysis [3], evaluation of e-learning [4], technical education requirements [5], character- [6], digital libraries [7], remedial systems [8], learning enhancements [9], lesson plans [10], basic evaluation of student competence [11], academic advice [12], and evaluation of academic programmes [13], the effectiveness of teaching and learning [14], projections of student performance [15], and criterion master level [16]. In addition to expert system literature review, educational and career advisory services for students [17] as well as professional skills counselling and guiding services [18] are also used in vocational education.

Conclusion

From simple expert systems to large multipurpose systems, the expert system in education has through enormous phases. Researchers recently employed a novel technique that combines hybrid expert systems with fuzzy expert systems. Techniques and approaches from adaptive hypertext and hypermedia have a significant influence on the implementation of expert systems in these disciplines. Personalization capabilities, user modeling, and environmental adaptability will be extremely difficult to overcome. It can serve as a guide to help an expert system in a variety of tasks. ESs has been employed in conjunction with artificial neural networks, fuzzy logic, genetic algorithms, and other AI techniques in recent years.

Expert systems are computer algorithms that replicate the judgement skills of a human expert in a particular field. Here is how they may be used to improve educational programmes:

Personalised Learning Paths: Expert systems are able to evaluate a learner's present knowledge and abilities before designing a personalised learning route. As the student advances, these pathways

might change, offering specialised resources and information to meet their individual requirements and rate of learning [19].

Adaptive Assessment: Expert systems are capable of delivering adaptive assessments to measure a learner's abilities. Depending on the outcomes, the system may recommend further reading material or exercises to improve weak areas [20].

Content Recommendation: By analysing a learner's preferences and performance, these systems may suggest pertinent educational content, such as articles, videos, or courses, ensuring that students are engaged with resources that match their interests and learning preferences [21].

Responding to inquiries and Giving response – Expert systems are able to respond to inquiries from students in real-time, giving prompt response and justifications. This can be especially useful in courses like programming or mathematics where immediate feedback is crucial [22].

Problem-Solving and Tutoring: Some expert systems may serve as virtual tutors, taking students through problem-solving exercises and providing step-by-step answers or ideas to assist them get over obstacles [23].

Skill Development: Expert systems are able to make plans for learners' skill development that include milestones and goals. To guarantee continual improvement, the system may modify these programmes as learners advance [24].

Language Learning: To make learning a new language more dynamic and immersive, expert systems can give grammar and pronunciation checks, language drills, and conversation practise.

Analytics and Progress Tracking: Professional systems can monitor and evaluate student progress, assisting both students and teachers in identifying problem areas and modifying their approaches [25].

Expert systems can be used by instructors to help with curriculum preparation and decision support. Based on data and best practises, these systems can provide instructional methodologies, assessment techniques, and learning resources [26].

Accessibility and Inclusivity: By supporting students with impairments, expert systems may assist make learning programmes more accessible. For learners who are blind or visually handicapped, they could translate text into voice or offer other material forms.

Continuous Improvement: Expert systems can gather information on interactions and

results with learners to enhance the learning plan over time. Educators may increase the efficacy of the programme by making data-driven decisions by assessing this data.

Expert system integration into learning programmes involves rigorous design, development, and integration. It's crucial to make sure that the technology supports the educational objectives and that students and teachers are properly trained to use these tools. When gathering and assessing student data, it is also important to take privacy and data security concerns into account.

These techniques enable the designed system to take into consideration their advantages, making designed systems more potent tools for facilitating a variety of tasks that call for immediate, precise, and trustworthy outputs.

The use of expert systems in education shows that these systems are particularly beneficial in resolving issues connected to input domain, process, output, and outcome in education. Since expert systems are a multi-science study area, it is advisable to combine educational techniques with other fields for further growth. It is anticipated that it will provide additional opportunity for scientists to create better expert systems to address future issues and educational obstacles.

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NEP 2020: A Catalyst for Internationalization of the Indian Higher Education System

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Abstract

India has a cherished custom of welcoming and embracing foreign students with open arms, and this tradition of India gives birth to the concept of "Internationalization". With a long history of enrolling students from other developing nations in Asia and Africa, India's higher education system provides these "source countries" with a way to strengthen their human capital bases, and the purpose is to promote international relations. The demand for international education is increasing constantly. To improve the internationalization of the postsecondary level, several initiatives and policies are implemented. Through a descriptive and critical synthesis of published literature and the new education policy, the article explores the current topic at hand. In this piece of literature, the significance of an evolving situation tied to higher education's internationalization is discussed. It also covers various issues that are pertinent in higher education in relation to internationalization and discusses some recommendations as envisaged in NEP-2020 and the University Grants Commission (2021) to encourage the Indian higher education system to go global.

Keywords: *Internationalization, Higher Education, UGC, and NEP 2020.*

Introduction

The radical shift in collegiate education is Internationalization. The idea of internationalizing the education emerged in order to create a global knowledge society. It makes Indian education system more accessible to students from other countries. However, the concept of internationalization is not new. It is as old as education itself. It has come from a long journey from studying at home to "Internalization at home". It has its roots in ancient civilization. It was there in ancient times when students from abroad came to India for studying at universities like Nalanda, Takshashila, and Vikramashila. The "Viswa Bharati" of Rabindranath Tagore also is a reflection of internationalization in modern times. Some people also claim that internationalization is the result of globalization. One of them is Dr. Hans de Wit. According to him, "Internationalization as a concept and as a process started around the 1990s in response to the increase in globalization of societies at the end of the Cold War." So, it is originated from the concept of Globalization. It came into focus only after the 1990s when Globalization emerged.

Internationalisation in higher education is nothing more than a response to 'Globalisation'. Its purpose is to raise educational standards and align curricula to acquire the kinds of skills needed to boost productivity in a globally competitive economy. For graduate students also, to successfully navigate the increasingly interconnected world, this is equally significant. Globalisation and internationalisation are thus related but also differ in many aspects. Globalisation is mostly an unchangeable occurrence, whereas internationalization necessitates actions at the individual, institutional, and macro-economic levels. It is true that higher education is becoming more globalised, and as a result, academic and economic trends follow their footsteps. This global system of education has become more inclusive and advanced quickly since the emergence of globalization. The promotion of international education is one of the ways in which India's education policy will strengthen its soft power strategy. The internationalizing function of academia has also absorbed greater interconnectedness as the importance of global interdependence in economic, political, and social dynamics has been acknowledged. The expansion of the service sector of the economy and globalization-related policies supported the internationalisation of higher education. Governments from numerous nations, as well as institutions like the World Bank and UNESCO, gradually began to promote it. Education became a more significant and crucial topic as the world's need for it grew. Today, it has developed into a significant tool for both the international involvement of individuals from many nations and the progress of human education. In India, more international students are expected to enlist. By the year 2024, 500,000 foreign students are expected to enroll (Varghese; 2020). Many Indian higher education institutions (HEIs) are now dedicated to increasing their ability to recruit international students, academics, and financing as these opportunities are developing to increase their global outreach.

The Philosophy of Internationalisation at Higher Education Stage

The institution of higher learning has begun to be substantially transformed by internationalisation in both developing and developed countries. When used in its literal sense, the term "Internationalisation" refers to any cross-border relationship between countries or between specific institutions operating inside various national systems. According to Knight, J., "Internationalisation is a

process of introduction of international constituents in research, educational, and administrative to the function of higher education." Thus, a process of incorporating a worldwide viewpoint into education is consequently known as "Internationalisation". It is a path that emphasises the importance of the global environment while also focusing on a diverse and dynamic external environment.

Internationalization: Local to Global Mode of Education

To pursue higher education in the global context has now become an important need that will help us think globally and act locally as well as globally. There are streams that wave towards internationalization and these streams have two major components.

1. The first component is domestic in nature which refers to the international and intercultural specifications at home. Here, the students can continue their education while remaining in their nation of origin or without ever leaving it.

2. The second important component has to do with the cross-border mobility of the participants. This type of education, often known as cross-border education, has blossomed significantly, particularly at higher education levels. According to Knight, J, the Cross-

border mobility programme is defined as "The movement of individual education or training courses and programmes across national boundaries through face-to-face, distance learning, or a combination of these".

Steps to attract International Students to the Indian Higher Education System

1. *Scholarships:* Scholarships play a crucial role in making India an appealing destination for foreign students. Through the Indian Council for Cultural Relations (ICCR), India offers approximately 3,940 scholarships to international students each year to promote intercultural understanding, and it has also signed cooperation agreements with 54 other nations in the area of education (Varghese & Mathews; 2021).

2. *GIAN:* GIAN stands for Global Initiative for Academic Networks was introduced in 2015 in the higher education sector. It is an initiative of the Ministry of Human Resource Development. It fosters international cooperation among researchers, entrepreneurs, and students. It was effective in magnetizing more than 1,283 scholars from 56 countries to Indian higher education institutions

between 2015 and 2019 (Varghese & Mathews; 2021).

3. *Connect to India:* The Ministry of Education launched Connect to India programme. This encourages international students to study in India. A value-added scheme called "Connect to India" would give 200 US students the chance to travel to India each year and enroll in a 4–6-week study programme at one of 15 prestigious Indian colleges. This plan would provide summer school-style short-term courses to educate US students about the key developments occurring in multiple sectors.

4. *Study in India program:* In 2018, the Ministry of Education unveiled its flagship project, the Study in India (SII) scheme. The project was designed to make it easier and more appealing for foreign students to enroll in top Indian universities.

5. *C.V Raman Fellowship:* In order to promote scientific cooperation between India and Africa, the Indian government also grants the CV Raman International Fellowship for African Researchers each year. Under this, eminent Indian Research and Development (R & D) institutions will accept Egyptian scholars to perform scientific and technological research

there. This will pave the path for Egyptian academicians to carry out their research in India.

Recommendations of NEP-2020 for the Internationalization of Higher Education in India

India has historically and still is portrayed as a top-tier educational destination that offers education at a reasonable cost. In addition to the historic Nalanda and Takshila institutions, universities in India currently enroll more than 40,000 overseas students from 164 different nations. However, this number's rise has recently decreased compared to a decade earlier. In order to help India regain its standing as a "Viswa Guru," the National Education Policy (NEP) 2020 calls for the development of an action plan. It motivates Indian higher education institutions to priorities meeting domestic concerns including access, equity, quality, affordability, and accountability while putting more focus on meeting international standards. In compliance with the National Education Policy (NEP) 2020 directives, a number of initiatives have been launched to strengthen the internationalisation of higher education, including:

1. Establishing FBCs (Foreign Branch Campuses) in India.

2. Offering high-quality education at a reasonable price.

3. The establishment of an office for international students at each HEI that would house the foreign students and serve to organise all activities designed for assisting and supporting newly recruited international learners.

4. Enabling partnerships between top-tier worldwide institutions for research and education.

5. Make a special effort to promote teacher and student liaisons between Indian institutions and foreign ones.

6. The mutually beneficial MOUs must be signed with foreign nations.

7. The most promising Indian institutions will be encouraged to open campuses worldwide.

8. It would consequently be made accessible to the top 100 universities of the world to operate in India.

9. As and when necessary suitable and in accordance with each HEI's standards, credits acquired at foreign universities can still be utilized as credit towards the award of a degree.

10. A legislative framework that facilitates the entry of such students will be set up, and such universities will be granted specific exceptions to the regulatory, governance, and content

standards that are applicable to other autonomous institutions of India.

UGC Guidelines on Internationalization of Higher Education

In accordance with NEP-2020's recommendations, the University Grants Commission (UGC) began taking action at the beginning of 2021 to foster the worldwide expansion of higher education in the nation. It included parameters that will provide Indian higher education institutions an opportunity to connect with people all around the world.

1. *Setting up Alumni Connect and Office for International Affairs:* In order to enhance their brand and encourage alumni interaction, higher education institutions in India must develop a culture that encourages alumni interaction. In order to accomplish this, colleges must establish an office for foreign affairs and an Alumni Connect Cell. This will make it easier to implement practical strategies like keeping an extensive database of graduates living abroad (both Indian and international).

2. *Credit recognition under twinning arrangements:* In a twinning arrangement, Indian students enroll in an Indian higher education institution but complete a portion of their programme at a partnered college in

another nation while adhering to local laws. However, only Indian higher education institutions are permitted to award degrees under twinning agreements. This twinning relationship will implement Credit Recognition in accordance with NEP-2020. Credit recognition and transfer refers to the recognition, quantification, and inclusion of 'Credit' awarded by a foreign higher education institution in the credit criteria for a programme being provided by an Indian higher education institution under a mutual twinning interaction.

3. *Global citizenship approach and engaging with foreign alumni:* Fostering a global ethos within the universities and turning students into "Global Citizens" is one of the foremost qualitative improvements in the Indian education system. A global citizen is someone who actively works to make our planet more equal, fair, and sustainable. They are aware of and understand the wider globe. Hence, a Global Citizenship Approach may be adopted by higher education institutions to foster global needs.

4. *ICT-based Intervention:* With its expansion, the Information and Communication Technology (ICT) has practically touched every facet of

college and university education, and it will be vital to the globalization of education. ICT has the power to completely transform the education industry. According to the University Grants Commission, ICT can aid in the creation of e-content, increase the accessibility of online courses, and solve concerns with access and equity through the use of MOOCs (Massive Open Online Courses).

5. *Academic and research collaboration with foreign universities:* Academics and research in HEIs across the globe must address a number of complex and connected global concerns, including those related to infectious diseases, energy security, and food security. Top most universities must work together to solve these problems. This will advance our Indian institutions more quickly and raise educational standards. HEIs are encouraged to engage in collaborative activities while adhering to the necessary standards and laws. The following might be some of the most significant initiatives: short-term Educand-exchange programmes, Educator-exchange programmes, semester abroad programmes under twinning agreements, planning academic and research workshops, seminars, and conferences in

collaboration with foreign universities, etc.

6. *Brand Development of Indian HEIs Abroad:* For Indian education institutions to be recognised internationally and to draw in international students, a methodical brand-building strategy is crucial. Scholarships play a crucial role in attracting international students to come to India. Collaboration with alumni from other countries or alumni of Indian descent who currently reside abroad will be beneficial for brand-building endeavors.

Conclusion

Higher education has grown significantly in India during the past few decades. Now, private operators also are allowed to endorse education in conjunction with the advancement of state-funded institutions. India has to produce high-quality colleges and universities (HEIs) in order to overcome the challenge. The government's support for educational institutions is minimal, thus private and international resources are welcomed. India's potential to become a global economic force will be dependent on its ability to attract a highly trained workforce, which will require raising the standards of its educational system to those of other nations. Hence, there is a growing need for foreign education in India. The Indian universities have started developing cutting-edge techniques for delivering higher education in order to address these needs. India can grow its internationalization push thanks to a number of benefits, and consequently, foreign universities are showing interest in opening campuses there.

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Beti Bachao Beti Padhao Scheme: An Attempt to Empower Beyond the Imagination

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Abstract

If we outlook the population of India, females are considered to be half of the total population. Women are the most important part of society. It has been said that a country in which women are given equal importance, the country is also prosperous. To be a prosperous nation, the government of India launched a nationwide programme to save and educate the girl child. The scheme has been initiative by the government of India on 22 January 2015, by the honourable Prime Minister of India, Narendra Damodar Das Modi, in Haryana (Panipat) The objective behind this scheme is to ensure protection and education for the girl child. Although the NDA government took initiative in October 2014 to address the issue of decreasing child sex ratio, it is one
in collaboration with the Ministry of Women and Child Development, Health and family welfare and Human resource development. The Purpose of the scheme is to empower girl children and work for the welfare of women's education.

Keywords: *Females, Women, Equal Importance, Government Initiative, Girl Child Education, Empowerment.*

Introduction

As the slogan of "Beti Bachao, Beti Padhao" comprises two terms under its objectives: Beti Bachao and Beti Padhao.

Beti Bachao: Under this scheme, an initiative is taken to provide security and bring awareness among females during pregnancy period and after birth to save girl child sex. Various health services are being provided by bringing different social programs for this purpose.

Beti Padhao: Under this objective, the focus is on the upliftment and promotion of female child education. Efforts are made to improve facilities at the primary education and higher secondary education levels so that girls' children have the opportunity of quality education. They are encouraged to pursue higher education, vocational skills and training. Through this scheme, efforts have been made to improve the social status of girl children, provide them equality, security and opportunities to encourage them. As we all know, in many developing nations, including our country India, there are still areas where the outdated myths of society prevail, suggesting that women are not suited for positions outside of the household work. This mindset confines

them within the four walls of their homes, limiting their roles to domestic responsibilities. This has led to significant gaps not only in the sex ratio but also in the literacy rate. In regions like Haryana, where the sex ratio is 775 females per 1000 males, an initiative was launched by the Government of India on 22nd January 2015. This initiative is a joint venture of three departments of Government of India: The Ministry of Women and Child Development, the Ministry of Health and Family Welfare and the Ministry of Education. The scheme cover states and union territories of India. The primary focus of the initiative is to take small steps towards the education of girl children, enabling them to emerge as a source of pride for the nation. "Beti Bachao, Beti Padhao" is more than just a slogan; its main motive is to take individual level steps for the up liftment of girls, recognizing that they are the hope of tomorrow and precious gifts of nature.

The scheme proposed by the Government comprises two main reasons:

1. Rising crime against women: In many Indian families, a large number of illiterate individuals still consider the birth of a girl child as a burden, as sons are seen as the sole property holders. This discriminatory attitude often leads to abortion cases and a decline in the female population. To combat such practices "Beti Bachao, Beti Padhao" scheme was initiated.

2. Low sex ratio: According to census data, there were 933 girls per 1000 boys in 2001. However, by the year 2011, this ratio had dropped to approximately 918 girls per thousand boys, indicating a decline in the female-to-male sex ratio. The "Beti Bachao, Beti Padhao" initiative aims to address and improve the ratio.

Review of Literature

Walia (2017) conducted a study to determine the awareness of the scheme and the availability of benefits among the targeted population of one hundred married females. The study took place in the area of Jalandhar City, Punjab, with participants selected randomly. The research revealed that rural females don't show interest in the functioning of the government despite the schemes formulated for them.

Rani & Patil (2018) conducted their study on "Brief information about the Beti Bachao, Beti Padhao scheme". The researchers collected data from primary and secondary sources, focusing on stopping gender bias in sex selection, abolishing it to ensure the persistence and safety of the girl child not as a burden but as a source of power for the family, society and country.

Biswas & Sinha (2020) conducted their study on "Implication of BBBP scheme on Girl child in India: A critical Analysis" The researchers used qualitative methods with primary and secondary data related to girls' mortality rate and compared them to those of boy children.

Women Empowerment

Still, a few parts of our country show a dark picture where men are considered as prime or all in all, whereas women are oppressed in both rural and urban areas for multiple reasons. There are still households in which women are kept within four walls, and they have a fear of raising their voice. Earlier, women were seen to perform household work, give birth to children, feed them, maintain the home, and provide care, and nothing more but the present and modernized situation has changed this perception of people towards women; now they are modern and independent. "Beti Bachao, Beti Padhao" is an initiative taken in terms of scheme to empower women by promoting literacy of girl children and also by emphasizing the improvement of the gender ratio. Addressing the goal of a self-reliant nation, Prime Minister Modi said that without empowering women, we can't attain "Atamnirbharta" (self-reliance). By focusing on and supporting the female power of the nation, we ensure women's empowerment. Beti Bachao, Beti Padhao" is one of the initiatives to make women empowered. This scheme aims to boost self- esteem, eliminate negativity toward females, create public leaders, support women, and cultivate them an open and honest attitude toward them. Thus, it is clear that if the female power of India becomes fully empowered, they can contribute to building the nation towards self-reliance.

Beti Bachao Beti Padhao: Caring for a Girl Child

The motive behind the logo is *"Beta Beti Ek Saman"* Let us celebrate the birth of girl child; we should be equally proud of our daughters. I urge to plant five trees when your daughter is born to celebrate the occasion. This was proposed by Pradhan-Mantri Narendra Modi to the citizens of his adopted village, Jayapur. Yet, society also thinks of women as inferior to men. The scheme aims to provide nationwide awareness and emphasizes a mindset change to raise awareness and community mobilization on the ground. The Government of India is trying to bring transformation shift the way our society looks at the girl child.

Objectives of the Study

- To study the "Beti Bachao, Beti Padhao" scheme.

- To focus on the challenges and new reforms made in the scheme.

Methodology of the Study

The research is descriptive in nature. The qualitative study is based on secondary data. For the collection of secondary data related to public policy, Beti Bachao Beti Padhao, various published articles from government and other non-governmental institutions have been consulted to derive results from the study. Researchers' articles have also consulted. Secondary data have been gathered from government websites, research papers, blogs, journals and newspapers.

Objectives of the Beti Bachao Beti Padhao Yojana as follows:

- Improve the child sex ratio.
- Secure and empower gender impartiality and women's representation.
- Prevent gender prejudice, sex selective abolition.
- Ensure viability and defence of the girl child.
- Inspire education and engagement of the girl child in community aspects.
- The scheme aims at address a range of issues, including reducing the child sex ratio (CSR) and enhancing women's engagement to empower them.

Requisite to be part of beneficiaries of the Scheme

- The family should have a girl child below the age of 10 years. In the.name of the girl child in the family, a Sukanya Samriddhi account (SSA) should be opened in an Indian bank.
- The recipient girl child must be a citizen of India; otherwise, she is not eligible for the Beti Bachao Beti Padhao scheme.
- To be a recipient of scheme, one must have a birth certificate provided by any government body or institution.
- Parents identity proof, such as ration card or Aadhaar card.
- Evidence of address, such as electricity bills, telephone bills, utility bills, water bills, as well as a driving license or passport, among others.
- Passport-size photograph.

