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I also thankful to NRJP to chose me as editor in chief. I vowed to support them always and fulfil the adequacy of my position. I am not only the position holder but I also the witness of their hard work, team spirit and goal oriented job, I was there from the first bench to saw the building of the publication team, rising of a journal house and publishing of their first journal.

I also feel very proud that, the mission of the journal has a very downstream purpose "Do Revision not Rejection". They even work harder to teach a layman student, technical paper writing. Meanwhile, the team has to work rather harder to make a paper ready to publish.

In sum, then, language is an important accessory, but never the main thing.

Every success story was written on the very first step, so with your first step and all the next steps, I shall always bless you and promise you to guide on every steps you needed from my end.

With Blessings and Regards,



**Prof. Vinod Kumar Gupta
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We also thankful to our Editor in Chief, and their vision of the advertisement of collages, across the city. His proposals for the advertisement of the collages, workshops and seminars through our journals are impactable, by which we are acting as a connection to integrate them and make them in light of current status and situations.

Finally, I express my sincere gratitude to our Editorial and Reviewer board, Authors and publication team for their continued support and invaluable contributions and suggestions in the form of authoring write ups, reviewing and providing constructive comments for the advancement of the journals. With regards to their due continuous support and co-operation, we have been able to publish quality Research and Reviews findings for our customers base. I hope you will enjoy reading this issue and we welcome your feedback on any aspect of the Journal.

Swaranjali Gupta

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Journal of Management Science, Operations & Strategies

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Journal of Management Science, Operations & Strategies

Volume 2 Issue 3

Dec, 2018

Content Page

- 1. Awareness about Digital India Programme among Undergraduate Students in Faridabad District of Haryana** Page No 1
Ms. Upasana Nasa
- 2. A Comparative Report on the Growth Analysis of Indian Economy- 2018** Page No 6
Dr. Jugendra Kumar Sharma
- 3. A Comparative Study of the Academic Motivation & Academic Achievement among Senior Secondary Students** Page No 11
Dr. Sushma Rani
- 4. A Study of Women Entrepreneurship in Aligarh District** Page No 15
Dr. Jugendra Kumar Sharma
- 5. माध्यमिक विद्यालयों में कार्यरत शिक्षकों की शिक्षक सामंजस्यशीलता का तुलनात्मक अध्ययन** Page No 22
डॉ० सुनीता मिश्रा, दीपा मिश्रा
- 6. शिक्षा में ई-शासन की चुनौतियां व सुझाव** Page No 31
पवन कुमारी, कु. मीनाक्षी
- 7. Human Teaching Verses Robotic Teaching** Page No 34
Dr. Ajay Singh
- 8. Water Resources Management in Bundelkhand Region** Page No 39
Dr. Ashok Babu

9. **Fiber Dispersion for Communication System: An Overview** Page No 44
Madan kr. Mahto
10. **Studies on Microstrip Patch Antenna with Application to Wireless Communications** Page No 53
Pradeep kr. Jha
11. **Theoretical Studies on the Problem of Diffusion of Fiber** Page No 58
Bijendra Mohan
12. **Comparative analysis of Research Scholars on access and uses of Library for E- Journals** Page No 63
Jay Singh
13. **औद्योगिक विकास का मानव जीवन और पर्यावरण पर प्रभाव** Page No 68
डॉ. सदानंद राय
14. **The Comprehensive Analysis of Interrelationship of Food with Health** Page No 71
Dr. Jaya Sharma



Research Paper

Awareness about Digital India Programme among Undergraduate Students in Faridabad District of Haryana