Scheme mostly affects communities

- *People from poor and socially weaker areas:* This campaign affects families that are economically disadvantaged and where boys are given priority in education over girl children due to family pressure. Through this scheme, the government provides financial aids to the recipient girl child for their education and raises awareness about the social security of the girl child.

- *Peoplein Rural Areas:* The Beti Bachao Beti Padhao campaign works in collaboration with partner organizations in rural areas, gram panchayats and local communities to successfully implement this scheme. The government promote access to education facilities, the establishment of girl child education centres and work for the development of girls.

- *Social Workers and NGOs:* The Beti Bachao Beti Padhao scheme is initiated to promote and protect the rights of the girl child. These non-governmental organizations organize various programs to sensitize community members and exert pressure on government policies to achieve campaign goals.

Benefits of Beti Bachao, Beti Padhao Scheme

A lot of welfare is done in favor of the girl child under the Beti Bachao Beti Padhao scheme:

- An account opened under this scheme aims to provide financial security for a girl child.

- The account remains protected under the Act 1961 u/s 80C and is completely tax-free.

- There is a reasonable rate of interest on this account and money is withdrawn from the account only when the girl child attains the age of 18 years.

- Under this scheme, a saving scheme known as a Sukanya Samriddhi Account (SSA) has been announced.

- The scheme focuses on addressing issues related to girls and women.

- It aims to decrease the child sex ratio (CSR), in critical states and regions.

- There is an 8.1% interest rate per annum on the Sukanya Samriddhi Account under the Sukanya Samriddhi Yojana.

- The maximum deposit limit is Rs 1.5 lakh per annum.

- It provides better education opportunities and integration for women.

- The policy ensures the efficiency and implementation for the welfare of women.

Provocation of Beti Bachao Beti Padhao Scheme

- The Beti Bachao, Beti Padhao scheme will be difficult to implement and benefits each beneficiary until the scheme is properly executed.

- To change mindsets, there is a need for extensive awareness programs to be conducted at ground level. There are still places where females are considered secondary within homes and are confined to four walls.

- The scheme requires civic support to meet its objectives.

- Fund released for the scheme are used for promoting activities rather than distributing them to the districts for scheme execution.

- There is a significant gap between the allocated fund amount and the actual released fund amount.

Reforms in Beti Bachao Beti Padhao Scheme

- Providing quality education to empower the girl child.

- A memorandum was signed between the Ministry of Women and Child Development and the Ministry of Skill Development and Entrepreneurship and Minority Affairs to ensure adolescents complete their education and enhance skills in various professions.

- A national committee was set up, headed by the Secretary of Ministry of Women and Child Development, formed under Mission Shakti to review the Beti Bachao Beti Padhao scheme.

- Some other scheme that supports girl education, similar to the Beti Bachao Beti Padhao scheme, include Sukanya Samridhi Yojana, CBSEUDAAN scheme, National scheme of Initiative to Girls for Secondary Education, and more.

- Since this is a welfare program for girl child empowerment, itis completely tax-free; no amount will be deducted from the account after it is opened.

Recommendations

- To raise awareness, the government has appointed brand ambassadors to popularize the scheme. Just as Vidya Balan for the hygiene and cleanliness campaign and Akshay Kumar for the Menstrual Hygiene campaign, the seam bassadors help spread awareness nationwide, maximizing the scheme's benefit.

- Increasing the training of ASHA workers to raise awareness among illiterate mothers during pregnancy about the ill effects of sex-selective abortions.

- To include sex education courses in schools. This would help young teenagers properly understand sexual relationships, ensuring they do not get molested or exploited (Roshni, 2018).

- Steps should be taken at an individual level, like educating and sensitizing sons to respect women and girls as equal members of society. This would help change people's thinking and empower them to overcome the perception of women ad a burden ("Bojh") or "Paraya Dhan". Encouraging admissions and ensuring

the retention of girl children in school is also crucial.

- Don't consider the birth of a girl as a burden; see it as a matter of pride and promote gender equality, regarding girls as 'laxmi'. This is also stated in epics: *"Yatra Naripujyante Ramante Tatradevta".*

Conclusion

For the successful implementation of the scheme, strategic planning and effective communication are required to ensure that the beneficiaries understand the program's usefulness. towards the usefulness of this programme. Education of the girl child benefits two families for better lives. While the government has initiated numerous schemes for societal development, the Beti Bachao Beti Padhao scheme uniquely focuses on empowering girl children and providing them basic rights. However, even with various laws and policies in place to empower girl and encourage their education, the challenge remains due to policy paralysis. Beti Bachao Beti Padhao is the most effective initiative taken by the Government of India for empowering and improving the health, nutrition and economic status of households. The scheme has brought about a marked improvement in the living standards of girl children under the Beti Bachao Beti Padhao Campaign. Today,

girls represent themselves not only in household tasks but also on the global stage in various fields. There is no field where girls do not demonstrate their power of success.

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Developing 21st Century Skills through Formative Assessment: Enhancing Critical Competencies in Contemporary Educational Environments

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Abstract

The skills people need to succeed in the modern world, marked by quick technological breakthroughs and dynamic global terrain, have undergone a paradigm shift in the 21st century. The concept of 21st-century skills, which include critical thinking, communication, cooperation, creativity, digital literacy, and more, is explored in the paper along with their importance in preparing students for success in both academic endeavours and real-world issues. One of the efforts in building competence related to the desired 21st-century skills is the use of formative assessment in learning. Formative assessment as a pedagogical approach fosters personalized education, ongoing development, and pupil-centered instruction. It acts as a bridge that cultivates 21st-century abilities in students, enabling them to adapt, innovate, and succeed in a constantly changing world by promoting ongoing feedback, self-evaluation, and goal planning. The transformative potential of the formative assessment fosters critical 21st-century skills that ultimately empower learners to become adaptable, proactive, and socially responsible individuals in contemporary society. In modern educational contexts, this paper examines the crucial function of formative assessment in developing and improving essential 21st-century abilities.

Keywords: *21st Century Skills, Formative Assessment, Critical Competencies.*

Introduction

The world is undergoing significant changes because of technical breakthroughs, globalization, and the shifting nature of labor and society in the quickly changing 21st century. The abilities necessary for success have migrated beyond traditional academic knowledge as the demands of the modern world continue to change. The idea of "21st-century skills" has arisen to encompass the essential abilities students require to succeed in this complicated and interconnected age.

Critical thinking, creativity, communication, cooperation, digital literacy, problem-solving, and other talents fall under the category of 21st-century skills. These abilities are necessary not only for achieving academic success but also for overcoming obstacles in the real world and making a positive contribution to society. As a result, educational systems are rethinking how they approach instruction and evaluation to provide students with the skills they need to succeed in the twenty-first century. An effective teaching method

is known as the formative assessment has grown in prominence in recent years. Formative assessment places more emphasis on continual self-evaluation, focused changes, and constant feedback than standard summative assessment, which primarily evaluates a student's performance at the end of a learning session. Formative assessment equips teachers to tailor lessons, modify teaching methods, and develop student skills by giving them immediate insights into students' strengths and areas for improvement.

Incorporating formative evaluation with 21st-century skills improves academic performance while also supporting students' overall growth. Formative assessment gives students regular feedback on their critical thinking, problem-solving, and communication skills, which gives them a sense of ownership and agency over their learning. These are important qualities that are highly desired in the workforce of the twenty-first century and are fostered by this student-centered approach. The partnership of 21st-century skills has also described 21st-century skills as they need to thrive in today's global economy. The *Educational Testing Service* also defines 21st-century skills as the ability to collect, organize, and manage information relating to existing resources. NCREL identifies

21st-century skills as the skills of high productivity and effective communication. *(Kamehameha Schools Research & Evaluation Division, N.D.)*

Additionally, formative evaluation can use technology to develop interactive and interesting learning experiences. Digital tools let teachers gather and analyze data efficiently, enabling the creation of personalized learning pathways that consider students' specific strengths and areas for growth. Formative assessment provides a natural platform to improve students' proficiency in navigating and exploiting technology for learning and self-improvement. In the digital age, digital literacy is itself a 21st-century talent.
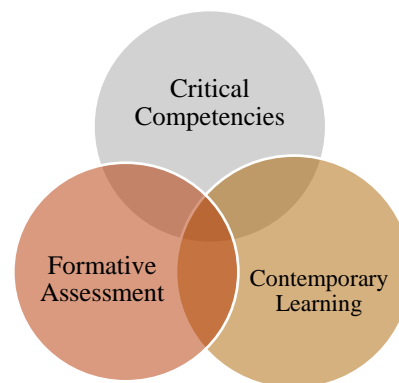
Fig.1: The intersection of Critical Competencies, Formative Assessment, and Contemporary Learning depicting the influence in Learning

Formative evaluation and the effective integration of 21st-century skills are not without difficulties, though. Teachers must balance developing students' creativity, critical thinking, and collaborative skills while simultaneously preparing them for standardized tests. Additionally, a

supportive institutional culture, ongoing professional development for teachers, and a dedication to data-driven decision-making are necessary for the implementation of formative assessment.

The importance of 21st-century skills in education rests in their ability to provide students with the knowledge and abilities necessary to meet the complex and changing problems of the contemporary world. These abilities, which span adaptability, critical thinking, teamwork, digital literacy, creativity, and more, give students the tools they need to flourish in a connected and digitally savvy society while traditional learning approaches change. Education may now develop independent thinkers capable of navigating an information-rich environment, confronting challenges with creative solutions, and participating in the meaningful global conversation by nurturing abilities that go beyond rote memorization. Additionally, these abilities foster a passion for lifelong learning and enable students to develop into responsible adults who can collaborate, communicate, and contribute ethically to a varied and changing society. Therefore, incorporating 21st-century skills into education not only meets the needs of the present era but also equips people to influence its course via innovation and purpose.

21st-century skills

"The term 21st-century skills refer to a broad set of knowledge, skills, work habits, and character traits that one believed- by educators, school reformers, college professors, employers, and others- to be critically important to success in today's world" (Glossary of Education, 2022).
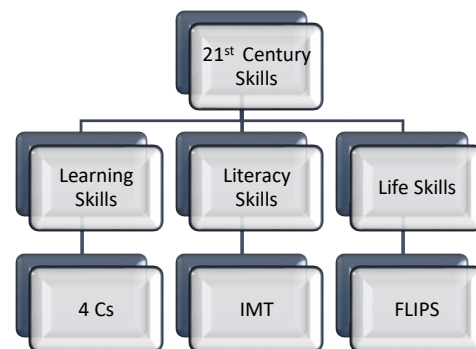
Fig. 2: Guide to 21st-Century Skills

An era of extraordinary technical developments, worldwide connection, and quickly changing societal dynamics has begun in the twenty-first century. Traditional educational paradigms that emphasize rote memorization and subject-specific information are no longer sufficient to equip people for success in this dynamic and complicated environment. Instead, the focus is now on developing a broad range of "21st-century skills" that enable people to succeed in the contemporary world. The research done by McLachlan, and Kurt related to 21st-century skills concludes in terms of curriculum, assessment, professional development, leadership, and culture, this case study is consistent with

recent research on 21st-century skills. According to the research looked at, a global curriculum, alternative assessments, intense intervention, frequent and meaningful use of data, professional development, shared leadership, and community and student involvement are all essential elements of a 21st-century school. Beyond academic knowledge, 21st-century talents cover a broad spectrum of aptitudes that give people the tools they need to deal with the opportunities and problems of the modern day. These abilities include flexibility, social and emotional intelligence, creativity, communication, teamwork, problem-solving, critical thinking, and cultural awareness. They also involve a dedication to lifelong learning.

The key components of 21st-century skills include the following:

1. *Critical Thinking*: The capacity to reason logically, examine the evidence, and analyze information to solve complex issues.

2. *Life-long Learning:* Developing a mindset of progress and a readiness to learn new things and adjust to new situations as they arise.

3. *Social and Emotional Intelligence:* Developing self-awareness, empathy, and emotional control to create effective interpersonal connections.

4. *Flexibility and Adaptability:* Accepting change, being receptive to new ideas, and being adaptable under changing conditions while maintaining an optimistic attitude.

5. *Creativity:* Encouraging creativity, imagination, and the ability to come up with creative ideas and solutions to solve problems and take advantage of possibilities.

6. *Digital Literacy:* The ability to use digital tools, information, and technologies effectively for communication, research, and problem-solving.

7. *Communication:* Communicating clearly and succinctly using a variety of channels, including written, oral, and digital communication, and being open to criticism.

8. *Media Literacy:* Understanding and evaluating media messages critically to spot bias, false information, and the impact of the media on society.

9. *Global and Cultural Awareness:* Valuing and respecting all cultures, viewpoints, and the interconnectivity of the world.

10. *Collaboration:* Working cooperatively in different teams, respecting others' viewpoints, and utilizing the group's resources to achieve shared objectives.

11. *Information Literacy:* The capacity to get, assess, and ethically use knowledge from a variety of sources.

12. *Initiative and Entrepreneurship:* Displaying proactivity, initiative, and resourcefulness to seize chances and find novel solutions.

Schools may easily include 21st-century skills in the context of formative assessment by reinventing evaluation approaches beyond conventional testing. Students are encouraged to apply critical thinking, creativity, cooperation, and problem-solving abilities to realistic circumstances by creating project-based examinations that reflect real-world difficulties. While collaborative assessments encourage collaboration and good communication, performance activities give students the chance to apply their learning in real-world settings. Digital portfolios give students the chance to collect proof of their skill development over time, encouraging self-awareness and metacognition. The use of simulations or role-playing exercises models decision-making and flexibility in the actual world. Innovative questioning strategies foster the capacity for complicated topic analysis and higher-order thinking. Diverse viewpoints and the opportunity to tackle real problems are provided by peer evaluation and true problem-solving possibilities. In 2019, a study was done on the students to see the importance of lesson study on 21st-century skills. (Rosdiana et al., 2020). The results were in the continuous improvement of 21st-century skills, 21st-century skills including creativity and innovation, critical thinking and problem-solving, communication and collaboration information, and media and technology skills that can be introduced through lesson study.
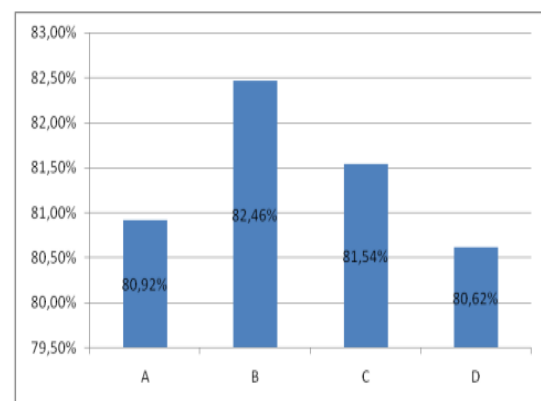
Fig. 3: Percentage of 21st Century skills
(a) Creativity and Innovation; (b) Critical Thinking and Problem-Solving; (c) Communication and Collaboration; (d) Information, Media, and Technology Skills

There are many difficulties in integrating and developing 21st-century abilities in both the classroom and the business. It can be challenging to modify traditional educational institutions to effectively foster abilities like teamwork, creativity, and adaptability. Standardized assessments frequently fall short of capturing these abilities' nuanced development; therefore, one problem is matching curriculum and evaluation methods with them. Progress

can also be hampered by stakeholders' reluctance to change, including teachers, parents, and administrators. Implementing skill-focused techniques can be difficult due to time and technological resource limitations. A challenge is ensuring that all students have equal access to technology and educational opportunities, which raises questions regarding possible inequalities among pupils. It can be difficult to promote integration due to societal and parental expectations that are based on conventional educational paradigms.

Formative Assessment: A Bridge to Skill Development

When data from assessments are used to identify learning needs, modify instruction as necessary, and create teaching and learning activities that will help learners achieve their objectives, this is known as an assessment for learning. Diagnostic testing falls under the category of assessment for learning. It is often carried out at the start of a new unit, academic year, or academic cycle and offers details on what pupils learned and did not understand in earlier classes or terms. Each teacher must decide how to modify the principles presented above for use in their practice because various instructors will find different components of classroom formative assessment more beneficial for their styles, their students, and the situations in which they work. Of course, as always, "more research is needed," but the breadth of the research indicates that, if teachers develop their practice centred on the principles, they are unlikely to fail because of failing to consider nuanced or delicate qualities. Although there will never be a perfect model, positive outcomes are possible as long as educators keep researching the incredibly complicated connection between "What did I do as a teacher?" and "What did my students learn?" (Wiliam, 2013)

A crucial opening stage in the continuous formative assessment process is diagnostic evaluation. Instead of only being used before or after a session, unit, or cycle, formative assessment is applied as a continuous process throughout teaching and learning. By establishing a dynamic and learner-centered approach that enables people to acquire, refine, and apply critical competencies, formative assessment serves as a bridge to skill development. Formative assessment takes place during the learning process as opposed to traditional summative assessment, which offers a snapshot of students' performance at the end of a learning period. It provides immediate feedback, direction, and opportunities for development. Here are a few ways that formative evaluation acts as a link to skill development:

- Real-time observation and evaluation

- Personalization

- Attitude to growth cultivation

- Tailored Assistance

- Active participation

- Integration of skills across subjects

- Encouragement of creative thinking and innovation

- Promoting Interaction and Cooperation

- Focus on Lifelong Learning

Skill	Interdependent Skills
Critical Thinking	Creativity, Resilience, Problem-solving, Open Mindedness
Creativity	Curiosity, Empathy, Critical Thinking, Communication, Innovation
Leadership and Responsibility	Initiative and Self-Direction, Critical Thinking and Communication
Problem-Solving	Seeing Problems as Problems, Teamwork, Decision Making

Fig. 4: Interconnectedness of Skills

Integrating Technology in Formative Assessment

The use of technology in the classroom is becoming essential for effective instruction that enhances learning, particularly in the twenty-first century, when students' passion for technology and digital tools pave the way to inspiring and motivating them to learn. A large body of study has grown in the investigation of the function of technological instructions in the educational process and their impact on enhancing the interactive learning environment because of the development of

technology and its role in education. Much of the previous research has demonstrated how technology significantly enhances teaching, learning, and evaluation strategies that have a favorable influence on students' knowledge and abilities.

Students receive detailed, non-evaluative input during formative testing that helps them perform better. Effective teachers strive to involve their students in formative assessment activities to determine to understand and address misconceptions. They do this by using a variety of techniques, including diagnostic tests, start-up activities, exit cards, pop quizzes, group discussions, think-pair-share exercises, etc. As they give them the chance to evaluate their efficacy as teachers and, therefore, alter and modify their teaching activities, teachers also profit from the use of formative evaluation approaches. In other words, instruction is informed by formative assessment.

In modern educational environments, integrating technology in formative assessment has emerged as a game-changing strategy. Technology offers strong

tools and platforms that improve formative assessment practices' speed, efficacy, and personalization while giving teachers and students insightful information about learning and skill development. Using digital tools, teachers can design dynamic, interactive assessment activities that include students, improve important competencies, and foster deeper knowledge.

The ability to gather and analyze real-time data is one of the main benefits of technology in formative assessment. With the help of digital assessment technologies, teachers may get quick feedback on students' performance, allowing for prompt intervention and focused support. By focusing on each student's unique strengths and areas for development, this data-driven approach enables personalized learning pathways and guarantees that students get the help they need to succeed.

Educators' evaluation procedures are streamlined using technology, freeing up time for more individualized instruction and meaningful interactions with pupils. The administrative burden is reduced through automated grading and data analysis, which frees teachers to concentrate on modifying their lessons to match the requirements of students.

Earlier, were 21st-century skills present?

To handle the shifting demands of the modern world, particularly in the context of rapid technological breakthroughs and globalization, the term "21st-century skills" as a specific idea and framework was coined. Many of the abilities and skills that are today seen as 21st-century capabilities, however, have always been crucial for human achievement and development, even in earlier periods.

For instance, the ability to think critically, solve problems creatively, communicate effectively, and work collaboratively have always been crucial traits that people have required to succeed and adapt in both their personal and professional lives. These abilities have been used by people throughout history to overcome obstacles, invent, and communicate successfully with others.

The current situation differs in that technical improvements, greater connectedness, and globalization have accelerated change's pace and changed the nature of difficulties. Thus, the idea of 21st-century skills was developed to emphasize the necessity and significance of systematizing the development of these abilities in educational contexts to equip people with the skills they need to succeed in a world that is changing quickly.

In the past, memory and topic knowledge may have been prioritized in education as the main objectives. To succeed and adapt in other spheres of life, people needed to have a broader set of abilities than just subject-specific knowledge, and this realization grew as the world changed.

The phrase "21st-century skills" highlights the unique importance and necessity of certain competencies in the modern era. Focusing on incorporating these skills into curricula and instructional strategies will help educators and policymakers prepare students for the opportunities and challenges of the twenty-first century.

Conclusion

Formative assessment integration is a revolutionary strategy that enables students to build and improve essential 21st-century abilities in modern educational settings. Formative assessment acts as a link to skill development by fostering abilities like critical thinking, communication, teamwork, digital literacy, and adaptability through constant feedback, personalization, and a growth-oriented mindset. A culture of active participation, creativity, and problem-solving is fostered by educators who design learner-centered experiences, enabling students to succeed in the complex and rapidly changing the 21st century.