Ms. Upasana Nasa

Research Scholar, Jamia Milia Islamia Delhi

Abstract

The research paper was conceived with the researcher intending to find out the awareness of Digital India initiatives of Government of India in both rural and urban areas. The paper incorporates the challenges in the Digital India programmes of the government among the students in Faridabad district of Haryana. With the much talked about Digital India program envisioned by the Humble Prime Minister Shri Narendra Modi, emphasis on digitalization revitalizes all the sectors with technology. It aims at ensuring better connectivity by creating broadband highways which will span across the length and breadth of the country. The 'Digital India' campaign has increased the scope of technology in the country and maximized the potential of India's demographic divide. A majority of India's population lives in rural and semi-urban areas, the infusion of technology in education, if done on a larger scale and at the grass-root level, would only then prove to be fruitful. One of the major pillars of Digital India is e-Kranti under which immense emphasis has been given to digitising rural India through e-technology, especially in the domain of education. The key aspects attended to are: all schools connected with broadband, free Wi-Fi in all schools, digital literacy, MOOCs, etc (Ralhan, 2016).. Although digitization is proposed as a solution to reach out to higher volumes of student yet due to financial constraints, it may remain a challenge to ensure its accessibility to the masses. The need is to identify and respond to the challenges involved by employing most fit measures to minimize or remove any roadblock in the way of making the dream of 'digital education a reality. The researcher intends to find out awareness of Digital India program among students, and explored the challenges faced by the students affecting their awareness and understanding their attitude towards Digital India program.

Keywords: Digital India, e-Kranti, connectivity, Undergraduate Students.

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Introduction

Digital India program was incepted by Honorable Prime minister Narendra Modi on 2nd July 2015 with a vision to transform India into a digitally empowered and knowledge economy. The major initiatives of the Government of India under the flagship of Digital India include railway computerisation, developing information systems, e-governance projects providing electronic services to citizens. National e-Governance Plan was initiated in 2006 in the domains of

agriculture, land records, health, education, passports, police, courts, municipalities, commercial taxes, treasuries. The shortcomings of the government initiatives include lack of integration amongst government applications and databases, low degree of government process reengineering, scope for leveraging emerging technologies like mobile, cloud. Government of India has approved the e-Kranti programme recently with the vision of "Transforming e-

Governance for Transforming Governance". All new and on-going e-Governance projects as well as the existing projects, which are being revamped, should now follow the key principles of e-Kranti namely 'Transformation and not Translation', 'Integrated Services and not Individual Services', 'Government Process Reengineering (GPR) to be mandatory in every MMP', 'ICT Infrastructure on Demand', 'Cloud by Default', 'Mobile First', 'Fast Tracking Approvals', 'Mandating Standards and Protocols', 'Language Localization', 'National GIS (Geo-Spatial Information System)', 'Security and Electronic Data Preservation'. The portfolio of Mission Mode Projects has increased from 31 to 44 MMPs. Many new social sector projects namely Women and Child Development, Social Benefits, Financial Inclusion, Urban Governance, eBhasha...have been added as new MMPs under e-Kranti.

Digitalization is one of the most fundamental periods of transformation we have ever witnessed with an objective of connecting rural and urban areas with high-speed internet networks. For improving digital literacy, the vision of this program is to make strong economy for India into a digitally empowered society and knowledge. The Government of India motivates the citizen of the country and wants to connect Indian economy to knowledge and technology. Digital Technologies includes Cloud Computing and Mobile Applications, have combined for fast economic growth and citizen empowerment across the universe. Digital technologies are being increasingly used by us in everyday schedules, they help us connect with each other and also

share information on issues and concerns. Honorable Prime Minister transforming knowledge and creating opportunities our nation for all citizens by digital schemes. His vision is to make empowerment of each citizen with access to digital services, knowledge and information. Digitalization of India is a big milestone now.

It aims touching deeply the lives of everyone with the change travelling the paths of both rural and urban India. Now days, the world has transformed from an information savvy to techno knowledge savvy. Think of something and it is available in one click. So, Digital India is a step by the government to inspire and fix Indian Economy to such a knowledge savvy world. The graph targets to construct government services obtainable to people digitally and enjoy the advantage of the latest information and technical innovations. It brings out a variety of schemes like E-Health, Digital Locker, E-Sign, and Education etc. and all over the country scholarship portal. The program strives to make available equivalent advantage to the user and service supplier. The customers will be benefited by way of saving time, money, physical & cognitive energy exhausted in lengthy government processes.