Formative assessment and 21st-century skills work together to create a dynamic educational environment where students can become self-directed learners who take responsibility for their learning and challenge themselves with confidence. Technology is essential to this process because it allows teachers to use interactive tools and real-time data to create immersive learning experiences that appeal to contemporary students.

Formative assessment is a potent tool for ensuring that students are equipped with the adaptability, resilience, and crucial competencies necessary for success in a variety of spheres of life as educational systems change to meet the demands of a fast-expanding world. The research on "Developing 21st-century skills through formative assessment" highlights the significant effects of this pedagogical technique and emphasizes the value of continued professional development and a welcoming institutional culture.

Modern educational environments may create the groundwork for a generation of creative, compassionate, and socially responsible people by committing to continual improvement and creating lifelong learners. In constructing a future where learners are prepared to positively contribute to the constantly changing environment of the 21st century and beyond, educators and policymakers play a crucial role.

Recommendations and Future Directions

Several important recommendations and future approaches arise to strengthen crucial competencies within contemporary educational environments and effectively build 21st-century abilities through formative assessment. First and foremost, educators must place a high value on a comprehensive curriculum that incorporates 21st century skills into all disciplines and grade levels. This can entail multidisciplinary assignments that motivate students to use a variety of abilities in practical settings. Secondly, it is essential to support educators through teacher training and continuous professional development to make sure they are skilled at using formative assessment strategies that are suited to certain competencies. Additionally, adding simulations, multimedia projects, and personalized learning routes into assessment procedures can accommodate a variety of learning styles and aptitudes. Enhancing self-evaluation and reflection is made possible by encouraging students to build digital portfolios that demonstrate their skill development progress. Utilizing technology to facilitate cross-cultural communication and teamwork among students from various backgrounds. Additionally, moving the assessment's emphasis from giving grades to supporting continual progress by giving useful feedback improves the development of skills. Students who have improved their assessment literacy are better able to evaluate comments and direct the development of their skills. Collaborative learning environments are promoted by educating parents and communities about the importance of 21st century skills and formative evaluation. Investigating applications of artificial intelligence for real-time feedback, individualized skill development, and adaptive assessments may revolutionize the procedure. The integration of these suggestions can be accelerated by supporting legislative modifications and encouraging collaborative research networks, ultimately enabling students to deal with the challenges of the twenty-first century successfully and competently.

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Usage of YouTube as an Educational Tool: A Study on College Students of Kolkata

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Abstract

The motivation, health, and academic performance of kids have all been significantly impacted by the COVID-19 pandemic. In order to address the educational restrictions brought on by the pandemic, institutions, teachers, and students rethink and recalibrate their previous instructional methodologies as a result of the abrupt transition in learning modalities from face-to-face to online learning. Researchers and instructors have recently paid a lot of attention to YouTube as an instructional resource. A key resource for independent learning is YouTube. The search engine on YouTube, however, prioritizes popularity, relevance, and viewing history over video quality. The major conclusions pointed out that, in contrast to perceived simplicity of use, perceived usefulness was seen to have a more substantial impact on students' impressions of learning using YouTube. Additionally, YouTube has been shown to be the greatest option for online learners. Research has also shown that incorporating videos into instruction improves students' results. As a result, the value and importance of modern communications in the educational setting are once again emphasised. Additionally, and perhaps most importantly, there was a considerable correlation between student attitudes regarding using YouTube and behavioural intentions, which may indicate that this e-platform is effective for tertiary student learning.

Keywords: COVID-19, Pandemic, YouTube, Online learner, E-platform.

Introduction

The Coronavirus spreads quickly over the world and directly affects 33 countries in distinct regions, whereas 33 nations that had the coronavirus stated that it had killed 78,966 people in the first quarter of 2020, the as a result of the, the death rate climbed by over 2,468 per day. coronavirus (Khan & Fahad, 2020). Due to the problem that the Covid-19 outbreak caused, innovations higher education courses that would often take several years to complete because of different managerial regulations were delivered quickly in a constrained amount of time. This marked the beginning of higher education's digital transition. As a result, online learning was no longer seen as disruptive but rather as having "messianic" significance. This disease has pushed the physical shutdown of businesses, athletic events, and educational institutions on a global scale by requiring switching to online platforms across all institutions. A pandemic is "an epidemic of a disease that

spreads across a vast geographic area and affects an extraordinarily high proportion of the population," according to Online Merriam-Webster Dictionary (2020). The appearance of the Corona virus, which shook the planet, swiftly turned into a global upheaval, and 2020 became the year that completely changed human life in the world. Social distance and the requirement to maintain it in order to slow the virus' pace of transmission have an impact on how people interact with one another. Education has been impacted, as have all other areas. Online or distance learning can be a solution to keep the conversation of the material going even when it is done online. The educational institutions were forced to put their worries aside and implement emergency remote education due to the closure of the institutions and the pressure to complete the required curriculum within the given time frame in accordance with the academic calendar. Numerous online tools, like Moodle, Zoom, Google Classroom, and Google Meet, can be used to continue learning throughout the pandemic. One of the most important online learning sites is YouTube. On the well-known website YouTube, users can post videos, share them with other users, and leave comments on the videos that have already been posted. Every month, the website draws millions of visitors. According to the research, YouTube videos can be used to give students the opportunity to share knowledge, leave comments, engage in discussions, and comprehend the topic they are listening to. Teachers and students now have some hope that online education will continue despite the lockout.

Literature Review

Since 2005, YouTube has seen a continual stream of videos related to marketing, science, education, and entertainment. Higher education classrooms are increasingly using it, despite the fact that it is still a niche endeavour *(Alon and Herath, 2014; Tugrul, 2012). T*hese channels are intended to increase student video viewing, foster student-teacher engagement, improve instruction, and provide real-time student feedback. Universities are integrating technological approaches that are suitable for the classroom to supplement conventional teaching methods as they become more aware of the benefits of employing technology as a teaching tool. As universities increasingly recognise the advantages of employing technology as a teaching tool, they are incorporating technological practises that are appropriate in a classroom context to improve conventional teaching strategies. This insight sparked a plethora of studies—

unfortunately underrepresented in the literature—on the efficiency of extracurricular teaching resources in a classroom, such as YouTube. YouTube is an engaging social medium that enhances education generally, claims Bonk (2009). Students are willing to watch YouTube in class but are less likely to perceive it as anything other than "fun." Although the participant's thought YouTube was fascinating, pertinent, and useful, there was little motivation to use it in the classroom More specifically, Kelsen stated that "there was little spill over leading to motivation to study English via YouTube video clips outside of class". It was said by *(Jackman, 2019.* one of the most recent e-resources that can be used in tertiary education instruction is YouTube. Additionally, the most popular video-sharing website, YouTube, is regarded as a crucial contemporary digital resource with numerous benefits in university classes *(Jackman, 2019). A* growing amount of worldwide research has revealed that students favour using YouTube as an additional resource for educational resources. As the epidemic spread, may have been the first to describe how institutions were switching from classroom-based instruction to online education. To better understand how students feel about online learning during

the COVID-19 epidemic, researchers have used empirical data from Serbia, the USA, and India as well as other countries. It is possible to introduce and research the effects of techniques like gamification, case studies, and flipped classrooms in online education. For the first time ever, online learning has been widely embraced globally as a result of the COVID-19 epidemic. During this pandemic, we will learn information about online education that will be helpful in the event of future disasters *(Chatterjee & Chakraborty, 2020; Skulmowski & Rey, 2020).*

Objective of the Study

- To find out how beneficial has digital learning been during Pandemic
- To examine the usefulness of You Tube for learning?
- To find out global knowledge sharing is possible through online education.

Hypothesis of the Study

The purpose of this study was to analyse the effectiveness of learning using YouTube media.

Methodology of the Study

Quantitative and qualitative method was used for this particular study. Convenient sampling was used due to economical and time constrain. The population of the study was college students of Kolkata. A sample size of 125 respondents were ascertained

for this study. Data was collected through online Google Forms. Content analysis was done to study the impact of You Tube during pandemic.

Data Collection and Analysis of the Study

How beneficial has digital learning been for you during Pandemic?
125 responses
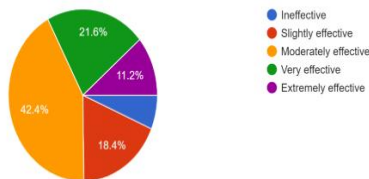
42.4% says digital learning is moderately effective during pandemic. Due to the epidemic, schools and colleges were closed during the lockdown period, and students and teachers shifted to education and learning online. Whenever COVID-19 shutdown began in India, school closures had an impact on about 250 million pupils.

How useful You Tube videos for learning?
125 responses
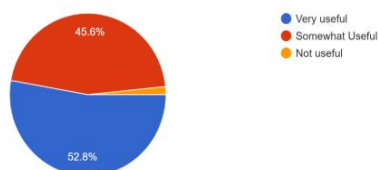
Both using and sharing YouTube is simple. Sharing a large collection of educational movies is simple and may be done in a fun and engaging way. So, You Tube learning is very useful.

Global knowledge sharing is possible through online education?
125 responses
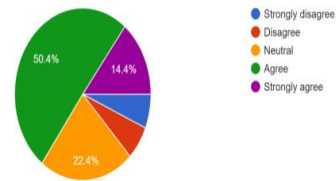
Global knowledge sharing is possible via online education. 50.4% agree on online education and global knowledge sharing.

Table: 1. Presentation of Data

Digital Learning During Pandemic	42% Moderately Effective
Usefulness of You Tube Videos for Learning	52% Very Useful
Beneficial of Digital Learning during Pandemic	42% Moderately Effective

Digital learning environments provide learning opportunities that let students interact with the material in a meaningful way. In order to make learning more engaging and interactive for students and to provide courses that can be customized for each learner, educators use digital learning platforms.

Role of You Tubeas an Educational tool

According to research (Utami & Zanah, 2021), YouTube was first utilized only as a social media platform. However, it may now be used by instructors, students, school staff, and even parents or guardians of students as a source of information or learning media. YouTube has adverse repercussions in addition to its positive

ones. Cyberbullying is a risk for students who use YouTube, and as a result, they could feel depressed. Children who use YouTube on a regular basis will also get dependent on it, which will make them lazy learners. Data provided by YouTube indicates that educational content is one of the areas that needs the most development. This is because a lot of people watch YouTube every day. Three key categories of educational content that are pertinent to the learning process can be uploaded on YouTube.

YouTube has a lot of potential as a resource for education for children. Students' enthusiasm and excitement for learning may rise if they use YouTube as a learning resource. If the teacher gives good, clear instructions by including a YouTube link linked to the material being taught or by setting up his own YouTube channel, YouTube can be a useful learning resource. According to a study *(Tutiasri & Kusuma, 2020),* the majority of people utilize YouTube as a learning tool for developing academic and non-academic soft skills as well as for learning about their passions in the current Covid19 pandemic. Due to specific explanations from informants who were students, there are various assignments from classes that require for access to YouTube. They utilize YouTube for a range of lecture-

related learning activities, including gathering outputs for assignments like vlogs, video reviews, and other products, as well as learning from knowledge provided by lecturers via YouTube. Teachers, students, parents, alumni, and other stakeholders now have access to a greater network of connectedness thanks to You Tube. Additionally, it offers a wider channel for capturing the audience's interest, keeping them interested, and soliciting their engagement. As of now the use of digital media platforms for marketing, communication, and social interaction has grown in prominence. It is a fresh approach to online social networking communication *(Haridakis & Hanson, 2009).* Being a content community, members are not needed to establish a personal profile page; if they do, it just contains the bare minimum of information, such as the date of their registration and the number of movies they have shared (Kaplan & Haenlein, 2010). Students' knowledge can be improved or increased by watching videos online, such as those on YouTube. Students can more easily learn a variety of concepts by using the knowledge found in YouTube videos, which encourage them to learn other skills on YouTube, such as those related to speaking, writing, listening, and grammar.

Findings of the Study

The most popular online videos on the internet are shared on YouTube, a media website. To help students and teachers develop independent and creative learning styles, You Tube also offers a video library service *(Latifah & Prastowo, 2020)*. Although the students in this study believed that video-based discussion boards facilitated the development of relationships with their learning community, they ultimately preferred text-based communications for a number of reasons. According to studies, YouTube in teaching and learning is excellent for increasing knowledge. YouTube is used as a video library for lecturers and students to use in the context of teaching and learning. At the same time, professors and students may be inspired to innovate and be more creative. Recognize the benefits of online learning for improving student learning and consider it as a possible teaching approach.

Online learning is undoubtedly the way of the future, and we must adapt. In this terrible pandemic, there is no better choice. You Tube promotes a favourable learning environment and increases students' interest in learning as it happens. Therefore, it can be said that the You Tube learning resources are efficient for online learning. The plethora of free public films available online on a wide range of topics is one of the obvious advantages of using YouTube for online teaching. One could draw the conclusion that YouTube's utilisation in a formal learning setting was well-received. Additionally, and perhaps most importantly, there was a substantial correlation between the student attitudes regarding using YouTube and their behavioural intentions, which may indicate that this e-platform is effective for helping students learn at the tertiary level.

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Women's Participation in Stem – Challenges and Recommendations

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Abstract

STEM education aims to create and offer original answers to international problems, particularly those directly connected to the 2030 Sustainable Development Goals. It is already common knowledge that the connections between the fields of science, technology, engineering, and mathematics are growing stronger, penetrating the workplace, and posing new challenges for resolving everyday work-related issues. Many academics and decision-makers have remarked that historically few women have entered the fields of science, technology, engineering, and mathematics (STEM), which have remained dominated by men. Since women and girls make up half of the global population, it is essential to advance gender equality in STEM fields in order to meet the Sustainable Development Goals and provide a better future for all. Researchers are looking into the numerous causes of the persistent gender gap in STEM disciplines. Those who think that discriminatory pressures are to blame for this gap are also looking for strategies to close it in STEM professions. This paper analyses the current situation of women in the STEM field in India and tries to find out the reasons behind their low participation like prejudices and biases, college curricula, and the work environment which are some of the causes of the underrepresentation of women in these sectors. This paper also suggests strategies for overcoming the challenges of lower participation of women in the STEM field.

Keywords: *STEM, Sustainable Development Goals (SDGs), Stereotypes, GATI Scheme, and KIRAN scheme.*

Introduction

In order to address the growing concern that many students wouldn't be capable of keeping pace with, and might be left behind, in the worldwide competitive economy driven by an increase in demand for STEM-related skills and competencies, the US National Science Foundation first proposed STEM in the 1990s. An integrated or interdisciplinary approach to STEM education seeks to advance and coordinate efforts to give students a solid theoretical grounding that will enable them to come up with novel solutions to societal and global issues.

The *U.S. National Science Foundation's* scientific administrators first used the abbreviation *STEM in 2001.* (NSF). When referring to the job fields in those disciplines or a curriculum that incorporated knowledge and abilities from those subjects, the organization previously used the acronym SMET. It is a curriculum built on the idea of teaching students in 4

distinct subjects - science, technology, engineering, and math — using an applied, interdisciplinary approach.

History of STEM

The acronym STEM is not wholly new. Science was created as a result of the exploration of the study of objects in their environs by early Greeks like Hippocrates and Aristotle. The Pythagoreans introduced the study of mathematics as a demonstrative subject in the sixth century BC. Since the beginning of time, when people created innovations like wedges and pulleys, engineering has involved the design, building, and use of devices, systems, and processes based on scientific and mathematical principles. The history of technology began with stone tools and practices that date back millions of years.

The four Industrial Revolutions (IRs) have led to enormous advances in industrial technology, which have had a profound effect on human civilization and daily life. The steam engine was initially invented in the 18th century, totally revolutionizing the manufacturing and transportation industries. The second Industrial Revolution (IR) in the 19th century saw the advent of electricity and mass production. The third industrial revolution of the 20th century brought with it semiconductors, computing, and internet use, all of which have contributed to the globalization of communication and trade.

The fourth industrial revolution (4th IR) is currently in full swing, and it is a time of unheard-of invention and quickly developing technological breakthroughs that have accelerated the digitalization and the amalgamation of technologies that transform and smudge the limitations between the physical, digital, and biological spheres. Numerous 'unthinkable' developing technologies, such as those in the fields of robotics, artificial intelligence, the Internet of Things, 3D printing, autonomous cars, quantum computing, and nanotechnology, are altering our daily life. Our understanding of the creation of goods and services as well as corporate management is already evolving as a result of the 4th IR. Together, these developments have repositioned the value of STEM and the contribution that STEM competencies make to productivity, economic growth, and satisfying future demand.

STEM and the world

The basic aspect of STEM is the application of information from the fields of science, mathematics, technology, and engineering to everyday or societal issues. This makes the study of STEM subjects more relevant and meaningful. STEM literacy is described as having the knowledge, attitudes, skills, and values necessary to

recognize issues and challenges in real-world scenarios.

- Understanding of the distinctive characteristics of STEM disciplines as forms of human knowledge, inquiry, and design;
- Awareness of how STEM disciplines shape our material, intellectual, and cultural environments;
- Willingness to participate in STEM-related concerns with the concepts of science, technology, engineering, and mathematics as a productive, concerned, and insightful citizen.

In order to address global issues like poverty, climate change, food shortages, and the protection of the environment, the *United Nations' 2030 Agenda* for Sustainable Development, titled *"Transforming our World," established 17 Sustainable Development Goals (SDGs).* These goals also work to ensure that everyone has access to peace, prosperity, and a high standard of living.

The SDGs can only be achieved with the help of education, especially STEM (Science, Technology, Engineering, and Mathematics) education. SDG 2 (Zero Hunger); SDG 3 (Good Health and Well-Being); SDG 6 (Clean Water and Sanitation); SDG 7 (Affordable and Clean Energy); SDG 9 (Industry, Innovation and Infrastructure); SDG 12 (Responsible Consumption and Production); SDG 13 (Climate Action); SDG 14 (Life Below Water); and SDG 15 are among the specific global issues that STEM education aims to elaborate on and offer creative solutions to (Life on Land). Moreover, advancements in the STEM domains are crucial for achieving SDGs 8 (Decent Work and Economic Growth) and 11 (Sustainable Cities and Communities). The contribution of STEM to achieving the SDGs in the context of Industry 4.0 is essential. (UNDP, 2019).

It has been noted that *Women,* who make up *half of the global population,* are essential for sustainable development. Despite having severe restrictions on access to and control over these resources, women play a critical role in their management, conservation, exploitation, and consumption as consumers and educators.

One of the key issues for sustainable development is the empowerment of women. While many nations have achieved gender parity in primary education, there is still a sizable gender difference in higher education. Women are graduating from colleges and universities in greater numbers, but they still make up a disproportionately small portion of the STEM (Science, Technology, Engineering, and Mathematics) workforce (STEM). In addition to gender inequities in

employment, academic promotions or seniorship, funding possibilities, and publications, systemic hurdles prohibit women from pursuing careers in research. Additionally, most women put in more time and effort than males do while earning less money in teaching, mentoring, partnerships, and other academic activities.

Significance of the Study

This study tackles this perplexing subject and paints a picture of what we know about girls and women in scientific fields—and what needs to be learned. The paper focuses on realistic ways that communities, schools, and families may foster an environment of support and dispel myths about women's ability to succeed in these hard industries. This study fosters interest in these subjects by encouraging girls' confidence in their capacity to learn math and science.

Objectives

- The main goal of this investigation is to examine and determine the difficulties that women encounter in their careers and the coping strategies they can employ.
- This paper analyses the current situation of women in the STEM field in India and tries to find out the reasons behind their low participation like prejudices and biases, college curricula, and the work environment which are some of the

causes of the underrepresentation of women in these sectors.

- This study highlights the various Government initiatives to promote women's participation in India.
- This paper also suggests strategies for overcoming the challenges of lower participation of women in the STEM field.

Methodology

This exploration is a descriptive study. The necessary secondary data was collected from assorted websites including those of the Government of India, magazines, journals, other publications, etc. A large number of academic articles on the subject of women in science and engineering were reviewed using a variety of databases, including Web of Science, ProQuest, Social Science Citation Index, and J-STOR. This data was analysed and reviewed to arrive at the consequences and conclusions.

Indian Women's Participation in STEM

One of the nations that produce the most scientists and engineers in India, and during the past several years, STEM has seen substantial growth. A symposium on women in science, technology, engineering, and mathematics (STEM) was held on November 24, 2021, jointly organized by the Department of Science & Technology (DST) Govt. of India and the Ministry of Innovation, Science and Technology

(MOIST), Israel. It was noted that in order to increase the participation of women in STEM fields, flexible work schedules and gender-neutral compensation must be implemented. ((DST), 2021)

According to Article 51A of the Indian Constitution, every citizen of India has a responsibility to cultivate a scientific temperament, humanism, and the spirit of inquiry and reform.

Critical thinkers, problem solvers, and innovators for the future generation are produced through a strong STEM education. The National Science Foundation predicts that 80% of the occupations that are produced in the upcoming ten years will require some level of math and science expertise. *India has the largest percentage of female STEM graduates (43%), however just 14% of STEM positions there are held by women. (Times, 2022) In Indian* STEM, the fraction of graduates who finally secure STEM jobs has always been of more concern than the overall number of female graduates.

By offering flexible work schedules and gender-neutral compensation to increase women's engagement in STEM, Science & Technology (S&T) might become a changemaker in society. S&T has transposed into the economic sphere and institutions are constructed in this way.