The Digital India would make sure that Government services are obtainable to citizens electronically. It would also bring in public liability through mandated delivery of government's services electronically; a Unique ID and e-Pramaan based on genuine and standard based interoperable and integrated government applications and databases. Mobile phones, internet, tablets, IPads, their applications, social media even travelling,

cooking, communication etc. are part of our lives from the start till the end of the day. Technology is touching every aspect of society and changing it dramatically. But there is one very important part of the society that has also been tapped by latest innovations and discoveries and that is education with the conception of E-learning.

So much more could have been done to bring the revolution in learning process in rural areas of India. If development is designed appropriately then proper results will be affecting optimistically. We know that E-learning is an effective tool for progress of education in India. E-learning is learning, utilizing electronic technologies in curriculum in integration with conventional classroom learning. In most cases, it refers to a course, program or degree delivered entirely online to achieve the learning objectives. The fundamental objective of this research is to identify with conception of e-learning and to inspect the type of e-learning through the study of awareness of rural and urban students about the Digital India program and various services available under this programme.

Objectives of the study:

- To explore the awareness about Digital India programme among rural and urban students.
- To study different schemes and programs under Digital India initiative of Government of India.
- To find out the challenges and problems of rural and urban students in the use of digital services.
- To explore the opportunities in the use of digital services for rural and urban students.

Population

Undergraduate students of colleges and universities of rural and urban area constitute the population for the study.

Sample

“A sample is the representative proportion of the population.” It is from the study of this sample that something is known and said about the whole population. Keeping in view the expenses, time, utility and suitability, the researcher decided to choose sample from TECH FEST, 2018 which was held in Lingaya's University, by using Convenient sampling.

The undergraduate students of colleges and universities have been selected from urban and rural area. The researcher has selected the sample in such a way that they are distributed proportionately with respect to gender (boys and girls). Thus, 250 students have been taken as a sample of the present study.

Table A: Number of participants in the Sample tabulated genderwise.

MALE (N=111)	FEMALE (N=139)
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Data collection:

Methodology: In accordance with the nature of the present study, quantitative and qualitative Method was used for the collection of data. The tools were administrated upon the sample and the data was collected by the investigator.

Tool:

The semi structured questionnaire was used to explore awareness of students and teachers participated in tech fest 2018 in Lingaya's Vidyapeeth. Questions with 'yes' and 'no' responses were posed in the questionnaire. The data was collected and analyzed in the light of objectives.

Analysis And Interpretation:

Responses of Participants in Awareness of Digital India were analysed quantitatively:

- The awareness data reveals that 40% people in rural area are aware of digital India initiatives and 60% people in urban area aware of digital India initiatives an services.
- Amongst the 40% people in rural India, 60% are males and 40% are females.
- Amongst the 60% people in urban India, 52% are males and 48% are females.

Table B: Students Responses in Awareness of Digital India

S. no.	Questions	Urban/Rural(Responses)	Boys/Girls(Responses)
1	Do you go for online shopping?		
2	Do you prefer making payments online or cash?		
3	Are you aware of online courses/e-courses?		
4	Does a social networking site help you to connect easily with your friends?		
5	Are you aware of digital India e-governance programs?		
6	Are you aware of digital locker scheme by Govt. of India?		
7	Are you aware that Pan card and Adhar card can be made online?		
8	Do you go for online booking of railway and air ticket?		
9	Do you know that medicines can be ordered online?		
10	Are you aware that taxi can be booked online		

Suggestions:

- Digital India awareness can be implemented by social media, people are very well connected to facebook,

watsapp, twitter, and using online shopping apps like Mantra, Voonik, Snapdeal etc.