Women will become stronger and more influential as they participate more in the tech industry, which will improve their socioeconomic standing in society. It is impossible to disregard or minimize the institutional, familial, social, and cultural variables that contribute to the gender gap in STEM in developing nations. In the end, there are fewer female role models for girls and fewer mentoring possibilities as a result of the lower number of female scientists in STEM subjects. Studies on the proportion of women holding senior positions in academic institutions indicate that unconscious and unintentional gender bias is widespread and that it can make it difficult for women to advance in their careers, receive recognition for their accomplishments, be nominated for leadership roles, or be perceived as leaders.
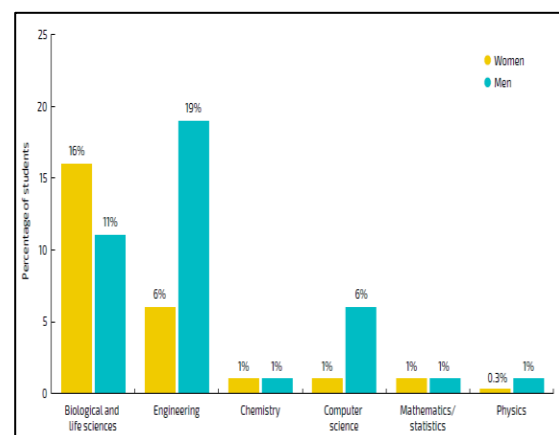
Fig.1: Intent of First-Year College Students to Major in Stem Fields, By Gender, 2014
Source: AAUW Analysis of Eagan Et Al. (2014).

According to World Bank data, there are fewer female STEM graduates than male STEM graduates in 107 of 114 economies.

In postsecondary education around the world, 18% of girls choose STEM majors compared to 35% of guys. Women tend to major in the living sciences, even in STEM subjects, and are underrepresented in fields like computer science and mechanical and electrical engineering. Only 33% of researchers worldwide are female. Only 22% of artificial intelligence experts and 28% of engineering students are women.

The situation is significantly better in India, where women make up roughly 43% of all STEM graduates. Despite the fact that just 14% of scientists, engineers, and technologists work in research development institutions and universities, it is one of the highest in the world. (Times, 2022)

Despite the enormous achievements that women have made in recent years, the evidence shows that they are still underrepresented in academics. Particularly among individuals who pursue higher education and progress in their research careers, there is a gender disparity.

Challenges faced by women in STEM

There are many different reasons put forth as to why there are so few women working in STEM disciplines. These can be broadly categorized into innate, social, and psychological explanations. The prominent reason reported experiencing stress at work. Females may experience greater stress as a result of harassment, biased peer and student evaluation, and familial duties in addition to gender bias experienced during appointments, promotions, and career growth chances. Females can achieve work-life balance with the help of their family's financial support, household management, secure childcare facilities, flexible work hours to suit family responsibilities and the support of their female research colleagues.

Nearly 50% of females did not achieve a work-life balance. (Farah Naaz Fathima, 2020) This might be brought on by a lack of a welcoming environment for women, a lack of childcare services at the workplace, lengthy workdays, and inadequate family support. The other often mentioned difficulties include discrimination, harassment, a lack of leadership opportunities, professional resources, low salary, difficulties with career choice, time management, and low motivation.

- *Stereotypes:* Assigned stereotyped gender roles have contributed to the lack of women in STEM fields, in addition to ability deficiencies.

- *Patriarchy:* There are patriarchal attitudes present in employment procedures, the distribution of grants and fellowships, etc.

- *Society:* A lack of positive role models, social pressure to fit in, and domesticity's constraints.
- *Stress:* marital, childbearing, and other stressors.
- Household management responsibilities include taking elderly people's care.
- *Physical Security:* Maintaining physical security while travelling to work.
- Harassment includes sexual harassment as well as other sorts in the job.

Structural and Cultural barriers

The underrepresentation of women in engineering and computer areas may be influenced by institutional structures and practices, more general cultural influences, and workplace and college contexts. Narrow focus, isolation, stereotypical surroundings, work-life balance, and social network less helpful for women, challenging academic workplaces, Biases can be either explicit (self-reported, conscious, and on surveys or in interviews) or implicit (automatic, generally occurring without an individual's conscious awareness), In-group favoritism, etc.

According to experts, societal stigma, prejudice, biases, social norms, and expectations play a significant role in the quality of education women receive as well as the disciplines they choose to study, which contributes to the underrepresentation and discrepancy of women in STEM.

This disparity in career choices not only emphasizes a lost opportunity but also the imbalance in a society where one gender is held back by constraints and limits.

Initiatives to Promote Women's Participation in India

- *Vigyan Jyoti Scheme:* This program was introduced by the Department of Science & Technology as one of the initiatives to encourage women's participation in INDIA (DST). It aims to level the playing field for deserving high school girls who want to major in science, technology, engineering, and mathematics (STEM) in college. It also provides exposure for female students from rural backgrounds to support the planning of their route from school to a career in science.

- *GATI Program:* The GATI Program will create a thorough Charter and a framework for evaluating gender equality in STEM.

- *Knowledge Involvement Research Advancement through Nurturing (KIRAN):* The program, which was introduced in 2014–15, offers female scientists the chance to advance their careers in academia and administration.

Recommendations

The issue needs to be resolved on two levels: the social level, which calls for sustained effort, and the institutional and policy level, where action can be taken right away. The following are some ways that parents, teachers, and especially engineering educators can assist children, especially girls, in developing their spatial abilities:

- Make clear to young people that spatial abilities must be learned.

- Encourage kids and students to play with construction toys, disassemble and reassemble objects, play games that require them to position objects in certain locations, sketch, and use their hands.

- To assist students to visualise what they see on the page in front of them, use portable models whenever practical (rather than computer simulations).

1. *Make people aware about the successes of women and girls in science and math* - It will dispel the myth by introducing young girls and boys to female role models who are succeeding in STEM disciplines, discussing the rising numbers of girls and women who are excelling in STEM professions, and emphasising the lack of gender differences in performance across nearly all STEM fields.

2. *Teach females that cognitive abilities, such as spatial abilities, are acquired* - Teach girls that their brains make new connections every time they work hard and learn something new, which makes them smarter over time. Teach girls that the path to success and contribution is paved with passion, perseverance, and self-improvement, not just natural talent. Encourage girls to put forth effort rather than intelligence.

3. *Encourage girls to take on challenges,* to work hard, and to learn from their failures. These messages will impart to girls the virtues that lie at the core of contributions to science and mathematics: a love of challenges, a love of effort, and the capacity to accept and learn from mistakes that are unavoidable.

Inform pupils about the dangers of stereotypes and encourage a growth-mindset culture.

4. *Educate girls on their employable skills* - Girls are less likely than boys to believe that their achievements in math and science classes prove they have the qualifications to succeed as engineers, physicists, or computer scientists. Encourage females to see their achievement in high school math and science for what it is: a sign that they have the abilities to excel in a variety of

science and engineering occupations in addition to being a requirement for attending college.

5. *Encourage high school girls to enrol in* engineering, computer science, physics, chemistry, calculus, and other related courses when they are accessible.

6. *Proactively assist female students majoring in STEM fields -* To assist in integrating women into the department-sponsor lunches, lectures, and other social gatherings.

- Make sure that no student group takes control of a STEM major or establishes itself as the ideal way to "be."

- To promote connection outside of the classroom, provide a warm, friendly student lounge that is accessible to everybody.

- Sponsor a group called "women in (STEM major)".

7. *Confront the prejudice against women in STEM disciplines-* If engineers and scientists are aware that there is gender prejudice in STEM disciplines, they can function to halt the unconsciously biased mental processes. If women, especially those working in engineering and science, are aware of the fact that there is gender bias in these sectors may give them an advantage. When it may be beneficial to know that they are not alone if they experience hostility from their peers alone.

The societal rejection is not personal, despite how it may seem, and women might be contrary to that perception.

8. *Evaluate the environment for female faculty by conducting departmental reviews* - Both male and female faculty members value the departmental culture, although it seems that female faculty members value it more in terms of their overall satisfaction. When there is a hostile environment, female faculty members report less job satisfaction and are more likely to consider leaving their jobs.

Conclusion

The paper focuses on realistic ways that communities, schools, and families may foster an environment of support and dispel myths about women's ability to succeed in these hard industries. We foster interest in these subjects by encouraging girls' confidence in their capacity to learn math and science. While the advancement of women in education is to be commended, more has to be done to guarantee that women and girls have full access to educational possibilities and career prospects in the fields of science, technology, engineering, and mathematics. As a result, it would not only encourage women to follow their goals, but science would also benefit from their inclusion. Strong STEM education produces next-generation innovators, problem-solvers,

and critical thinkers. With more women in

STEM, the future is promising.

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An Assessment of Corporate Social Responsibility in Emerging IT Company: A Case Study of Infosys Limited

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Abstract

Infosys limited aspires to play a significant contribution in attaining the Sustainable Development Goals (SDGs) through its successful business strategies and practices. In this case, an attempt is made to highlight the Corporate Social Responsibility activities and different theme areas of CSR embraced by Infosys Limited in recent years, such as literacy, healthcare, rural development and environment preservation. Yearly data was obtained from the company's annual reports and the national CSR portal for the years 2014-15 to 2019-20 in order to comprehend the company's engagement in various CSR programs. Various considerable thrust areas were also identified, where the firm was investing extensively. According to the Future scape responsible business ranking 2020, Infosys Limited is ranked first. As a result, there is a need to investigate the CSR in this specific firm for its remarkable work in the areas of sustainability and inclusive growth. For the current study, the researchers choose Infosys Limited to investigate the company's business model and CSR execution techniques in order to grasp the influence on various stakeholders.

Keywords: CSR, Infosys Limited, CSR spend, CSR strategies, CSR Thrust areas, CSR impacts.

Introduction

Infosys has a history of being an enthusiastic supporter of diverse industry best practices, environmental measures, and socio-cultural initiatives. According to the Company's Annual Report, Infosys Limited is a worldwide market leader in digital services and a major consulting manager for the next generation. The CSR expenditure for previous year was Rs. 342 crore which was in line with Article 135 of the Company Law of 2013. Out of total CSR expenditure the amount of Rs. 115.35 crore was spent in Bangluru alone. Company has a registered trust or society for their CSR initiatives long before the mandatory provision of CSR in Companies Act 2013.

Infosys was acknowledged as one of the "Most Honored" businesses, winning numerous accolades from Institutional

Investor, at the 2021 All-Asia Executive Team Rankings. The rankings are established on the basis of responses of more than 4,000 investing professionals.

In 2021 Ethisphere declared Infosys one of the Most Ethical Company in the World. The 'Ethics Quotient' is a patented grading system developed by Ethisphere that gathers and accurately assesses self-reported statistics in five weighted categories: governance, leadership and reputation, ethical and regulatory strategy, ethics culture, and social and environment impact.Infosys is the recipient of the 2020 Global Golden Peacock Award for Corporate Governance Excellence in IT category. The award acknowledges the proactive and inclusive ethical management strategy used by Infosys. Infosys was awarded the Platinum Award at the ESG Corporate Awards 2020. In addition, Infosys received the Environmental Responsibility Award for its carbon neutral program, as well as the Social Responsibility Award for its rural community bio-gas systems and competence development effort. In the yearly ranking of Forbes' top 250 firms in the world, Infosys was recognized 3rd Greatest Company in CSR. All the above awards and accolades are the depiction of company's best management practices in the

society. That shows incessant contribution of the company towards corporate social responsibility.

World Business Council for Sustainable Development interpreted that corporate social responsibility is the inevitable requirement for enterprises to act morally and contribute significantly to economic growth as well as towards employees and their families, community members and society in general. There is considerable evidence that CSR enhances business performance. Companies that engage in CSR activities have seen a wide variety benefits like profitability and reduction in costs(Waddock & Graves, 1997; McWilliams, 2000; Aggarwal, 2008), enlarged reputation and brand equity (Johnson & Greening, 1999;Krishna, 1992; Graves & Waddock, 1994), Increased sales and customer loyalty (Vaaland et al., 2008; Creyer, 1997; Maignan & Ferrell, 2001), convenient procurement of capital (Lee et al., 2013; Coffey & Fryxell, 1991) and enhanced ability to acquire and retain Human resource (Turban and Greening, 1996; Luce et al., 2001; Greening & Turban, 2000).

Review of Literature

In 1991 Archie Carroll described CSR as a diverse concept with distinguished four

dimensions – economic, legal, ethical, and charitable. Amba-Rao (1993) stated that CSR concept was based on management standards and has a diverse interpretation. Dahlsrud (2008) highlighted the five dimensions of Corporate social responsibilities i.e., environment, social, economic, Stakeholder and volunteering. For CSR, people, planet and profit are three main considerations comprising Economic issues, Social issues and Environmental issues. Sharma et. al. (2009) identified that CSR can enhance the sustainability of organizations. Social pressure from various stakeholders is the key drives which lead to many CSR efforts. In view of the current circumstances, the main challenges that need to be addressed via CSR are education, health and human rights, Environment and Rural development.The European Commission (2011) defines CSR as "Respect for applicable legislation, and for collective agreementsbetween social partners, is a prerequisite for meeting that responsibility.To fully meet their CSR, enterprises should have in place a process tointegrate social, environmental, ethical, human rights and consumer concern into their business operations and core strategy in closecollaboration with their stakeholders."For future generations, the three-part idea (TBL) is substantial as well as very crucial. It encourages the trade company to integrate environmental guidance in its activities with empirical demonstrations of triple bottom line results (orlitzky, 2011). Asif et. al. (2013) believes CSR as a strategy that may enhance the transparency and social responsibility of business activities and should be developed on a strategic level. Focusing on climate change, Mr. Gabler et. al. (2017) believes that sustainable development reminds organizations that they should never consume more than their capacities.They presented a business model for ecologically sustainable business strategy, which focuses on organization vision and objectives, leadership and strategic management to address social and environmental concerns.Moreover, Barron and Chou (2017) show that many businesses have been involved in corporate sustainability programs to deal with and prevent socioeconomic difficulties and promote social welfare in local and international communities for many years to combat societal problems such as poverty, hunger and unemployment.

Objectives

This study has concentrated upon following objectives:

1. To evaluate the status and segregation of CSR expenditure, along with company's CSR profile.

2. To elaborate the CSR initiatives, programs and policies of Infosys Limited to comprehend its responsibilities towards its stakeholders.

3. To examine the CSR planning and implementation of the Company in order to move a step forward towards SDGs.

Methodology

The current study employed an exploratory research approach. Through content analysis, a complete examination of the literature was conducted in order to focus on the subject under study. Secondary data was gathered from a variety of sources notably form e sources such as e-books, websites, online research papers and journals. Case study technique has been used to highlight the CSR contribution of Infosys Limited.

Company Profile and CSR initiatives

Mr. N.R. Narayana Murthy with six of his associates established Infosys in 1981. The company's headquarters are in Bangalore, India. However, Infosys works with customers in over 50 countries to help them manage their digital transition. It has almost 40 years of corporate experience. Infosys employs over 2,60,000 people and has 1659

satisfied clients worldwide. The firm has a capital of $14.22 billion and a market value of around US$ 90.25 billion. It is the first Indian firm to be listed on the NASDAQ (National Association of Securities Dealers Automated Quotations, an American stock market which handles the trading of e-securities all over the world). The company's intent is to become the best in the world, both professionally and ethically.

It has a well-defined ISO 22301:2011 certified Business Continuity Management System (BCMS), which provides guidance in reaction to situations, such as calamity and crisis that might interfere or seriously limit the functioning of the organization. The BCMS program includes management, surveillance, risk evaluation, contingency preparation and reporting, stakeholder interaction, communication with outsiders, and the simulation modeling, along with risk evaluation for the smooth functioning of business.

Company is indulged in diverse CSR activities which include protecting national heritage, reinstating historical sites, and propagating Indian culture and art; providing impoverished care and rehabilitative services; promoting ecological sustainability and natural ecosystems; improving the quality of education and

augmenting vocational training; boosting medical care, including disease prevention, and poverty alleviation projects. According to the report, the Company established a CSR committee in accordance with the Act.The company sponsors a number of projects both on its own and through its foundation. The Company has established its foundation in 1996 with the goal of bolstering its CSR efforts.

Employee well-being

The firm promotes the fitness and physical well-being of employees via virtual engagement programs under the occupational health and security standard. The company targets 25,000 health inspections, from which 20,000 health inspections have been carried out.

Education

For Educating and skill building of the youth and impoverished students, Company collaborated with more than 40 institutes and universities to implement and spread out their computer science curriculum as elective. Now, 137 universities/institutes offer training and education to youth. Company has also provided computer science curriculum training sessions for university professors. 1,875 members of the faculty were educated via workshops and webcast.

More than 700 teachers have trained for summer and winter pathfinder online institutions and more than 700,000 students have joined up InfyTQ learning platform recently released. Company strives to connect academia with industry. Many initiatives have been launched to spread education.

Campus Connect

CC program was started in India on May 2004 and it is collaboration between the professional institutes and industries to enhance the employability of engineering students. Through the program, enterprise shares best practice with engineering colleges in line with those of the IT sector, therefore adapting the demands of institutions, faculties and students. Company is working with national independent engineering colleges to co-create industrial options in fundamental programming designing, software and advanced subjects, includingArtificial Intelligence, Cloud Computing and Internet of things (Iot). Many of these topicshave already been incorporated in the curriculum of various institutions. CC also arranges conclaves, FDPs and networking events for students and staff members. Over the last 16 years the CC Project engaged 17,658 academic members and 531,255 learners.

Catch them Young

CTY is 10-day program of Infosys, designed to enhance the creativity and curiosity of promising urban school pupils by introducing them to current technological development trends. Excellent eighth grade pupils are selected and tested by Education, Training and Evaluation (ETA) professionals. The program is organized in the organization and offers young students in the field of IT.

InfyTQ

InfyTQ is a specialized training system to provide technological and interpersonal capabilities education to engineering students. The platform offers a structured practical learning to helpstudents to implement knowledge. It is open and encourages holistic development for all engineering students across India. Since the site was launched in February 2019, more than 700,000 students have joined.

Environment

Energy, water and waste management and climate action are the core components of company's environmental initiatives which are in consistent with the worldwide sustainable development goals. Company CSR activities address the issues of global sustainability.

Strategies in Response to Covid-19

In the wake of Covid-19 outbreak, Infosys has established an exclusive COVID-19 strategic management team, headed by CEO and represented by related employees. The safety of employees is always the utmost priority for the company. It ensured sanitization and disinfection of premise regularly. Enhanced medical and ambulatory measures, thermal scanners, necessary elements such as masks, gloves, sanitary and drug products and counseling are made available for employees, suppliers and partners.

Involvement of Samarpan

Infosys has an employees' volunteer group called Samarpan in Development Center Bengaluru. Samarpan was created in 2004 for providing services of community development like education, training, health, sanitation, rural development etc. A thorough charter of initiatives has been prepared by Samarpan each year.

More than 13,000 meals were made available to poor and needy. Essential supplies were provided to various police stands and more than 4,400 rationing kits were given for employees and menial laborers. More than 350 Infosys volunteers have examined 125,000 school children from 1200 rural schools for vision issues.

388 girl students supplied with reusable sanitary pads, under the Samarpan Muskaan initiative. 1276 personnel have taken part in several campaigns throughout the year for blood donation and more than 39 campaigns for blood donation have been held where more than 8500 units blood have been collected.

Samarpan provides scientific kits each year to help 80,000 rural children and Training on the efficient use of kits was provided to 700 rural schoolteachers. Through the Samarpan Shikshana Initiative, 88 meritorious students have been awarded fellowships. Career guidance has been given to more than 1700 pupils. The Infosys Female's Protection and Housekeeping Teams held Financial Education Training to equip them in money considerations. 4,000 used laptops gathered in a giveaway campaign and recycled and repaired to provide for needy children

Samarpan has partnership with a NGO named Unnati, to give training to young people for skill building and almost 743 young people have so far gotten jobs via this initiative in rural areas.

Samarpan Aranya Initiative was launched to give benefit for the development of Bannerghatta National Park and for the Bannerghatta Bear Rescue Centre with their

voluntary efforts and facilities. More than 10000 people of pavagada' shit-drought region was supplied with water and animal feed. Under this initiative, more than 1,500 households visited and more than 5000 people educated on the importance of waste management.

Company has constructed a biological gas turbine that allows the society to cook with biogas as well as using bio-digester compost in fields as nutrition rich wasted manure. Through different workshops, company also emphasized organic agriculture.

Data Analysis and Findings

In the forthcoming section, the data was presented and analyzed to understand the status and trends of CSR in Infosys limited. Cross tabulation, descriptive analysis and percentage method was applied to understand the trends and status of the construct understudy. CSR spend ratio was calculated by the author to understand how much company is spending on regular basis.

Table 1: Prescribed CSR, Actual CSR and Average Annual profit of the company with CSR Spend ratio (Rupees values – in crore)

Year	Average Annual Profits (crore)	Growth Rate of Average annual Profits	Prescribed amount (2% of AAP) (crore)	Actual expenditure (crore)	Growth Rate of Actual CSR Spend	CSR Spend Ratio (%)
2014-15	12100	-	243	239.54	-	1.98 %
2015-16	12800	5.78%	256	202.3	15.54%	1.58 %
2016-17	14371	12.27%	287.42	289.44	43.07%	2.01 %
2017-18	15513	7.94%	310.26	312.6	8%	2.02 %
2018-19	17018	9.70%	340.36	342.04	9.42%	2.01 %
2019-20	17978	5.64%	360	359.94	5.23%	2.00 %

(Source-Author compilation from data Collected from Annual reports of Company concerned and National CSR portal from 2014-15 to 2019-20)

Table 1. exhibits the status of CSR spends in

Infosys limited. Companies Average Annual Profits, Growth Rate of Average annual profits from the previous year, Prescribed CSR amount, Actual CSR spent, Growth rate of Actual CSR spend and CSR Spend Ratio were presented in table no-1. It is observed from the table that Average annual profits are increasing on regular basis which describe the company's growth and prosperity. Prescribed amount is2% of the average annual profits as per sec 135 and schedule VII of the IndianCompanies Act 2013. Actual CSR expenditure is presented in the table to postulate the company's actual contribution in various CSR Projects. CSR spend ratio was calculated by the researcher to understand whether company adheres to the 2 % obligation of CSR spend or not. It is found out that company is fulfilling the condition of spending 2% except in two years i.e., 2014-15 and 2015-16.

Table-2 CSR spend on various development areas from 2014-15 to 2019-20 (Rupees values – in crore)

Year/Focus Areas	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	Total	Average
Health, Sanitation and poverty eradication	123.62	93.88	42.79	10.9	33.71	108.42	413.32	68.89
Education, Training and livelihood enhancement	106.96	66.04	67.67	6.1	92.96	91.77	431.5	71.92
Environment Sustainability	0	0	83.91	206.24	149.24	88.73	528.12	88.02
Development of Underprivileged section	0	0	5	21.06	10.55	30.81	67.42	11.24
National Heritage, art and culture	3.44	6.5	3	33.17	26.18	15.83	88.12	14.69
Rural Development and community development	5.52	35.88	57.61	35.13	19.3	19.28	172.72	28.79
Armed force veterans, war widow and dependents	0	0	29.46	0	10.1	5.1	44.66	7.44
Total	239.54	202.3	289.44	312.6	342.04	359.94	1745.9	290.98

(Source-Author compilation from data Collected from Annual reports of Company concerned and National CSR portal from 2014-15 to 2019-20)

Table-2 presented the Segregation of CSR spend in various thematic areas/ development areas. As per the section 135 of companies act there are certain areas which are mentioned in schedule VII, for the spending of CSR amount. Here company's CSR spend is divided into various thrust areas like Health, Sanitation & Poverty Eradication, Employment, Training & Livelihood enhancement, Environment Sustainability, development of underprivileged section, Projects for Promotion of National Heritage, arts, cultures, Rural development and Community development, Support to armed forces veterans, war widows & their dependents etc. From the data it is resulted that company is spending extensively on Health, Education, Environmental and Rural Development projects.

Adherence of SDG and UNGC

In UN Sustainable Development Summit 2017, all the 193 member countries were agreed upon achieving and fulfilling the Sustainable Development Goals by 2030. The 17 SDGs and its 169 interwoven targets span from eradicating hunger & poverty to dealing with climate change. They pave the way for a healthier, Progressive and

sustainable society. Although the SDG must be fulfilled by 2030, it would necessitate a massive attempt from the governments as well as from companies. The government of India is employing the SDGs as a framework for drafting nation – wide legislation and guidelines. It is essential for companies to reinforce their endeavors.

Infosys has shown unwavering dedication to decreasing carbon footprint while positively impacting the environment, societies and communities at large. Over recent years, the company has transformed it by deploying different new approaches to mitigate environmental issues, and this has fueled progress toward sustainable development agenda such as poverty reduction, equality for women, invention, and economic prosperity. Infosys was awarded with the distinguished United Nations "Global Climate Action Award" in the "Climate Neutral Now" category at the UNCCC (COP 25) in Madrid, Spain. Infosys is the first Indian company to earn this honor. Company's carbon neutral program, provides creative, scalable and realistic climate measures to address climate change besides this company also driving momentum on many other SDG, including equal rights, healthcare, Education and socioeconomic prosperity.

Futurescape Responsible Business Ranking & ESG Performance

Futurescape responsible business ranking provides CSR ranking to the companies for their remarkable efforts in the area of Environment, Social and Governance (ESG). Companies engage in a wide range of sustainable business activities. The breadth and extent of their efforts are difficult to grasp. On the basis of Futurescape study a metric was developed to ascertain the Spread and involvement of company operations in a composite result of the environment, social, and governing factors. Infosys Limited is the highest business, marking the first time that a company from the service sector has topped the Responsible business ranking list. The study of Futurescape revealed that environment and governance are on the rise in India and more emphasis should be placed on social engagement.

Table-3 Top 10 companies in Responsible Business ranking 2020

RANK	COMPANY
1	Infosys Ltd.
2	Mahindra & Mahindra Ltd.
3	Tata Chemicals Ltd.
4	ITC Ltd.
5	Vedanta Ltd.
6	Wipro Ltd.
7	Hindustan Unilever Ltd.
8	Godrej Consumer Products Ltd.
9	Grasim Industries Ltd.
10	Bharat Petroleum Corporation Ltd.

(Source- Futurescape Responsible Business ranking 2020)

In table 3 the companies are presented on the basis of their responsible business

rankings. Infosys is on the top of the list in the year 2020.

Conclusion

Infosys is emphasizing on corporate sustainability which always comprise economical, ecological, and societal perspectives that affect not just the firm but also the communities it serves. In order to meet the needs and aspirations of the social groups, the emphasis placed on environmental and social obligations. The company's Corporate Social Responsibility (CSR) extended beyond charity to include comprehensive social inclusion, policy formulation, and sustainable development

projects. Infosys has created a C-Life philosophy of fundamental values that it strives to uphold in all parts of its company operations. C-LIFE: Customer Delight, Lead by Example, Integrity and Openness, Fairness, and Excellence are Infosys' Core Beliefs.

Infosys has been functioning admirably and with tremendous passion for several years. It has not only performed their obligations but also actively participate in the improvement of societal and environmental issues. This way Infosys has set example for others to follow in the field of CSR.

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Impact of Teachers' Training on Student Learning Comprehensive Conclusion

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Abstract

Teacher training has a significant impact on student learning. When teachers receive effective and on-going training, it enhances their instructional practices, pedagogical skills, and content knowledge. It is important to note that the impact of teacher training on student learning also depends on other factors such as school resources, support systems, and the overall education ecosystem. However, well-designed and comprehensive teacher training programs undoubtedly play a crucial role in improving learning outcomes. The impact of teachers' training on students is a complex issue that has been studied by researchers for many years. There is a general consensus that teacher training can have a positive impact on student learning, but the specific effects of training vary depending on the type of training, the content of the training, and the individual teacher.

Introduction

Teacher training plays a crucial role in improving student learning outcomes. Well-trained teachers possess the pedagogical knowledge, content expertise, and instructional strategies necessary to effectively engage students, accommodate diverse learning needs, create a positive learning environment, and provide valuable feedback. Ongoing professional development further enhances their abilities, ensuring that they stay current with the latest educational practices and research.

Meaning of Teacher Training

Teacher training is not just about acquiring knowledge and skills. It is also about developing a professional identity and a commitment to lifelong learning. Effective teachers are constantly reflecting on their practice and seeking new ways to improve their teaching. They are also aware of the latest trends in education and are willing to adapt their practices accordingly. I believe that teacher training is one of the most important investments that we can make in our children's future. By investing in teacher training, we are investing in the quality of education that our children

receive. This is an investment that will pay dividends for years to come Teacher training refers to the process of preparing individuals to become effective educators and acquire the necessary skills, knowledge, and strategies to teach students in various educational settings. It is a systematic and structured approach to developing and enhancing teaching abilities. The primary goal of teacher training is to equip prospective teachers with the pedagogical expertise, subject matter knowledge, instructional methods, and classroom management techniques necessary to promote learning and meet the diverse needs of students Teacher training programs can vary in duration and format, ranging from short-term workshops to comprehensive degree programs. These programs typically cover a wide range of topics, including educational psychology, curriculum development, lesson planning, assessment and evaluation, teaching methodologies, classroom technology integration, student engagement strategies, and cultural sensitivity. Teacher training may encompass both theoretical and practical components. It often involves a combination of classroom instruction, supervised teaching practice (such as student teaching or practicum experiences), reflective exercises, and ongoing professional development opportunities.

The training process aims to develop educators who can create engaging learning environments, foster critical thinking skills, facilitate student growth and achievement, manage classroom dynamics effectively, and establish positive relationships with students, parents, and colleagues. Teacher training is essential for maintaining high standards of education and ensuring that teachers are equipped with the necessary skills to deliver quality instruction. It plays a crucial role in shaping the teaching profession and improving educational outcomes for students.

Teacher training components

Teaching is not merely about imparting knowledge; it's a complex, diverse, and dynamic profession that requires continuous growth and learning. An effective teacher training program isn't confined to just theoretical knowledge, but it encompasses an array of components. This involves developing soft skills, mastering instructional and teaching methodologies, navigating classroom management challenges, curriculum planning, understanding student learning outcomes, encouraging inclusive practices, and leveraging technological integration.

- *Professional Development:* Catalysing continuous growth is at the heart of teacher training. Professional development forms a crucial aspect of

fostering self-improvement and enhancing knowledge in teaching subject areas, as well as novel teaching techniques. It aids in achieving demonstrable changes in teaching strategies that improve student learning outcomes.

- *Soft Skills and Emotional Intelligence:* An impactful teacher is not solely defined by their expertise in a subject matter but also by their interpersonal skills. Teachers need to be emotionally intelligent, understanding the dynamics of pupil-cantered learning, and nurturing an environment conducive to fostering the emotional, intellectual, and academic needs of students. High emotional intelligence in teachers helps in identifying their students' needs, leading to improved student outcomes.

- *Instructional Strategies and Teaching Methodologies:* The diverse student populous demands innovative instructional strategies and teaching methodologies. Optimizing these strategies based on students' strengths and weaknesses is crucial for nurturing an inclusive learning environment. These methodologies are fundamental in promoting collaborative learning and engaging students meaningfully, making learning enjoyable and effective.

- *Curriculum Planning and Lesson Planning:* Curriculum planning and lesson planning are essential tools which allow teachers to construct instructional sequences for their students, creating a streamlined teaching-learning process. Effective curriculum planning ensures that all learning goals and objectives are met while lesson planning helps in designing instructive, attention-grabbing lessons that engage students.

- *Classroom Management:* Teachers should be well-equipped to handle a variety of classroom scenarios. Effective classroom management strategies help in creating a safe, conducive environment that enhances learning. This includes establishing rules, promoting positive behaviour, and implementing disciplinary techniques.

- *Understanding Student Learning Outcomes:* Successful teachers understand that the fundamental aim of teaching is to improve student learning outcomes. Training programs should focus on imparting techniques to evaluate students' knowledge accurately and develop unique assistance strategies to enhance their comprehension and retention.

- *Inclusive Practices:* Inclusive classrooms ensure equity in education, where every student, regardless of their

differences, is valued and included. Teachers need to be trained in implementing inclusive practices in the classroom, promoting mutual respect and understanding among students.

- *Technological Integration:* With the advancing digital landscape, adopting technological integration in teaching practices is not just a luxury but a necessity. Technology aids in making teaching methods more innovative and engaging by facilitating interactive learning experiences, enhancing teacher-student communication, and enriching the overall teaching process.

- *Communication Skills:* Effective communication is a cornerstone of successful teaching. It allows teachers to articulate their messages clearly, build strong relationships with students, and ensure that every student understands the lessons. Good communication skills also enable teachers to effectively engage with parents and colleagues.

- *Hands-on Teaching Experience and Subject Knowledge:* A strong theoretical foundation accompanied by hands-on teaching experience ensures the overall competency of a teacher. It provides a realistic glimpse into the dynamics of a classroom and helps teachers adapt and develop their individual teaching styles.

- *Cultural Competence:* Cultural competence is the ability to understand, communicate with, and effectively interact with people from different cultures. It is integral in today's diverse schools and classrooms, promoting respect and mutual understanding between teachers and pupils.

Types of Teacher Training Courses in India

In India, there are various types of teacher training courses available to individuals who wish to pursue a career in education. These courses cater to different levels of teaching and are offered by different institutions. Here are some of the commonly known teacher training courses in India

1. **Bachelor of Education (B.Ed.)**: B.Ed. is a popular undergraduate program for individuals aspiring to become teachers. It is a 2-year course that prepares students for teaching in primary, secondary, and senior secondary schools. B.Ed. programs are offered by numerous universities and colleges across India

2. **Diploma in Education (D.Ed.)**: D.Ed. is a diploma course that focuses on elementary education. It is typically a 2-year program and trains individuals to become primary school teachers. D.Ed. programs are offered by various state-

level education boards and teacher training institutes.

3. **Master of Education (M.Ed.):** M.Ed. is a postgraduate program in education. It is a 2- year course that provides advanced knowledge and skills in the field of education. M.Ed. programs are available in universities and colleges across India and are designed for individuals seeking specialization in a particular area of education or aspiring to take up administrative and leadership roles in the education sector.

4. **Diploma in Elementary Education**: D.El.Ed. is a diploma course that focuses on elementary education and is primarily designed for individuals aspiring to become primary school teachers. It is typically a 2-year program and is offered by various state-level education boards and teacher training institutes.

5. **Integrated B.A. B.Ed./B.Sc. B.Ed**.: These are integrated undergraduate programs that combine a bachelor's degree with a Bachelor of Education (B.Ed.) degree. The program duration is typically 4 to 5 years and is designed to provide a comprehensive understanding of both subject knowledge and pedagogy

6. **Diploma in Special Education**: This course is specifically designed for individuals interested in teaching students with special needs or disabilities. It equips teachers with the knowledge and skills to support and educate students with various disabilities. Diploma programs in special education are offered by institutions specializing in special education and inclusive schooling.

7. **Certificate Courses**: In addition to the above-mentioned courses, there are also several certificate courses available in specific areas of education, such as early childhood education, educational leadership, educational technology, etc. These certificate courses are typically of shorter duration and provide specialized knowledge and skills in a specific domain. It's important to note that the availability and specific details of these courses may vary across different states and institutions in India. Aspiring teachers should research and consider the requirements and accreditation of the courses before choosing a teacher training program.

NEP 2020 on Teacher Training

The National Education Policy (NEP) 2020 is a comprehensive framework for the transformation of the education system in India. It was approved by the Government of India in July 2020 and aims to bring significant changes in various aspects of education, including teacher training. Teacher training plays a crucial role in

enhancing the quality of education. The NEP 2020 recognizes this and emphasizes the need for continuous professional development of teachers. Here are some key points regarding teacher training as per the NEP 2020:

- *Multidisciplinary Approach:* The NEP 2020 encourages a multidisciplinary approach in teacher training, wherein teachers are trained in diverse subjects and fields beyond their specialization. This approach helps in fostering a holistic understanding of education and enables teachers to provide a more comprehensive learning experience to students.

- *Continuous Professional Development:* The NEP 2020 emphasizes the importance of continuous professional development for teachers throughout their careers. It recommends the establishment of a robust system for ongoing training, up skilling, and reskilling of teachers to keep them updated with the latest pedagogical practices and advancements.

- *Technology Integration:* The NEP 2020 highlights the significance of integrating technology in teacher training. It recommends the use of online platforms, digital resources, and virtual learning environments to enhance the reach and effectiveness of teacher training programs. This enables teachers to develop technological skills and leverage digital tools for effective teaching and learning.

- *National Professional Standards for Teachers (NPST):* The NEP 2020 proposes the development of comprehensive National Professional Standards for Teachers (NPST) that outline the essential competencies and knowledge required for teachers at different stages of their career. These standards aim to guide the design of teacher training programs and ensure quality in teacher education.

- *Pre-service Teacher Education:* The NEP 2020 envisions the transformation of teacher education programs to ensure that they are multidisciplinary, integrated, and provide a strong foundation in pedagogy It emphasizes the importance of practical training and experiential learning for teacher candidates

- *Four-year Integrated B.Ed. Program:* The NEP 2020 proposes a four-year integrated Bachelor of Education (B.Ed.) program that combines high-quality general education with specialized training in teaching. This program aims to equip teachers with a broader knowledge base and pedagogical skill the implementation of the teacher

training reforms outlined in the NEP 2020 will require concerted efforts from various stakeholders, including teacher education government bodies, and educators. It aims to elevate the status of the teaching profession, enhance the quality of teachers, and ultimately improve the overall

Unravelling Barriers to Effective Teacher Training and Proffering Actionable Solutions

The education system is the cradle of future generations. It's a place where young minds are conditioned, and perceptions are formed. The individuals who play a significant role in this system are educators: the teachers who help shape futures. Pursuing excellence in education is no easy task. Teacher training is an essential ingredient in this journey. Despite its importance, several obstacles hinder effective teacher training implementation. This paper will discuss potential barriers and propose possible solutions, ensuring our leaders of tomorrow are given absolute best education.

1. Lack of Sustainable Training Programs

One of the chief barriers is the lack of sustainable training programs for teachers. These programs often only span over a couple of days without any follow-up support, making them ineffective in long-

term practice. In addition, traditional forms of teacher development, such as single-session workshops, are often inadequate when it comes to encouraging real change in teaching practice.

Solution: A commitment to continued professional development should be prioritized. This includes a year-round calendar of in-service workshops, seminars, and follow-up sessions. Regular mentoring and coaching sessions could provide the much-needed breakthrough in creating sustainable teacher training programs.

2. Unrealistic Expectations and Overburdened Curriculum

High-stakes assessment and accountability measures place heavy pressure on teachers to cover vast curriculum areas in a short period. This hampers their ability to make full use of newly learned skills from teacher training programs.

Solution: Flexibility needs to be introduced into the curriculum planning process. Teachers should have input into the content and pace of the curriculum, mitigating the strain of unrealistic expectations. This alteration fosters a better learning environment, allowing teachers to implement what they've gained from their training sessions.

3. Insufficient Time

Time is a significant barrier to effective teacher training. Not only do training

programs require time, but so does the process of implementing new teaching techniques. Teachers often find themselves juggling between administrative tasks, teaching, marking, and planning, leaving no substantial time for training.

Solution: Effective time management should be a fundamental part of teacher training programs. Furthermore, schools must consider lessening the workload of teachers to allow them to focus on their professional development. Small adjustments like reducing unnecessary administrative tasks can help provide more valuable time for training.

4. Lack of Relevance

Many teachers find the content of training programs irrelevant or not directly applicable to their day-to-day classroom teaching. This makes the training seem redundant, leading to a lack of motivation to participate wholly in the program.

Solution: Training programs must be designed based on the needs of teachers that reflect the real issues they face in their classrooms. Teachers' feedback plays a crucial role here. Allowing teachers to choose their training topics can also enhance the relevance of the training programs.

5. Limited Resources

Limited resources, both in terms of technology and financial constraints, pose a significant barrier to effective teacher training. Inadequate resources to facilitate new teaching methods discourage teachers from embracing innovative approaches.

Solution: Schools must prioritize budget allocation for teacher training programs. Additionally, partnering with Edu-tech companies and investors passionate about education can provide the necessary technological support.

6. Insufficient Support for Peer Learning

Peer-learning holds tremendous potential for developing innovative teaching methods. However, this is often overlooked, leading to an overreliance on external teacher training programs.

Solution: Encouraging a culture of peer observation and reflective practice can cultivate an environment ripe for professional development. Regular forums to discuss challenges faced by teachers and sharing techniques that work can make a significant difference.

The Privatization of Teacher Training Programs

The role of the teaching profession in shaping society cannot be understated. It is vital to ensure that educators are well-equipped to provide top-notch instruction. In recent years, there has been a noticeable trend towards privatizing teacher training programs. While this shift aims to broaden

access to training and infuse new perspectives, a growing chorus of critics contends that it has gone too far. The surge in privatization within teacher training is an undeniable reality of our era, with many regions globally embracing private entities in the field of teacher education. This surge is primarily propelled by the principles of neoliberalism, which often champions market-driven approaches for allocating resources, even in sectors traditionally seen as public goods, like education. As a result, the landscape of teacher training now features a multitude of private providers, ranging from large for-profit corporations to small local businesses and non-profit organizations. The heart of the matter lies not in the presence of private entities in teacher training but in the extent of their influence. Critics argue that corporate priorities often overshadow pedagogical values. Commercialization tends to promote quick-fix, one-size-fits-all solutions that may not address the unique training needs of individual teachers. Furthermore, market-driven strategies can sideline areas that may not yield substantial profits, such as special education or rural teaching, despite their crucial role in the broader educational landscape. Balancing the benefits of innovation with the preservation of educational values remains a central challenge in this evolving terrain.

Potential Solutions to the Excess Privatization of Teacher Training

To tackle the issue of the excessive privatization of teacher training programs, we must first and foremost recognize the importance of public accountability in teacher education. Incorporating strong public regulatory mechanisms provides one solution. Governments should establish robust quality assurance frameworks that hold all training providers, public or private, accountable for the quality of their graduates. This is vital to ensure that privatization does not undermine the quality of teacher training. Secondly; the role of public institutions in teacher training programs should not be underestimated. Public universities and colleges have a long and proven history in teacher education, anchored in research and practice. Their role must not be minimized in favor of for-profit entities. Instead, a balanced approach where public and private providers collaborate rather than compete could help maintain the integrity of teacher training. Lastly, the teaching profession must regain control over its training practices, becoming the primary decision-maker in what becomes best practice. Professional teacher associations could play a significant role in redesigning teacher training, bringing it back to its roots in pedagogy and content-specific practice. Elevating the status of the

teaching profession will likely dissuade profit-seeking entities from entering the teacher training market. In conclusion, while the privatization of teacher training programs brings with it certain advantages; its excessive nature has raised several concerns. To ensure that teacher training remains an endeavor that centers on pedagogical know-how rather than market dynamics, a holistic approach incorporating regulatory mechanisms, role restoration for public institutions and professional empowerment is key. Only by bridging the gap between public and private inputs in teacher education can we ensure the continued strength of our education systems, and by extension, the future of our societies.