- Digital India awareness amongst rural India can be created by holding campaigns and digital drives in our rural schools and making them technically aware about the different programs being offered by govt. of India for example: Paytm, E-bills, E-Adhar card
- Use of govt. portals like has to be taught to them like E-governance, E-kranti etc.
- The Govt. of India should have organized Faculty Technical Awareness Programs and Student Technical Awareness Programs. These programs could be compulsory for teachers and schools at school level.
- Management of schools and colleges should create high-tech classrooms for regular classes.
- The government should collect feedback after FTAP and STAP from each state.

Delimitations

- The study is delimited to undergraduate students of Faridabad District of Haryana.
- The sample size of 200 students includes girls and boys from rural and urban area.

Conclusion

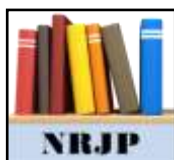
The purpose of this study is to investigate the awareness of students and teachers with respect to digital India programme and the services offered by the government. To overcome this gap in awareness, the government should

7.

organize campaign to spread more awareness in the context of Digital India.

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Review Article

A Comparative Report on the Growth Analysis of Indian Economy-2018

Dr. Jugendra Kumar Sharma

Faculty of Commerce, DS (PG) College Aligarh Uttar Pradesh.

Abstract

Concerns have been expressed about the growing trend of protectionism in some countries and it is still clear how the situation will develop. In addition, the average price of crude oil in Indian scenario increased 14% in 2017-18 (mid-January 2018) compared to 2016-17. According to recent trends, average crude oil prices are around \$ 56- \$ 57 per barrel in the current fiscal year, and can raise 10-15% in 2018-19. Some of these factors could affect GDP growth next year. However, as global economic growth is expected to show modest improvement in 2018, expectations for growth in GST stability, recovery in investment levels and ongoing structural reforms are generally expected to improve as the country's economic performance improves in 2018-19 do..

Keywords: Financial, Accounting, Recent Development, Management.

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Introduction

GDP is a very powerful measure of the country's economic health and reflects the total output of the country, so there are purchases of all goods and services produced in countries and individuals, companies, dominated by foreign and body. Almost all government and economic decision makers use it as an indicator of planning and policy formulation. If contracting, expansion, impulse or oppression is required, you can decide whether threats such as recession or inflation remain on the horizon. GDP, like India, has grown at a faster pace in recent years. Participation rates in various fields have changed drastically in relation to the composition of GDP. The share of agriculture in total GDP has decreased. On the contrary, the proportion of GDP services is growing rapidly. As a result of these changes, while the Indian economy

was generally regarded as the post-1991 economic reform of agricultural-based economic reforms, after the economic reform in 1991, the mainstream of services was 44.60%. Agriculture accounts for 17.39% of GDP and employs 47.20% of the population. Industry and industry account for 25.75% of GDP and employ 35.70% of the population. They employ 24.70% of the population.

GDP growth in 2016-17 The Indian economy, which has surpassed 7% for the third consecutive year, is expected to decline to 6.5% in 2017-18. Published by CSO. According to recent development, it is now slightly lower than the 6.5% to 6.75% range. Despite the low growth rate of 2017-18, GDP growth is much more stable than the decline of the highest inflation in the world's major economies, an average of 7.3% from 2014 in 2017, the

current account deficit is improving and the deficit rate and gross domestic product (GDP) Has decreased significantly. In addition to presenting the GST, we have seen important steps to address the problem of unproductive assets and the liberalization of FDI. After staying in the

negative territory for two years, export growth recovered positively in 2016-17 and further strengthened in 2017-18. As of January 12, 2018, the cash value of foreign exchange reserves has increased to approximately \$ 414 billion.