The Impact of Teacher Training Programs on Students Learning: A Comprehensive Conclusion

In the realm of education, there is a crucial bond between the teacher and the student. This bond is guided by the teacher's knowledge, skills, attitude, proficiency, and teaching methods. These elements significantly impact the student's participation, comprehension, learning, and overall academic performance. A key stratagem in enhancing these aspects is teacher training programs, designed to improve the teachers' abilities and effectiveness in teaching.

The Vital Role of Teacher Training Programs

Teacher training programs have opened a gateway to a whole new approach in education. Through these programs, teachers can obtain extensive knowledge, develop their skills, and explore innovative techniques in teaching. The refresher courses, seminars, workshops, and conferences that constitute teacher training empower the teachers while simultaneously making them adapt to the evolving educational ecosystem. These programs teach creative methodologies and updated content, which resultantly have a profoundly positive effect on students' learning journey.

- **Improved Teaching Methodologies** Teachers equipped with advanced methodologies through training programs are more capable of explaining even the complex concepts with ease. They use various teaching strategies, coming up with innovative approaches that are more understandable and relatable for students. These approaches may include games, group work, experiments, outside the classroom teaching, and more, which not only make learning fun but also more engaging for the students. Therefore, the teacher training programs actively enhance students' comprehension,

interest, and active engagement.

- **Up-to-date Knowledge**

The world is evolving at a fast pace. To cope up with this rapid advancement, it is necessary to stay updated with the latest knowledge. This applies to the education sector as well. With teacher training programs, teachers get the opportunity to brush up their knowledge and learn the latest developments in their respective fields. This updated knowledge is then passed onto the students, enriching their understanding and preparing them competently for the future.

- **Enhanced Student Performance**

Research studies have found a direct, positive correlation between well-trained teachers and student performance. The skills and proficiency that teachers gain from training programs reflect on their teaching style, which influences the way students learn and perform. No learning is possible without motivated learners, and these programs train teachers to create engaging lessons, stimulate creativity, and establish a positive learning environment that inherently inspires students to perform better.

- **Promotion of 21st Century Skills**

World economies are changing, and so are the skills required to be successful. The 21st Century Skills such as creativity, critical thinking, communication, and collaboration are necessary for the students of today to thrive tomorrow. Teacher training programs are valuable in this context as well. They equip teachers with the needed acumen to instill these skills in students, making them future-ready.

- **Building Positive Student-Teacher Relationships**

Furthermore, teacher training programs help teachers understand the psychology of students, the way they learn, their learning pace, their interests, and their issues. This understanding forms a basis for strong student-teacher relationships. These bonds foster an environment where students feel safe, motivated, and more inclined to learn, further elevating their academic performance.

- **Closing Thoughts**

No doubt, the essence of education can be encapsulated in the ancient Chinese proverb, "Give a man a fish and you'll feed him for a day. Teach a man to fish, and you've fed him for a lifetime." Hence, the focus should be on 'teaching the teacher first'. The profound impact of teacher training programs on student learning cannot be overlooked. Comprehensive teacher training, therefore, should not be an option but a compulsory component of a teacher's career. Making teachers ready to thrive in the classroom will inevitably lead

to students who are ready to excel in the real world. The future of global education, thus, balances greatly on the quality of teacher training programs and their impacts on student learning.

Conclusion

Teacher training programs are essential for improving student learning. They provide teachers with the skills and knowledge they need to be effective in the classroom.

Teacher training programs help teachers develop a variety of teaching strategies, use technology effectively, assess student learning, reflect on their practice, and stay up-to-date on the latest educational research and practices. These programs are essential for improving student learning and should be a priority for all school districts and educational organizations.

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Emerging Trends of Teacher Education in India: To Address the 21st Century Demands

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Abstract

Teacher is the heart of teaching learning process. Teachers are fostering hope for the future. Now everything is changing very fast in our society so, teaching learning process is no exception from them. There are various emerging trends in the field of teacher education of 21st century India to address the need of the hour. It is clearly mentioned in National Education Policy 2020 that teacher needs to have training in high quality content as well as in strong pedagogical knowledge. For this purpose, pedagogies which are followed by the other countries and among those which are suitable and meaningful in our country require to be collected and practiced in our education system. This is the time when teacher have to understand about different aspect of technology as well as blended learning because it places a very crucial role for productive output. Teachers are not only taught but also involved in continuous research process for the development of education system. At present situation inclusive education is the demand of our society and a teacher must be inclusive in attitude and aptitude. To address the plurality of our nation a teacher needs to be multilingual and aware and empathetic towards multicultural aspects. Today's the trends of teacher education to create a connectivism approach in education and improving the critical thinking and problem-solving skills among the teachers. So, the objective of the paper is to explore the various trends of teacher education in Indian context.

Keywords: *Teacher Education, Multicultural Approach, Transformative Pedagogy, Vocational Education.*

Introduction

Due to the rapid advancement of technology and the shifting values of students, teacher education is currently in a transitional phase. To understanding the underlying dynamics of teaching and learning concepts used by students in the era requires considerable efforts. The progress of the society shaped through the wheel of education where teachers are the key facilitator. Modern society urgently needs high-quality education, which can only be provided by qualified and enthusiastic educators. In the age of globalization, gratifying the constantly evolving educational needs and demands of the knowledge-based society is gradually more considered as dependent on the competence of a teacher (Pushpanadham, 2020). Teaching is the

most important aspect of education. For preparing a quality teacher, it is very crucial to create an updated teacher education program. There must be a variety of approaches like use of technology, suitable pedagogy the process of learning and unlearning, how to learn that's very crucial part in the field of teacher education, so that every prospective teacher can be competent to address the need of the learners. An effective teacher education program is rational and efficient to focus on some specific pedagogical concerns. This has necessitated the improvement of the system of teacher education so as to prepare quality teachers.

Teacher education is at a turning point and about to undergo a metamorphosis in order to adapt to the shifting needs of society. There are new requirements for education today, with a particular emphasis on the teachers who serve as the facilitator of a high caliber of instruction. Modern society is technologically evolved, and the present worldwide issue is 'quality education'. The transformation of education can only be accomplished by effective educators who serve as teacher and educational leaders on the front lines (Hans & Aktar, 2013). In order to learn more about the background study of the emerging trends in teacher

education and their developments, we have looked into it.

Objectives of the Study

1. To explore the current trends of teacher education in India.

Method of the Study

The present study conducted based on the secondary data collected from the different resources for instance books, journals, articles, magazines, web resources etc. the methods are followed here exploratory in nature.

Some Current Emerging Trends of Teacher Education

Teacher education programs over the years have undergone developmental changes due to the technological, economic and cultural forces (Pushpanadhan, 2020) and those changes has prompted the need for new competencies for teachers. In response to the changing educational landscape and the dynamic challenges of the twenty-first century, teacher education has undergone dramatic changes to better prepare educators with the skills and competences required for effective teaching. UNESCO report of the international Commission on Education in the twenty first century envisages that the rethinking of teacher education is necessary in order to bring future teachers with human

and intellectual qualities that will facilitate a fresh approach to teaching (UNESCO, 1999).Here we explores some of the aspects which are very much need to inculcate in teacher education programme to improve the quality of teaching profession, bring changes and updates to meet the changing needs, to address the preparing teachers for diverse learners in the era of digital literacy.

Multidisciplinary Approach in Teacher Education

Teacher preparation is an activity that requires multidisciplinary perspectives and knowledge, formation of dispositions and values and development of practice under the best mentors (National Education Policy, 2020). Multidisciplinary curriculum is studying a topic from the viewpoint of more than one perspective and solving a problem using a different disciplinary approach (Klaassen, 2018).So, preparing teacher through the lens of multidisciplinary approaches is vital because multidisciplinary approach removes the barriers between various disciplines, and it integrates them in order to produce or construct comprehensive and innovative sets of knowledge in order to meet the demands of the emerging societal needs (Roy, 2022). In this approach educators and trainee teachers will illustrate a lesson using their experiences from

various disciplines. As a result of the multidisciplinary approach's emphasis on cooperation, critical thinking, and adaptability, instructor are more equipped to deal with the complex dynamics of today's classrooms and meet the diverse needs of 21st century students.

Connectivism in Teacher Education

The concept of connectivism as a pedagogical theory emerged in reaction to the extremely quick development of information and communication technology, which influencing the current educational system (Smidt, &Abhari, 2017). Connectivism emergence as a theoretical framework in teacher education is a reflection of the necessity to modify pedagogical methods for the digital era. Siemens (2005) introduced the term "connectivism," which holds that learning is a process of linking information nodes and that being able to navigate these networks is an essential skill in today's information-rich environment. The ability to learn what we will need for tomorrow is more significant than what we know today in the modern day. Teacher Educators encourage this learning process by connecting learning networks and acting as a participant rather than a leader in the learning process. Connectivism learning occurs in teacher

education when peers are connected and share their opinions, viewpoints, and ideas through a collaborative approach.

- *Continuous Professional Development in Teacher Education:* According OECD – Teaching and Learning International Survey (Talis, 2009), CPD can be defined as "the one which involves those activities that develop an individual's skills, knowledge, expertise and other characteristics as a teacher." It ensures the professional responsibilities of a person. National Education Policy acknowledged that teachers will be given continuous opportunities for self-improvement and to learn the latest innovations and advances in their professions (NEP, 2020). National Professional Standard for Teachers has been developed by NCTE in support with the experts as a set of guidelines for determining attributes of teachers at different levels of their career path (NPST, 2021). CPD prepare the teacher educators and teachers with up-to-date knowledge and updated development in the education field (Srinivascharlu,2019). Teachers can equip themselves with ever-changing skills and competences in the teaching learning process and satisfy the needs of 21st century learners through

continual professional development. Teachers will be trained in learner-centered pedagogy as well as how to develop high-quality content using online teaching platforms and technologies.

- *E-Learning in Teacher Education:* E-learning can be utilized as an educational instrument that is instructive, contextualizing, constructive and communicative (Behera, 2013). E learning is crucial to the teaching learning process for raising the standard of teacher preparation. Therefore, each and every teacher trying to be compatible with the electronic revolution which has become quite essential for other related changes in the field of education. E-training helps in achieving the goals of education effectively and efficiently. Individual variations, such as job analysis and principles of indirect learning have been discovered through study of the e training based on the teacher education programme. Government of India has launched NISHTHA training for the teachers of elementary and secondary level that aims to capacity building for improving quality of school education through integrated teacher training. The NISHTHA effort, which seeks to develop capability, is titled "Improving Quality of

School Education through Integrated Teacher Training." All primary school principals and teachers who participate in it have their skills improved. The inspiration and preparation of instructors to encourage and assist young people's critical thinking is the primary objective of this extensive training programme. A pioneering effort is to provide standardized training modules at the federal level for all states and union territories (Kumar & Gangwar, (2022). Active participation, motivation, and trainer competence are some of the positive effects of using the e-training approach (Siswanto, Sutarto, & Mulyono, 2018).

- *Transformative Pedagogy:* The goal of transformative pedagogy is to help students establish new epistemologies, centre of multiple ways of knowing, and gain a feeling of critical recognition and agency. It does this by empowering them to critically analyze their ideas, values, and knowledge with reflection. Transformative pedagogy has been defined as an educational philosophy that combines social constructivism and critical pedagogy (Tinning, 2017). Transformative pedagogy believed in the learning with engagement. It believes that a relevant education goes beyond the four walls of the classroom and attempts

to place the subjects in their social and physical context. Khedkar & Nair conducted a study and they found that the faculties mainly felt that experience as a teacher would help them to adopt the methods of transformative pedagogy and also expressed that there is a need to adopt transformative pedagogy so as to stop the routines mechanical environment, for dropping the competition among the students can be exposed to various subjects, linking students learning through diversified professionals and changing tradition of existing employment marketplace (Khedkar & Nair, 2016). Listening, talking, acting and reflecting are all parts of a problem-solving approach of teaching. A reform in the country's educational pedagogy is urgently needed (Nishant, 2021). It is time to think about moving away from an examination-based educational model to skill-based education through the practicing transformative pedagogy in teacher education programme.

- *Vocationalization in Teacher Education:* Vocational education will be gradually included into all institutions of school learning and higher learning over the decade. The

National Education Policy 1986 that modified on 1992 states that "the introduction of systematic, well planned and rigorously implemented programmes of vocational education is crucial in the proposed implemented educational reorganization". The 12th five-year plan (2012-2017) projected that only less than 5% that is very small percentage of Indian workforce in the age group 19-24 received formal vocational education and numbers only underline the urgency of the need to accelerate the spread of vocational education in our country. Vocational education will be integrated into all school and higher education institutions in a phased manner over the next decade (NEP,2020). Due to the employment crises and skills mismatch between employment market needs and training provided by general and vocational education and training provision is a significant, even expanding, part of the national education system and any skill development agenda. New education policy also addressed that by 2025; at least 50% of learners through the school education and higher education system shall have exposure to

vocational education, for which a clear action plan with targets and timelines will be developed (NEP, 2020).So, providing vocational exposure to the young learners it is very critical to preparing a vocationally skills teacher who can transact the general education with the flavor of vocational education.

- *Continuous Research in Teacher Education:* At time when teacher education is under the active development across the nation, an important question for all those seeking to improve the quality of teaching and learning how to boost the research to inform the design, structure and content of teacher education programme. The research knowledge is needed for local curriculum planning and development of teaching and school practice as well as for the assessment of teaching and learning (Lavonen&Jari, 2018). Teacher educators are now doing action research on teaching-learning process for improving the teacher's professional development that's very crucial to understand the real classroom situation so that teachers

can able to solve educational problem in school environment.

- *Multicultural Approach in Teacher Education:* Multicultural education has become crucial in the twenty-first century due to the diversify status of society. Teachers must be prepared in terms of philosophy, pedagogy and curriculum to deal with the challenges of a gradually more diverse population and actively to work on behalf of equity issues in their schools and communities (Chou, 2007, Page-141). This is an approach to teaching that considers the unique cultural backgrounds of youth (Emdin, 2011). The last five decades focusing on the rhetoric and reform in teacher education showed the importance of multicultural education while training the teachers to meet the basic requirements of the students regarding education. Challenging multicultural education through state policy initiatives is created on two conjectures which include that the preserving teachers do not have any awareness regarding multicultural education and secondly the higher level of multicultural awareness coincides with the pedagogical ability.

- *Blended Learning in Teacher Education:* Due to the growing demand for curricula and the need to provide pertinent, interesting training, teacher educators are under pressure to evaluate and change their programmes. Many have viewed the prevalence of online education as a potential solution to a constantly expanding problem; however, accreditation with reference to course content and competencies is crucial (Kumar, G., & Gangwar, 2022). Blended learning transforms the teacher's position from that of a knowledge supplier to that of a coach and mentor. This shift does not imply that teachers are less important or play a passive role in their students' education. On the contrary, using Blended Learning teachers can have an even greater influence and effect on their students' learning. Classroom education has traditionally been teacher-directed, top-down, and one-size-fits-all, with some differentiation thrown in, but with Blended Learning it is becoming more student-driven, bottom-up, and individualized, with differentiation as a primary element. (UGC, 2021). It can broaden the

spaces and opportunities available for learning. Promoting digital learning and education the importance of face to face in person learning is fully recognized by the National Education Policy 2020 (NEP 2020).

- *Internationalization in Teacher Education:* Today's teacher education influenced by global practice and it benchmark with internationally. Now we need to have best teacher education program so that teacher can deal effectively with beyond the country. Internationalization of teacher education has the potential to have an impact not just on the global community, but also on the local communities where teachers work. (Mikulec, 2014). Global education is defined as an approach to education which seeks to enable young people to participate in shaping a better shared future for the world. The global perspective of teacher education is a unique approach that prepares today's prospective teachers all over the world to function in a global setting under the supervision of intellectually and professionally organized teacher educators. Teacher education programs should understand the

leadership roles to facilitate integration of international education issues, practices, and concerns in school level curriculum (Roberts, 2007). Teacher education programme can prepare teachers for global engagement through learn the abroad education system as well as by incorporating different models and curriculum frameworks for global education.

Discussion

Teacher education is a programme that focuses on teacher competency and competence in order to prepare them to deal with new difficulties in the classroom. Education is no longer limited to books, but has expanded into a variety of new frontiers (Rani, 2016). Changes in education have had an impact on teacher education. When the outside world enters the classroom and schools open to the outside world, we need to prepare instructors with new viewpoints. The emphasis on globalization and individualization in pre-service and in-service teacher education programmes has resulted in a paradigm change. Organization for Economic Co-Operation and Development (OECD, 2005) report assert that "Teacher Matter'' and calls for a greater emphasis on luring, fostering and keeping

excellent teachers. "The destiny of India being shaped in its classroom" (Kothari Commission, 1964-66) so; lots of effort should be taken to advancement in the field of teacher education for being right shaped to our future generation. Teachers are the powerful and meaningful role models for students at all levels, and the way the act influences both learning and motivation (Pushpanadham, 2020 & Bandura, 1989). The current trends in teacher education in India are in line with the demands of the twenty-first century. These changes underline the importance of adaptability, innovative thinking, and student-centered approaches in pedagogy. Teacher education in India is on the edge to create a new group of educators equipped to navigate the complexities of the modern educational landscape and prepare students for success in an ever-changing world by embracing technology, promoting inclusivity, focusing on competency-based education, prioritizing professional development, and fostering interdisciplinary collaboration. National Education Policy has suggested there is an urgent necessity to start integrated teacher education programme throughout the country and to convert all academic institutions and places into the multidisciplinary centers for holistic development (NEP, 2020). Information communication technology has revolutionized every industry and each component of our society as well as our culture. In the present day's technology need to be integrated with tomorrow's technology to achieve the best synergy in quality of techno-pedagogy. So our teachers and teacher educators must be well prepared to work on such future technological and pedagogical development.

Conclusion

On the basis of above discussion, in conclusion we can summarized that the emerging trends in teacher education in India hold the potential to transform the education system to meet the demands of the 21st century era. These trends reveal a broader shift towards student-centered learning, adaptability, inclusivity and experiential learning. A key goal of teacher education in India is to produce high-quality, professional, skilled and passionate teachers through the excellence teacher education programme. Today's teachers will deal with our future generation therefore we should organize our teacher education programme such a manner where our current approaches must be decorated. As we all may aware that now we are living with a click generation where everyone can access

all the information just through a single click, so now the role of teacher to transformation the society not just transfer the information. 21st century education needs to process collaboration based rather than the competition-based education. So, today's most challenges task of teachers is - information transform into knowledge and knowledge transform into action and everything will be possible when we inculcate the modern approaches of teacher education in our education system.

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Landscape of World Publishing in the Era of ICT

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Abstract

E-publishing has transformed the way we access, share, and produce knowledge. It has made information more accessible and affordable, and it has empowered individuals to publish their own work. This paper discusses the basics, merits, and demerits of e-publishing in the internet age. It also explains the different types of e-publishing methods and how to use the internet to publish content. In other words, e-publishing is a powerful tool for researchers, academics, and knowledge seekers of all kinds. It has the potential to democratize knowledge and make it more accessible to everyone.

Keywords: ICT, Electronic Publishing.

Information and communication technology (ICT) has enabled electronic publishing (e-publishing), which has revolutionized the way we collect, store, and retrieve information. Libraries and information centers have always played a vital role in providing access to information from various fields through hard copies and soft copies of available sources. ICT has been a major boon to these library systems and other information centers, both in academia and for public use. These innovative technologies have facilitated access to sources through the internet.

Teachers, researchers, and knowledge seekers can now share knowledge with peers, obtain information, clarify their doubts, and provide feedback on any subject area from anywhere in the world through the internet. Information on any subject is now easily available to everyone, including those in underdeveloped countries, through the internet web portals of educational institutions in developed countries, without delay. This technology has also transformed the process of publishing and distributing information. E-publishing has become a foundation for a new and innovative way to provide the right information to the right person at the right time.

Concept of Electronic Publishing

The term "electronic publishing" was first introduced by William Dijkhuis in 1977. E-publishing is the use of computers to create, distribute, and store information. The first e-publications were plain text emails sent to

subscribers via mailing lists in the 1980s. Later, CD-ROMs became a popular medium for e-publishing, due to their high quality, ability to store pictures and figures, low cost, and long lifespan. CD-ROMs are still used for e-publications such as encyclopedias, dictionaries, atlases, and handbooks.

E-journals first appeared in 1994–95. In 1995–96, e-journals began to be distributed on the web, which was a huge success. The Portable Document Format (PDF) allowed for the embedding of links in the text and the use of multimedia tools. E-publications can now be instantly downloaded onto Personal Digital Assistants (PDAs), which are e-book devices that many people already carry in their pockets for other purposes.

Meaning of E-Publishing

E-publishing is the use of computers to create, distribute, and store information. It has become increasingly popular in recent years, due to its many advantages over traditional print publishing. E-publications are often more affordable, accessible, and convenient than print publications. They can also be more interactive and engaging. Some examples of e-publications include: E-books, E-journals, E-magazines, E-newspapers, E-reference books, E-textbooks, E-dissertations. E-publishing has had a major impact on the way we consume information.

It has made it easier for people to access information from anywhere in the world, and it has also made it easier for people to publish their own work.