Table 0.1 : Key Indicators

Data categories	Unit	2014-15	2015-16	2016-17	2017-18
GDP and Related Indicators					
GDP at constant market prices	` Crore	10536984	11381002	12189854	12985363
Growth Rate	%	7.5	8.0	7.1	6.5
GVA at constant basic prices	` Crore	9719023	10490514	11185440	11871321
Growth Rate	%	7.2	7.9	6.6	6.1
Gross Savings	% of GDP	33.1	32.3	na	na
Gross Capital Formation	% of GDP	34.4	33.3	na	na
Per Capita Net National Income (at current prices)	`	86454	94130	103219	111782
Production					
Food grains	Million tonnes	252.0	251.6	275.7	134.7
Index of Industrial Production (growth)	%	4.0	3.3	4.6	3.2
Electricity Generation (growth)	%	14.8	5.7	5.8	4.9
Prices					
WPI Inflation (average)	% change	1.2	-3.7	1.7	2.9
CPI (Combined) Inflation (average)	% change	5.9	4.9	4.5	3.3
External Sector					
Export Growth (US\$)	% change	-1.3	-15.5	5.2	12.1
Import Growth (US\$)	% change	-0.5	-15.0	0.9	21.8
Current Account Balance (CAB)/GDP	%	-1.3	-1.1	-0.7	-1.8
Foreign Exchange Reserves	US\$ Billion	341.6	360.2	370.0	409.4
Average Exchange Rate	` /US\$	61.14	65.46	67.07	64.49
Money and Credit					
Broad Money (M3) (annual)	% change	10.9	10.1	10.1	10.5
Scheduled Commercial Bank Credit (growth)	% change	9.0	10.9	8.2	9.3
Fiscal Indicators (Centre)					
Gross Fiscal Deficit	% of GDP	4.1	3.9	3.5	3.2
Revenue Deficit	% of GDP	2.9	2.5	2.1	1.9
Primary Deficit	% of GDP	0.9	0.7	0.4	0.1

With average GDP growth of 7.5% between 2014-15 and 2016-17, India can be considered one of the world's best performing economies.

India's overall GDP growth is expected to be higher than most if the 4-year average is

expected to rise 6.5% between 2017 and 18 and the 4-year average by 7.3%. The growth rate of the global economy is 4% And nearly 3% higher than the average growth achieved by EMDE (Figure 1).

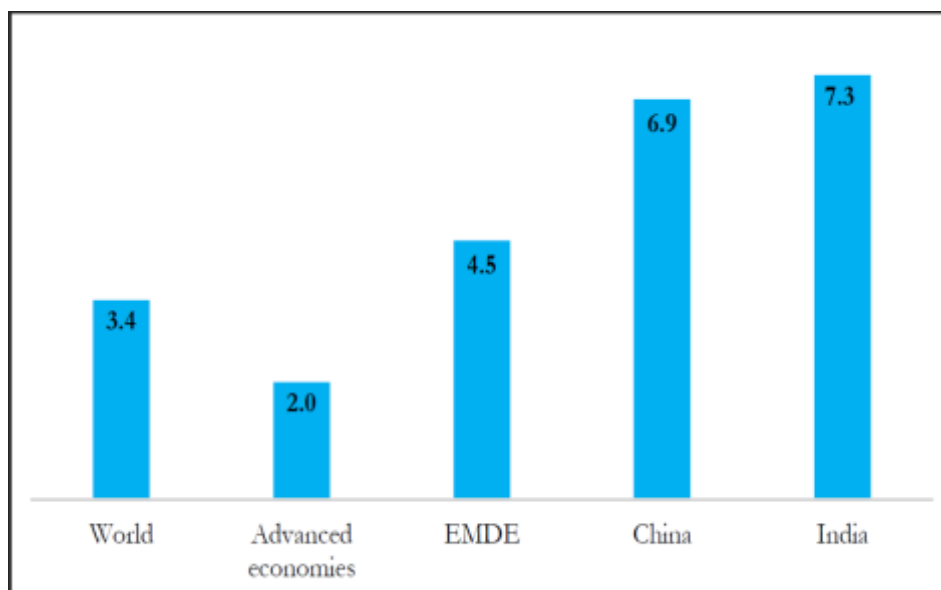


Figure 1 : Average growth of GDP during 2014-17 (per cent)

Source: Based on IMF's World Economic Outlook Database (October 2017)

According to the first prospect (1 AE) published by the Central Statistical Office (CSO), the growth rate of GVA at a constant base price is estimated at 6.1% between 2,017 and 2,018. It is expected to increase by 6.6% in 2016-

17. This is 'agriculture. The growth rate for the 'Union' and 'Sector' divisions will be 2.1% and 4.4%, respectively. The service sector is expected to grow 8.3% in 2017-18 compared to 7.7% in 2016-17. In the service sector, growth in this sector is expected to decline in "Public administration, defense and other services" 2017-18 (Table 1).