Features of Electronic Publishing

1. *Accessibility:* E-information is easily accessible to all users, regardless of their location.
2. *Convenience:* Users can access, download, and save e-publications much faster than print versions.
3. *Affordability:* Disseminating information in the form of research ideas and results is faster and cheaper through e-publishing.
4. *Scalability:* E-publishing is not limited to a single user or location.
5. *Searchability:* E-publications are easy to search and browse.
6. *Ease of use:* E-journal articles are easy to use and access, following a step-by-step procedure.

Advantages of Electronic Publishing

1. Improved access: Electronic search engines make it easy to find and access information.
2. Public peer review: Readers can comment on and evaluate e-publications, and authors can respond. This can lead to

a more open and transparent review process.

3. Faster dissemination of information: E-publishing can expedite the entire publishing process, from submission to publication. This means that scientific information can be disseminated more quickly.

4. Hypertext and hypermedia links: E-publications can be linked to other electronic information resources, making it easy for readers to explore related topics.

5. Multimedia: E-publications can use multimedia elements such as sound, video, and simulations to present research findings and other information in a more engaging and informative way.

6. More efficient dissemination of research findings: E-publishing services such as abstract alerts and article matching can help researchers to stay up-to-date on the latest research in their field.

7. Enhanced discourse: E-publishing can facilitate communication and discussion among researchers and other stakeholders.

Categories of E- Publishing

E- Publishing is divided into following nine categories:

- Electronic Books (E-Books),

- Electronic Periodicals, Print-on-Demand (POD),

- Digital Content,

- Electronic Ink,

- Email Publishing and Web Publishing,

- Electronic Database,

- Electronic Publishing on CD-ROM.

Notable E- Publishing Journals URLs

Research content is freely available in electronic form on various platforms such as journals, by publishers over web portals and web pages to encourage more and more people to access the information to get the contents cited and publicized. Examples of some of the open access resources and organizations are given below:

E- Publishing Journals	E- Journals URLs
Springer Open Journals	www.springeropen.com/journals-a-z
Taylor & Francis Open Access	www.tandfonline.com/openaccess
Oxford Open	www.academic.oup.com/journals/pages/open-access
Science Direct Open Access Content	www.sciencedirect.com/browse/journal-and-books?
Cambridge University Press	www.cambridge.org/core/what-we-publish/open-access
SPARC	www.arl.org/sparc/
Public Library of Science	www.plos.org/
PubMed Central	www.pubmedcentral.nih.gov/
HighWire Press	highwire.stanford.edu
BioMed Central	www.biomedcentral.com/

Writing a Public Interest Statement

When academic authors write an article, research paper or a book few things should be kept in mind so that their work will reach to majority of masses as they come up with new ideas in their respective works. Academic articles influence policy and practice at a wider level not only academicians and scientists therefore well-written public interest statement highly offers an easy way

to help readers to understand quickly and get responses from both academicians and non-expert audiences. While writing a Public

Interest statement few things are necessary which are discussed below:

1. Keep it short and simple	2. Get the reader's attention	3. Highlight wider relevance	4. Conclude with relations to broader concepts and larger issues
• Make the focus of your article clear, using simple terms that can be understood by a non-expert audience.	• Think of the statement as an advert for your article -use active language to draw the reader in and state your main points early.	• Be clear why this article has the potential to impact on a wider level, beyond the specialist academic area.	• Include any ways in which your article adds to broader conversations, particulary if they are outside your main area of focus - this will increase the potential for your research to reach a larger audience.

Source: https://support.google.com/legal/answer/3463239?hl=en

Submitting a Journal Article: Ethics for Authors

What to think about and why is it important?	
▪ **Be clear on authorship** ————▶ ▪ *Have you included all the contributors to your article (in the right order), and are your acknowledgments Up-to-date?* Agree with your co-authors which journal you are submitting to, and tell them when you submit.	▪ **Agreement makes getting published easier** Disputes on authorship can show down peer review and publication, so make sure decisions have been made together and everyone is aware.
▪ **Avoid plagiarism (and self-plagiarism)** ————▶ ▪ *Have you checked you've cited your own, and others', Work correctly?* You'll also need to have written permissions for any reproduced figures or tables	▪ **Who Checks?** Editors and reviewers will look for similarities to other published articles, as part of the peer review process.
▪ **Double check your data** ————▶ ▪ *Using datasets gathered by someone else?* Check you have permission to use them in your work. Plus, if a statistician helped with data analysis makes sure you acknowledge this.	▪ **Include everything: Check the Instructions for Authors** Some journals may need supplemental data to be submitted along with your article. Check the journal's Instructions for Authors to make sure you've including everything you need.
▪ **Declaring any interests** ————▶ Make sure you've declared any funding, and the role of the funder, in your cover letter.	▪ **Transparency is essential** Relevant interests and relationships that could be seen as influencing your findings (whether financial or otherwise) must always be declared to the journal editors, reviewers, or readers.
▪ **Upholding standards** ————▶ ▪ *Describing experiments or procedures?* Make sure you include warning of any hazards that could be involved in replicating these (including any in instructions, materials or formulate you've mentioned). You'll also need to cite any relevant standards or codes of practice, and include a reference to them.	▪ **Evidence you've followed procedure** National and International procedures govern experimentation on people and animals. Statement of ethical approval, trial registration and informed patient consent will all be needed with your submission.
▪ **One at a time** Remembering to submit your article to just one journal at a time, so it is only ever being considered by one editor and one set of reviewers. If you decide you want to send it to another journal, you can always withdraw your paper.	

Source: https://authorservices.taylorandfrancis.com/ethics-for-authors/
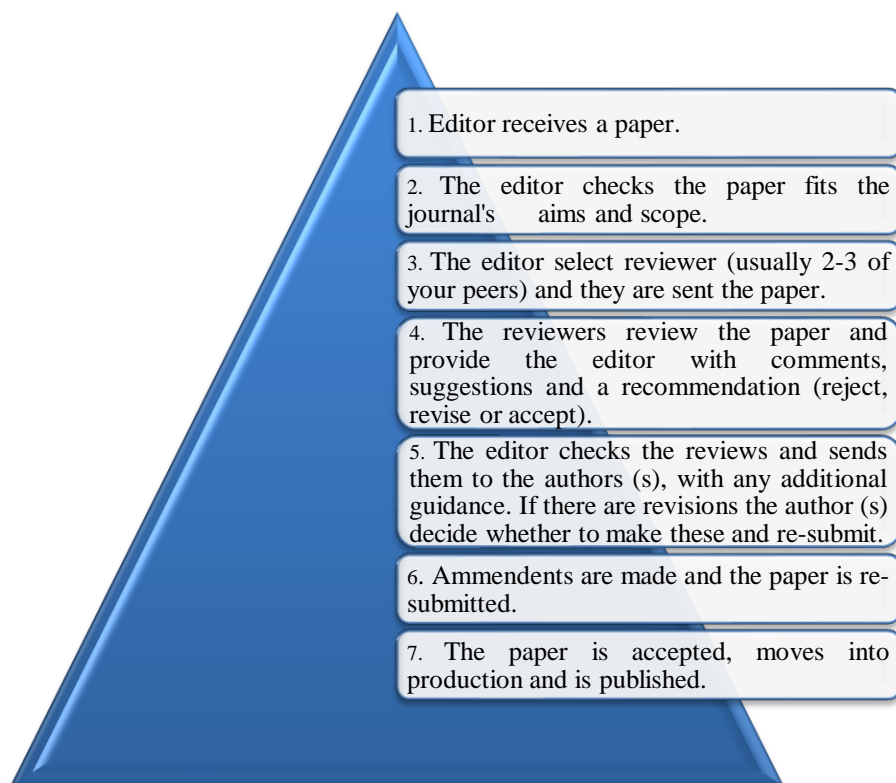
Understanding Peer Review

Every article published in a journal goes through rigorous peer review. Peer review allows the research work to be evaluated and commented upon by independent experts i.e., 'peer' who work within the same academic field. It aims to:

- ✓ Ensure that submitted articles are suitable for the journal and its readers.

- ✓ Give detailed and constructive feedback on the research work from experts in the field.

- ✓ Alert about errors or gaps in literature which have been overlooked.

- ✓ Create a discussion between the author, reviewers, and editors over the research work.

Before submitting the paper

1. It is necessary to check the journal's Instructions for Authors in which the article is to be submitted online.
2. It is to understand what type of peer review—single, double-blind, or open peer review will the article go through.
3. *It is mandatory to know what is expected to write.*

1. Editor receives a paper.

2. The editor checks the paper fits the journal's   aims and scope.

3. The editor select reviewer (usually 2-3 of your peers) and they are sent the paper.

4. The reviewers review the paper and provide the editor with comments, suggestions and a recommendation (reject, revise or accept).

5. The editor checks the reviews and sends them to the authors (s), with any additional guidance. If there are revisions the author (s) decide whether to make these and re-submit.

6. Ammendents are made and the paper is re-submitted.

7. The paper is accepted, moves into production and is published.

The Peer Review Process
Source: https://authorservices.taylorandfrancis.com/peer-review/

Mastering Metrics Guide

FOR RESEAARCHERS	FOR JOURNAL EDITORS	FOR LIBRARIANS
Metrics can help you to choose which journal to submit your work to, and assess the ongoing impact of an individual piece of research (including your own)	Metrics can help you assess your journal's standing in the community, raise your journal's profile, and potentially attract quality submissions.	Metrics can help you to select journals for your instruction, and analyze their usage and impact. They can also help you assess the impact of research published by those in your institution.

(J) Journal Metrics (A) Article Metrics

(J) Impact Factor	(J) 5-Year Impact Factor	(J) Immediacy Index	(J) Cited Half-Life
Impact Factors are the most commonly used metric to assess a journal. Different subject areas have varying citation patterns which are reflected in the calculations. Released annually based on the Web of Science Journal Citation Reports ®, only journals in the Science Citation Index Expanded (SCIE) and Social Sciences Citation Index (SSCI) can have an Impact Factor. *How it's Calculated:* Number of citations in one year to content published in the previous two years ÷ Numbers of articles and reviews published within the previous two year	5-year Impact Factors attempt to reflect the longevity of research and more stable year-on-year for smaller titles as there are a larger number of articles and citations included. These are useful for subject areas where it takes longer for work to be cited. *How it's calculated:* Number of citations in one year to content published in the previous five years ÷ Number of articles and reviews published within the previous five years	The immediately Index focuses on how quickly content is cited rather than its long-term impact. The immediacy Index can vary between subject areas and journal type. *How it's calculated:* Number of citations to articles published in a given year ÷ Number of articles published in the same year	Cited Half-life is a measurement of the "archivabilty" or longevity of research. It reflects how long research continues to be referred to and cited after it has been published. *How it's Calculated:* Number of years after which 50% of the life time journals citations in a year have been received
(J) Eigen factor	(J) Article Influence Score	(J) Cite score	(J) Source Normalized Impact Per Paper (SNIP)
The Eigen factor is based on the idea that not all citations are created equal. Its measures the influence of a journal within the relevant literature over 5 years. A citation from a highly cited journal is worth more than one that receives few citations. *How it's calculated:* Number of citations in one year to content published in the previous years (weighted) ÷ Number of articles published within the previous five years	The Article Influence Score measures the average influence per article of the papers published in a journal. It is calculated by dividing the Eigenfactor by the number of articles published in the journal. A score greater than 1.00 means that each article has an above influence. *How it's calculated:* The normalized Eigen factor per article	Cite Score aims to capture the optimum citation period for most subject areas. It is ratio of citations to content published, and considers all contents. *How it's calculated:* Citations in a given year to articles published in the previous three years ÷ Citations in a given year to articles published in the previous three years	SNIP is published twice a year and looks at a 3-year period. It attempts to correct subject specific characteristics so it is easier to make cross discipline comparisons between journals. It measures citations received relative to citations expected for the subject field. *How it's calculated:* Journal citation count per paper ÷ Citation potential in the field
(J) Scimago Journal Bank	(J) (A) H-Index	(A) Altimetric Attention Score	(A) Author Bibliometrics
Like the Eigen factor, the SJR aims to capture the effect the subject field, quality, and reputation of a journal has on a citation. It weights a citation by prestige and aims to measure the prestige one journal gives to another. *How it's calculated:* Average number of weighted citations in a given year ÷ Number of articles published in the previous three years	The *h*-index attempts to measure the productivity of a researcher and the citation impact of their publications. It varies by field and depends on which data source is used to calculate the value. If you have h-index of 10 you must have published at least 10 papers that have each been cited 10 times or more. *How it's calculated:* Number of articles published which have received the same number of citations	Almetric Attention Scores are based on the number of mentions an article receives from various source types. Within each source type, each mention in an international newspaper have a different weighting g to someone tweeting about the same piece of research *How It's calculated:* Gather data collected around research content that isn't usage or citation data, such as mentions on social media, in policy documents, and online references	The simplest author level metric is the number of papers published by an author. The number of citations the author has received is the next step up. Such author-level metrics allow for direct analysis of a researcher's output and how well cited they are. Web of Science, Scopus, and Google Scholar all allows searches for individual authors.

Publishing Open Access: The Basics

- *Increased discoverability:* Open access can make research more discoverable, which can lead to a larger readership, more citations, and better career and funding prospects.

- *Wider audience:* Open access research can reach a wider audience than traditional research, including people outside of academia and in other subject fields.

- *No barriers to readership:* Open access can benefit interdisciplinary research, research that is likely to be of interest to the media, and research that the author wants to reach policymakers or practitioners.

In simpler terms, open access publishing makes research more accessible to everyone, which can lead to more people reading, sharing, and using the research. This can have many benefits for researchers, including a larger readership, more citations, and better career and funding prospects.

The Benefits and Advantages of eBooks

E-books are digital versions of books that can be downloaded and read on a variety of devices, such as computers, tablets, smartphones, and e-readers. They are just like printed books, with numbered pages, a table of contents, pictures, and graphics. E-books are easy to purchase and download online. Simply pay for the e-book and you will be directed to a download page or receive a download link in an email. Click on the link and the e-book will automatically download to your device. Once downloaded, e-books can be read offline and printed easily.

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1. Instant delivery: E-books are delivered almost instantaneously. You can purchase, download, and start reading an e-book within minutes, without having to leave your chair or go to a bookstore.

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7. E-books can contain links to more information and related websites, making it easy to access additional information.

8. E-books are easily searchable, so you can find any information you need without having to turn pages.

9. E-books can be interactive and contain audio, video, and animations, which can enhance the author's message.

10. Since e-books are delivered over the internet, there are no shipping or packaging costs.

11. E-books can be inexpensively printed at home or at a print shop, if you prefer to read in the traditional way.

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14. You can purchase an e-book 24 hours a day, every day of the year, even on vacation. All you need is a laptop, tablet, smartphone, or e-reader, and a wireless internet connection.

Conclusion

Information and communication technology (ICT) has made it easier for researchers, academics, and information seekers to access and share knowledge in electronic form through electronic media. While there are many advantages to using the internet and e-copies, there are also some health concerns, such as eye strain from staring at screens for long periods of time and back pain. Additionally, we should be aware of the need to back up digital data to avoid losing it. Finally, battery-powered devices need to be charged regularly. Despite these drawbacks, electronic sources of information have become ubiquitous, and people around the world are interconnected and sharing information in digital format quickly and affordably. In simpler terms, ICT has made it easier to access and share information electronically, but there are some health and data storage concerns. Electronic sources are becoming more and more popular, even though paper books still have some advantages.

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कोरोना काल में आगरा जनपद की माध्यमिक स्तरीय शिक्षा व्यवस्था के बदले स्वरूप का अध्ययन

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सार

जिस प्रकार जीने के लिए सांस की आवश्यकता है ठीक उसी प्रकार एक अच्छा मनुष्य बनने और अपने समाज की तरक्की के लिए शिक्षा बहुत जरूरी है। बिना शिक्षा के मनुष्य एक पशु के समान ही व्यवहार करता है। प्रस्तुत शोध के माध्यम से कोरोना काल में आगरा जनपद की माध्यमिक स्तर की शिक्षा पर क्या प्रभाव पड़ा और उसका स्वरूप कैसा बदला यह पता करने का प्रयास किया गया है कि विद्यार्थियों को क्या समस्याएँ आईं। उनकी शिक्षा की क्या व्यवस्था थी? क्या शिक्षा सुचारू रूप से मिल पाई या नहीं। यह जानने का प्रयास किया गया है। साथ ही साथ यहपता लगाने का प्रयास किया गया कि कोरोना काल में अध्यापक व अध्यापिकों को इन किशोर व किशोरियों को शिक्षा देने में किन-किन कठिनाइयों का सामना करना पड़ा था। विद्यालय के अलावा बच्चा अपना सारा समय तो घर में ही बिताता है। कोरोना काल में तो वह विद्यालय गये ही नहीं, तब उनके माता-पिता को अपने बच्चों की पढ़ाई का सारा भार ज्यादातर खुद ही उठाना पड़ा था। इन सबने उस समय में शिक्षा के स्तर में क्या बदलाव देखा।

प्रस्तावना

भारत भूमि अनैक विद्वानों की जन्मभूमि रही है। अति प्राचीन काल से ही भारतीय समाज में शिक्षा को महत्वपूर्ण स्थान प्रदान किया जाता रहा है। वैदिक काल का जब हम शिक्षा की दृष्टि से अध्ययन करते हैं तो पाते हैं कि उस युग में शिक्षा की अत्यंत उन्नत व्यवस्था थी। वेदकालीन साहित्य में शिक्षा की नाना प्रकार से प्रशंसा की गई है। वैदिक काल से लेकर आज तक के समय में भी भारतीय समाज में शिक्षा को बड़े ही आदर की दृष्टि से सम्मानित किया जाता है। देश व काल के अनुसार शिक्षा का पाठ्यक्रम व उद्देश्य बदलते रहे हैं। इसकी व्यवस्था तथा पद्धतियाँ बदलती रही हैं तथा इसके केंद्रों का समयानुसार उत्थान तथा पतन होता रहा है। आज के समाज में भी इसको महत्वपूर्ण स्थान प्राप्त हैं।

गुरुदेव रवीन्द्रनाथ टैगोर के अनुसार- "शिक्षा का उद्देश्य संपूर्ण से व्यक्ति में एकत्व की भावना का विकास करना है।" रविन्द्रनाथ टैगोर चाहते थे कि शिक्षा द्वारा व्यक्ति अर्थात विद्यार्थियों की क्षमताएँ विकसित हो जाएं, जिससे वह प्रकृति के साथ सामंजस्य स्थापित कर सके और मनुष्यता का व्यवहार कर सके। शिक्षा एक परिवर्तनशील प्रक्रिया है। समाज की आवश्यकताओं व परिस्थितियों के अनुसार शिक्षा के स्वरूप में भी निरंतर परिवर्तन होते रहे हैं। इस प्रकार कोरोना काल में भी शिक्षा का स्वरूप बदलना स्वाभाविक है।

कोरोना काल एक ऐसा समय है, जिसके विषय में पहले ना किसी ने सुना और ना ही ऐसा देखा गया और ना कभी किसी ने ऐसे समय की कल्पना भी की होगी। कोरोना काल से तात्पर्य आज के समय से हैं, जो कोरोना वायरस के कारण

हमें देखना पड़ा है और इसने संपूर्ण विश्व को अपनी चपेट में ले लिया है।

कोरोना वायरस यानि की कोरोना वायरस डिसिज कोविड-19 बहुत सूक्ष्म लेकिन बहुत ही घातक और प्रभावी है। कोरोना वायरस मानव के बाल की तुलना में 900 गुना छोटा होता है।

दिसंबर 2019 में चीन के बुहान शहर में नोबल कोरोना वायरस का पहला मामला सामने आया था। इस संक्रमण से प्रभावित लोगों में सर्दी, खांसी, जुखाम, बुखार तथा सांस लेने में तकलीफ पाई गयी थी। नोवल कोरोना वायरस (NCOV/COVID-19) कोरोना वायरस परिवार का सातवाँ वायरस है। इसकी अनुवांशिक संरचना 80 फीसदी तक चमगादड़ों में पाये जाने वाले सार्स वायरस जैसी मिली।

कोरोना वायरस का प्रभाव केवल चीन तक ही सीमित नहीं रहा, अपितु इस वायरस ने अधिकांश देशों को अपनी चपेट में ले लिया है। ऐसे में भारत भी इससे अछूता न रह सका।

30 जनवरी, 2020 को भारत में कोरोना का पहला केस सामने आया और देखते ही देखते यह भारत के विभिन्न राज्यों में फैल गया। कोरोना के बढ़ते हुए प्रभाव को नियंत्रित व सीमित करने के लिए केंद्र सरकार द्वारा संपूर्ण भारत में 24 मार्च, 2020 को 21 दिन के पहले लॉकडाउन की घोषणा की गई। परंतु कोरोना संक्रमितों और उसके कारण मरने वालों की संख्या को देखते हुए तीन और लॉकडाउन लगाये गए अर्थात् कुल 4 लॉकडाउन लगाए गए और विभिन्न राज्यों में संक्रमण की स्थिति को देखते हुए इसको समय-समय पर बढ़ाया जाता रहा है। इतने लंबे समय तक लॉकडाउन रहने के कारण इसका