2012-13 GDP growth steadily improved over the three-year period from 5.5%, peaking at 2,015 to 2,016 (Q4, 9.1% increase in GVA from 4T2015). 16). However, the first quarter of 2016-17 (P1) slowed down. GDP and GVA growth rates in the fourth quarter of 2016-17 fell to 6.1% and 5.6%, respectively. GDP growth fell to 5.7% in the first quarter of 2017-18. Growth rate increased to 6.3%, but in the second quarter of 2017-18 (Q2), we saw a drop in GDP growth. The nominal GDP and GVA growth rates increased to 9.4% and 8.6% in 2017 and February, respectively (Figure 2).

Table 1 : Annual real GVA and GDP growth (per cent)

GVA at basic prices from	2014-15	2015-16	2016-17	2017-18 (1st AE)
Agriculture, forestry & fishing	-0.2	0.7	4.9	2.1
Industry	7.5	8.8	5.6	4.4
Mining & quarrying	11.7	10.5	1.8	2.9
Manufacturing	8.3	10.8	7.9	4.6
Electricity, gas, water supply & other utility services	7.1	5.0	7.2	7.5
Construction	4.7	5.0	1.7	3.6
Services	9.7	9.7	7.7	8.3
Trade, Hotel, Transport, Storage, communication & services related to broadcasting	9.0	10.5	7.8	8.7
Financial, real estate & professional services	11.1	10.8	5.7	7.3
Public administration, defence & other services	8.1	6.9	11.3	9.4
GVA at basic prices	7.2	7.9	6.6	6.1
GDP at market prices	7.5	8.0	7.1	6.5

Source: Based on data from CSO

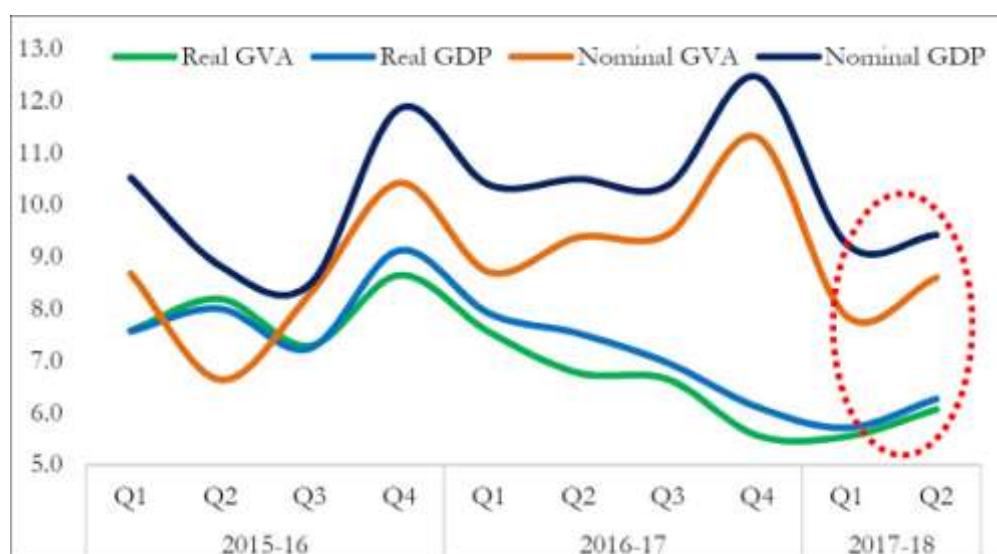


Figure 2 : Quarterly growth in GDP and GVA (per cent)

Source: Central Statistics Office (CSO)

According to the first AE, real GDP growth is expected to increase by 6.5% from 2017 to 1818 and by 6.1% from basic VAB. Gross domestic product (GDP) and VAB growth rates were

6.0% and 5.8%, respectively, and the implied growth rate (H2) for the first half was 7.0% and 6.4%, respectively, indicating the economic recovery started in the second quarter of 2017-2018. The

index is expected to increase more rapidly in the second half of 2017 than in the first half of 2017-18.