सकारात्मक प्रभाव यह रहा कि उस समय मे कोरोना बहुत अधिक नहीं फैल सका तथा भारत सरकार द्वारा कोरोना से बचाव के लिए वेंटिलेटर व कोरोना से बचाव के अनेक उपकरणों की उचित व्यवस्था भी कर ली गई, जिससे जब-जब अनलॉक की प्रक्रिया शुरू होने पर कोरोना संक्रमितों को उचित उपचार दिया जा सके। परंतु इस कोरोना के कारण लगाये गए लॉकडाउन के अनेक दुष्परिणाम भी सामने आये। यह भी कहा जा सकता है कि इस समय में देश के विकास की गति कहीं थम सी गई। आम व्यक्ति ही नहीं अपितु लॉकडाउन के कारण सभी वर्ग व उम्र के लोग प्रभावित हुए हैं। लॉकडाउन के कारण ऑफिस, विद्यालय, कॉलेज, होटल, सिनेमा हाल सार्वजनिक स्थलों को लंबे समय तक बंद कर दिया गया था।

इन सभी चीजों के बंद होने से देश की अर्थव्यवस्था को बहुत नुकसान पहुँचा। हर समुदाय के लोगों की स्थिति खराब हो गयी। बहुत सारे लोगों की नौकरियाँ चली गईं। लोगों को खाने के लिए सरकार दे तो रही थी परंतु आम आदमी अपनी आवश्यक चीजों तक के लिए दूसरों पर मोहताज हो गया। परंतु इन नुकसानों के साथ-साथ एक और नुकसान ऐसा था जिसको बिल्कुल भी नजरअंदाज नहीं किया जा सकता है और उसकी कीमत हमारी आने वाली पीढ़ी जो कि हमारे देश का भविष्य है, उसने चुकाई है। अर्थात् विद्यालय बंद होने के कारण बच्चों की शिक्षा पर बहुत ही बुरा असर पड़ा। क्योंकि शिक्षा की प्रक्रिया सतत् रूप से चलने वाली प्रक्रिया है तथा जब भी कोई बदलाव हुए हैं शिक्षा को उसी के अनुसार बनाने का प्रयास किया गया है। शिक्षा एक गतिशील प्रक्रिया है।

इसका स्वरूप स्थिर नहीं है। अतः जब भी कोई रुकावट आती है तो परिणाम स्वरूप विद्यार्थी और अध्यापक तथा परिवार व समाज सभी को इसका नुकसान उठाना पड़ता है। शिक्षा ही आगे बढ़ने और सफलता का एक साधन है, जीवन जीने के लिए।

शिक्षा के महत्व को देखते हुए इस कोरोना काल में शिक्षा प्रदान करने की भी आवश्यकता महसूस हुई। क्योंकि विद्यार्थियों की शिक्षा काफी समय तक तो बाधित रही, जिसके कारण बच्चों का मानसिक व शारीरिक नुकसान होता गया। ऐसे समय में यह महसूस किया गया कि उस सत्र में ही विद्यार्थियों की शिक्षा को सुचारू कैसे रखा जाए, जिससे संक्रमण का खतरा भी न हो और शिक्षा भी पूर्ण हो जाए क्योंकि दोनों में से किसी बात को भी नजर अंदाज नहीं किया जा सकता है।

अतः इन परिस्थितियों को देखते हुए ऑनलाइन शिक्षा पर जोर दिया गया क्योंकि इस आपातकाल में तकनीकी ही एक ऐसा माध्यम थी, जिससे विद्यार्थी व अध्यापकों को सुरक्षा के दायरे में रखकर उनके सत्र के दौरान ही शिक्षा को पूर्ण कराया जा सकता था। ऑनलाइन शिक्षा व्यवस्था औपचारिक तो नहीं है परंतु इसे पूर्णतः अनौपचारिक भी नहीं कह सकते। शिक्षक व विद्यार्थी अपनी बात को एक दूसरे के सामने रख पा रहे थे। परंतु फिर भी कोरोना काल में बच्चों की शिक्षा सामान्यतः चलने वाली शिक्षा की तरह बिल्कुल नहीं रही। विद्यार्थियों के साथ-साथ अध्यापकों ने भी अनेक समस्याओं का सामना किया, इस कोरोना काल में।

अध्ययन की आवश्यकता व महत्व

परिवर्तन ही सृष्टि का शाश्वत नियम है, परिवर्तन से सृष्टि में नवीनता आती है। प्रतिक्षण सृष्टि में परिवर्तन हो रहा है। ये परिवर्तन प्रकृति तक सीमित नहीं है। समाज में भी प्रतिक्षण परिवर्तन हो रहा है। पुरानी मान्यताओं की जगह नई मान्यताएँ आ रही हैं। समाज में परिवर्तन के साथ-साथ शिक्षा में भी परिवर्तन हो रहा है। और शिक्षा के स्वरूप में परिवर्तन की आवश्यकता समय की परिस्थितियों के अनुसार बदलती रहती है। कोरोना काल की बदलती हुई स्थिति में शिक्षा व्यवस्था के बदलते स्वरूप की भी आवश्यकता है। शिक्षा में तकनीकी की आवश्यकता को बहुत समय पहले ही बताया गया है। परंतु यह पूरी तरह लागू नहीं हो पा रही थी।

कोरोना काल में शिक्षा प्रक्रिया में काफी परिवर्तन हुए हैं, जिसके कुछ फायदे व कुछ नुकसान भी है। कोरोना काल में ऑनलाइन शिक्षा पर जोर दिया गया ताकि कुछ हद तक तो वह शिक्षा प्राप्त कर सकें क्योंकि ऑनलाइन शिक्षा औपचारिक शिक्षा की जगह पूरी तरह से तो ले नहीं सकती पर ऑनलाइन के माध्यम से पाठ्यक्रम तो पूरा किया जा सकता है। ऑनलाइन शिक्षा के माध्यम से कोरोना काल में शिक्षा की प्रक्रिया सतत् रूप से चलती रहेगी।

अध्ययन के द्वारा विद्यार्थी, परिवार व समाज को कोरोना काल में किन समस्याओं का सामना करना पड़ा। किस प्रकार की शिक्षा प्राप्त हुई। ये जानने को अध्ययन के द्वारा प्रयास किया गया है।

उद्देश्य

1. कोरोना काल में आगरा जनपद की माध्यमिक शिक्षा व्यवस्था के बदलते स्वरूप का अध्ययन।

2. कोरोना काल में तकनीकी शिक्षा के प्रति बढ़ती जागरूकता का अध्ययन।

3. कोरोना काल में बदली शिक्षा व्यवस्था का छात्रों व शिक्षकों पर प्रभाव का अध्ययन।

4. कोरोना काल में शिक्षा के एक समान वितरण का अध्ययन।

संबंधित साहित्य का अध्ययन

भारत में हुए अध्ययन- सिंह सरोज (30 अक्टूबर, 2020) ने ऐनुअल स्टेट ऑफ एजुकेशन। पाण्डेय आलोक (19 मार्च, 2020) ने कोरोना के शिक्षा व्यवस्था व परीक्षा प्रणाली पर प्रभाव। तिवारी उमेश (01 अप्रैल, 2020) ने कोरोना के माध्यमिक शिक्षा पर प्रभाव। मिश्रा बबीता (22 अप्रैल, 2020) कोरोना काल में माध्यमिक शिक्षा की परीक्षा प्रणाली। नारायण बद्री (19 अप्रैल, 2020) कोरोना काल में शिक्षा के क्षेत्र में आये बदलाव। जैसवाल ज्योति (05 सितंबर, 2020) कोरोना काल में शिक्षकों की स्थिति व कार्य। यूनिसेफ ने भारत में कोरोना के कारण व शिक्षा के क्षेत्र में हुए बदलाव व विद्यालयों की स्थिति का अध्ययन किया। यूनेस्को ने अक्टूबर, 2020 ने कोविड-19 के कारण शिक्षा के क्षेत्र में बढ़ती लैंगिक असमानता पर अध्ययन किया।

अध्ययन की विधि

अनुसंधान की सफलता उसकी अध्ययन प्रक्रिया पर निर्भर करती है। प्रस्तुत शोध की प्रकृति को ध्यान में रखते हुए वर्णात्मक सर्वेक्षण विधि का प्रयोग किया गया है। शिक्षा संबंधी अनुसंधान के क्षेत्रों में वर्णात्मक सर्वेक्षण विधि का महत्वपूर्ण स्थान है।

न्यायदर्श का चयन

प्रस्तुत अध्ययन हेतु आगरा शहर के माध्यमिक स्तरीय विद्यालयों का सर्वेक्षण किया गया है। इसके अंतर्गत माध्यमिक स्तर के 50 विद्यार्थी 20 विद्यार्थियों के अभिभावक व विद्यालयों में कार्यरत 20 शिक्षकों को लिया गया है। अर्थात् 100 व्यक्तियों को यादृच्छिक प्रणाली के माध्यम से चुना गया है।

उपकरण का चयन

आंकड़ों के संकलन के लिए विश्वसनीय व वैद्य परीक्षण का चयन अनिवार्य है, जिसके लिए स्वनिर्मित प्रश्नावली का प्रयोग किया गया है।

परिकल्पनाओं का परीक्षण

उपरोक्त प्रश्नों के उत्तर के आधार पर शून्य परिकल्पना-1 'कोरोना काल में आगरा जनपद की माध्यमिक शिक्षा व्यवस्था के स्वरूप में कोई सार्थक अन्तर नहीं पाया जायेगा अस्वीकृत होती है क्योंकि कोरोना काल में 'शिक्षा व्यवस्था अत्यधिक परिवर्तित हुई है। न केवल पढ़ाने के तरीके में अंतर आया है अपितु समय सारणी व परीक्षा प्रणाली में भी कई बदलाव किये गये हैं। जहाँ कोरोना से पूर्व ऑफलाइन कक्षाएं होती थीं वहीं कोरोना काल के दौरान ऑनलाइन कक्षाओं को बेहतर विकल्प मानकर ऑनलाइन कक्षाओं के माध्यम से विद्यार्थियों को पढ़ाया जा रहा है। ऑनलाइन कक्षाओं के

कारण शिक्षक छात्र सम्बंध भी प्रभावित हुआ है जिसका मुख्य कारण यह है कि इस समय शिक्षक व छात्रों की आमने-सामने बैठकर अन्तर्क्रिया नहीं हो पा रही है। इसके अतिरिक्त छात्रों पर शारीरिक व मानसिक प्रभाव भी देखने को मिले हैं। कोरोना काल के दौरान छात्रों को समूह कार्य के अवसर कम या न के बराबर प्राप्त हुए हैं तथा पाठ्यक्रम सहगामी क्रियाओं (खेल-कूद, प्रतियोगिता सांस्कृतिक कार्यक्रम व अन्य कार्य) से भी छात्र वंचित रहे हैं। जिसका प्रभाव छात्रों पर शारीरिक व मानसिक रूप से पड़ा है। कोरोना काल के दौरान पाठ्यक्रम में भी परिवर्तन हुआ है। सभी कक्षाओं का पाठ्यक्रम 20 से 30 प्रतिशत तक कम कर दिया गया है। जिसके कारण छात्र अपनी कक्षा के सम्पूर्ण पाठ्यक्रम के कुछ अंश को सीखने से वंचित रह जायेंगे साथ ही परीक्षा प्रणाली में भी परिवर्तन किया गया है। परीक्षा में वस्तुनिष्ठ प्रश्नों की संख्या बढ़ा दी गई है तथा कुछ परीक्षाऐं तो पूर्णतः वस्तुनिष्ठ प्रश्नों पर ही आधारित थी जिसके कारण छात्रों की योग्यता का सही आंकलन भी संभव नहीं हो पा रहा है। कोरोना काल के दौरान बोर्ड परीक्षाएं भी प्रभावित हुई है। पहली बार छात्रों को बिना परीक्षाओं के पूर्ण हुए उत्तीर्ण कर दिया गया तथा नई कक्षा में प्रोन्नत कर दिया गया।

उपरोक्त प्रश्नों के उत्तर के आधार पर शून्य परिकल्पना-2 कोरोना काल में तकनीकी शिक्षा के प्रति जागरुकता में कोई सार्थक अन्तर नहीं पाया जायेगा निरस्त होती है क्योंकि कोरोना काल में तकनीकी शिक्षा के प्रति जागरुकता में अत्यधिक वृद्धि हुई है। कोरोना काल में तकनीकी ही एक ऐसा माध्यसम है जिसके द्वारा देश प्रगति के पथ पर बढ़ रहा

है न केवल विभिन्न मल्टीनेशनल कम्पनियों का कार्य तकनीकी पर आधारित है अपितु आम क्रियाओं का क्रियान्वयन भी तकनीकी पर ही पूर्णतः निर्भर हो गया है तकनीकी के कारण ही विद्यालय बंद होने पर भी शिक्षण-प्रशिक्षण कार्य सुचारू रूप से चल रहा है। ऐसे में तकनीकी शिक्षा के प्रति जागरुकता पहले से अधिक बढ़ गयी है। तकनीकी शिक्षा को शिक्षा के अनिवार्य अंग के रूप में देखा जा रहा है। मात्र छात्रों के लिए ही नहीं अपितु शिक्षकों के लिए भी तकनीकी शिक्षा को आवश्यक व अनिवार्य समझा जा रहा है। यही कारण है कि शिक्षकों के लिए तकनीकी से सम्बंधित प्रशिक्षण कार्यक्रम भी चलाये जा रहे हैं जिसके अन्तर्गत शिक्षकों को आवश्यक तकनीकी कार्यों का प्रशिक्षण दिया जा रहा है ताकि उन्हें शिक्षण कार्य के समय किसी प्रकार की समस्या का सामना न करना पड़े। कोरोना काल में ऑनलाइन क्लासेस व अन्य तकनीकियों के द्वारा शिक्षण कार्य कराये जा रहे हैं जिसका परिणाम यह हुआ है कि सभी अभिभावक अपने बालकों को कम्प्यूटर कोर्स व अन्य तकनीकी उपकरणों को चलाने हेतु उनको एक्स्ट्री क्लासेस लगा रहे हैं ताकि उनकी शिक्षण प्रक्रिया के मार्ग में तकनीकी शिक्षा का अभाव (कोई रोड़ा) न बने।

उपरोक्त प्रश्नों के उत्तर के आधार पर शून्य परिकल्पना-3 कोरोना काल में शिक्षकों व छात्रों पर बदली शिक्षा व्यवस्था के प्रभाव में कोई सार्थक अन्तर नहीं पाया जायेगा निरस्त होती है क्योंकि कोरोना काल में बदली शिक्षा व्यवस्था ने सर्वाधिक शिक्षक व छात्रों को ही प्रभावित किया है। जहां छात्रो को ऑनलाइन कक्षा द्वारा पढ़ाया गया समझने में

समस्या आती है वहीं शिक्षकों के लिए भी ऑनलाइन कक्षाओं के माध्यम से शिक्षण कार्य करना बेहद चुनौतीपूर्ण रहा है। ऑनलाइन कक्षा में छात्रों के घर का वातावरण, शिक्षक के घर का वातावरण तो कभी नेटवर्क का न होगना अध्ययन-अध्यापन कार्य को निरंतर बाधित करता है। कोरोना काल में छात्रों के शारीरिक व मानसिक स्तर पर भी प्रतिकूल प्रभाव पड़ा है। जहां अभिभावक व शिक्षक छात्रों को मोबाइल व टी.वी. कम देखने की सलाह देते थे वहीं आज ऑनलाइन कक्षा के कारण वह स्वयं इनका अधिक से अधिक प्रयोग करने के लिए छात्रों को बाध्य करते हैं। स्क्रीन टाइम बढ़ने के कारण बालकों में सिरदर्द, आंखों में दर्द आदि की समस्या बहुत आम होती दिखाई दे रही है। कक्षा का समय निश्चित न होने के कारण बालक स्वयं को स्वतंत्र महसूस नहीं कर पा रहे हैं। बालकों में समूह भावना, नेतृत्व क्षमता आदि का अभाव होता नजर आ रहा है। इसी प्रकार शिक्षकों को भी अत्यधिक समस्याओं का सामना करना पड़ रहा है। कुछ शिक्षक तकनीकी से अधिक परिचित नहीं है जिस कारण ऑनलाइन क्लास देने में उन्हें समस्या प्रतीत होती है कुछ विषयों के अध्यापकों (जैसे गणित) के समक्ष सबसे बड़ी समस्या बालकों को समझाने की है क्योंकि इन विषयों को बालक जटिल समझते हैं इतना ही नहीं ऑनलाइन कक्षा में बालकों की अनुपस्थिति की संख्या बहुत अधिक बढ़ती जा रही है।

उपरोक्त प्रश्नों के उत्तर के आधार पर शून्य परिकल्पना-4 कोरोना काल में शिक्षा के समान वितरण में कोई सार्थक अन्तर नहीं पाया जायेगा' अस्वीकृत होती है क्योंकि कोरोना काल में शिक्षा के वितरण में असमानता बहुत अधिक है। शिक्षा के असमान वितरण के कई कारण है जैसे प्रत्येक बालक के परिवार की आर्थिक स्थिति समान नहीं है जिस कारण उनके लिए तकनीकी सुविधाएं (फोन, लेपटॉप) आदि की उपलब्धता में असमानता है जो बालकों की शिक्षा को प्रभावित करता है। इसी प्रकार प्रत्येक बालक को शांतिपूर्ण वातावरण उपलब्ध नहीं है क्योंकि प्रत्येक बालक की पारिवारिक वातावरण समान नहीं है। प्रत्येक बालक को एक समान भौगोलिक वातावरण भी उपलब्ध नहीं है जिस कारण नेटवर्क की उपलब्धता भी प्रत्येक स्थान पर समान नहीं है। इन सभी असमानताओं के कारण ही शिक्षा का वितरण भी प्रत्येक स्थान पर असमान है। कई परिवार ऐसे हैं जो तकनीकी से परिचित हीं नहीं है तथा बालकों को भी सहयोग देने में असमर्थ हैं। बालकों को सहयोग व मार्गदर्शन के अभाव में वे ऐसे बालकों से पीछे हो रहे हैं जिन्हें उनके परिवार द्वारा समय-समय पर उचित मार्गदर्शन व सहयोग प्राप्त होता रहता है।

निष्कर्ष

1. कोरोना काल में शिक्षा का स्वरूप ऑनलाइन कक्षा का हो गया है। सभी विद्यार्थियों को ऑनलाइन कक्षा के माध्यम से पढ़ाया जा रहा है।

2. ऑनलाइन कक्षा की अवधि ऑफलाइन कक्षा से कम है। 58 प्रतिशत बच्चों ने इसे कम बताया।

3. ऑनलाइन कक्षा में 88 प्रतिशत विद्यार्थी समय से उपस्थित होते हैं।

4. कुछ विद्यार्थी का कहना है कि हर विषय की कक्षा नहीं हो रही है।

5. अधिकतर विद्यार्थी ऐसे थे, जिन्होंने पहले कभी ऑनलाइन कक्षा नहीं ली।

6. अधिकतर विद्यार्थी ऑनलाइन कक्षा में रुचि नहीं लेते।

7. अधिकतर नेटवर्क की समस्या रही हैं।

8. पाठ्य सहगामी क्रियाएँ ना होने के कारण विद्यार्थियों पर शारीरिक व मानसिक नकारात्मक प्रभाव पड़ा है।

9. इस समय पर वस्तुनिष्ठ प्रश्नों के द्वारा ही परीक्षा ली गई है।

10. कुछ शिक्षकों ने ऑनलाइन कक्षा द्वारा अध्ययन नहीं कराया है।

11. अध्यापकों के अनुसार कुछ अनुशासन हीनता विद्यार्थियों में पाई गई। वह पूरी कक्षा नहीं लेते।

12. ऑनलाइन कक्षा में विद्यार्थियों की उतनी प्रगति नहीं हो पाई जो ऑफलाइन कक्षा में होती ती।

13. ऑनलाइन कक्षा में अभिभावकों का हस्तक्षेप बढ़ गया।

14. अभिभावकों के अनुसार बच्चे ऑनलाइन कक्षा में कम दिलचस्पी ले रहे हैं और पढ़ते भी नहीं हैं।

15. ऑनलाइन कक्षा से बच्चों की आँखों और मस्तिष्क पर नकारात्मक प्रभाव पड़ा है।

16. अधिकतर विद्यार्थी, शिक्षक व अभिभावक ऑनलाइन कक्षा से संतुष्ट नहीं पाए गये हैं।

शैक्षिक उपादेयता

प्रस्तुत अध्ययन द्वारा भारत के आगरा शहर की कोरोना काल में बदली शिक्षा व्यवस्था के विषय. में जानकारी प्राप्त होती है, जिससे हम भावी जीवन में ऐसी विषम परिस्थितियों में ऑनलाइन कक्षा व अन्य प्रभावकारी माध्यमों द्वारा शिक्षण कार्य कर सकते हैं तथा इस समय जो कठिनाइयाँ छात्रों व शिक्षकों के सामने आई है, उनका समाधान कर शिक्षण कार्य को और अधिक प्रभावी बना सकते हैं।

ऑनलाइन कक्षाओं का जो भी कमजोर पक्ष हैं, उन्हें हम ऑफलाइन कक्षा के द्वारा अधिक रोचक व प्रभावशाली बना सकते हैं।

ऑनलाइन कक्षाओं के दौरान जो समस्याओं सामने आई हैं, उनका समाधान ढूँढ़कर बेहतर विकल्प लाये जा सकते हैं। अध्यापक विद्यार्थी व परिवार के व्यक्तियों ने इस समय पर जो भी मानसिक कष्ट उठाए, शिक्षा के संबंध में वह भविष्य में कम हों, उसकी योजना बनाई जा सकती हैं।

संदर्भ

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