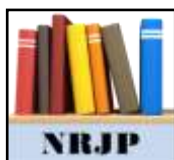
In recent years, the gap between real GDP growth and nominal GDP growth has narrowed considerably. Real GDP growth averaged 6.4% between 2012-13 and 2014-15, but the nominal growth rate was 12.5% during this period. On the other hand, the real GDP and nominal GDP growth rates for the period from 2015 to 2016 and 2017 to 2018 are 7.2% and 10.1%, respectively. This is better than the beginning of the previous period. Given that inflation

over the previous period (especially 2012-13 and 2013-14) is significantly higher than the last period, this is not surprising.

Nominal GDP growth in 2016-17 is expected to be 11% in 2017-18, low growth and low demand, and 9.5% in 2017-18. NVA's two-year nominal growth rate is estimated at 9.7% and 9.0%, respectively. The gap between GVA and nominal GDP growth has also increased in recent years. This implies an increase in indirect overhead of GDP.

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Review Article

A Comparative Study of the Academic Motivation & Academic Achievement among Senior Secondary Students

Dr. Sushma Rani

H.O.D. School of Education, Lingaya's Vidyapeeth, Faridabad Haryana

Abstract

Poor academic achievement in school can be the result of differences between child factors and environment. Studies have shown that during the early years, the effects of poor academic achievement often lead to population, along with a crime, to the years of adolescence. This paper describes the attitude of CBSE & HBSE students in relation to their academic motivation and academic achievement.

Keywords: *Academic motivation, Academic achievement.*

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INTRODUCTION

“Education is a process of development which consists the passage of human being from infancy to maturity, the process whereby he adopts himself gradually in various ways to his physical and spiritual environment.”

-T. Reymont

“Education” we often think ourselves to be educated and use the word “Education” in our daily life. But what’s the real meaning, of it. (1)

Is it mere collection of information or receipt of degree of diplomas. People have already be considering the deviation of the work “Education”, initially it was related to an original, Latin work Education which is a combination of two, words E and Duco meaning “out of and to lead” According to Mahabharata, Abhimanyu had learnt how to break the chakravyuha in the womb of his mother Subhadra. It beings from the birth and lasts long even after death as according to

Hindu Philosophy there is an immortality of soul. In broader sense the process is broad-based. Every woman we gain new experiences and transfer it to the other generation. It is a process of growth and development. Every individual is both a teacher and a taught and the place of giving and receiving the process is a ‘School’ Impact, life education, and education is life. Rousseau promoted his vision of maturity, keeping this broad concept of education in his view.

In a narrow sense, school education is called education. Education is called education. Education is imparted at a definite place – school, college or university and at a definite time, with definite curriculum.

Indian Education System

India's current educational system is an important center for the British rulers. In 1854 Woods Despatch laid the foundations of the present system of education in India.

Prior to the advent of British in India, the education system was private, in which the Woods Despatch was known as the Magna Carta of Indian Education, which changed the whole scenario. Its main purpose was to prepare Indian clerks to run local administration. Under it the means of school education were the vernacular language while the higher education was granted in English only.

British government started giving funds to indigenous school in need of help and thus slowly some of the school becomes government aids.(2)

Sarva Siksha Abhiyan (SSA)

The main goal of this program is that all children (6-1) years should complete primary education by the year 2007 and all children (6-14) years of age must complete eight years of schooling till 2010.

This plan covers the whole country with special emphasis on girl education and education of schedule caste (SC) and schedule Tribe (ST) children and children with special needs SSA centers are mainly opened in areas where there is no school or where the school is very far away. Special girl oriented programs are included.

- Girl education at elementary level.
- National Program for Education of Girls at Elementary Level (NPEGEL).
- Kasturba Gandhi Balika Vidhyalaya (KGBV).
- Mahila Samakhya Scheme.

Intellectual Development

Through college courses, we hope that students will develop intellectual qualities that reflect a well-educated person. We help them develop these traits by holding

them given intellectual standards (through their assignment).

Naturally, this is a learning process for students and tasks time, Faculty should plan according by developing activities appropriate to student's skill and abilities. Jump too high and cause frustration.(4) Jump just beyond and you pull students towards you. Scaffold and support this development process by providing relevant and thoughtful feedback to student's work that helps students to grow intellectually. While reading texts, students can use the questions related to the above intellectual standards to think critically about the text. Encourage the students to use the intellectual elements to examine the Scriptures more deeply and to outline those methods, in which they think of the methods written. (5)

Remember also, that modes of thinking and ways to approach texts critical, varies (sometimes greatly) between content areas. Make the ways in which people approach thinking in your discipline transparent for students.

Social Development

The current paper analyzes key issues related to access to rural poor for safe and sustainable land and water rights in India, thereby identifying and suggesting policies that help improve rural access to land and water.

Emotional Development

Children who learn to manage their emotions, they are benefited in many ways. Most experts agree that when children develop skills to deal with their emotions, they are better with others, academically better, and feel better themselves.

The American Psychological Association said that children who are capable of successfully controlling their emotions are better at focusing, focusing and less impulsive behaviors. Parents can help with their children by talking about emotions. (3)

Physical Development

The love to demonstrate their abilities and area's too inhibited as to where; whether in the grocery store, the bank, or a crowded restaurant; here's the lowdown on movement milestones for first graders. Poor academic achievement in school may be the result of interplay between child factors and the environmental milieu. Studies have shown that the effects of poor academic achievement during the early school years often carry over to the adolescent years, with a delinquency among this population.

Objectives of the Study

The objectives can broadly be stated as:

1. To study the academic motivation of C.B.S.E. & H.B.S.E. students of senior secondary school.
2. To compare the academic motivation of C.B.S.E & H.B.S.E. board students of senior secondary school.
3. To compare the academic achievement of C.B.S.E & HC.B.S.E. students of senior secondary school.
4. To study the academic motivation effects on the academic achievement of C.B.S.E. & H.B.S.E. board students of senior secondary school.

Hypothesis of the Study

- There is no significant difference between the academic achievement of

C.B.S.E. & H.B.S.E. students of senior secondary schools.

- There is no significant difference between the academic motivation of C.B.S.E. & H.B.S.E. board students of senior secondary schools.

Research Methodology

The researcher used simple random sampling for the present research study. A sample of 250 students is selected from the Gurgaon region of Haryana district in which students of +1 & +2 students are included. Out of these 150 students are selected from CBSE and 100 students are selected from HBSE.

Statistical Technique Used

Analysis of data for the present study has been made in conformity with the objectives and hypothesis formulated. The researcher has used SD (Standard Deviation) and 't' test for the present research study to find out the significance of different between Mean, Academic Motivation and Achievement scores of H.B.S.E. and C.B.S.E. of senior school students.

Delimitations of the Study

Keeping in the views the time factor and resources available the present study was delimited to the following

- The present study is confined to only one variable i.e. the academic motivation and the academic achievement.
- The study is delimited to 250 secondary school students C.B.S.E. & H.B.S.E. board senior secondary students.

Main Findings

- The academic motivation and achievement level of senior secondary school students of H.B.S.E Board is average.
- The senior secondary students of CBSE students are average motivated.
- There is a significant difference in the academic motivation of C.B.S.E. and H.B.S.E. senior secondary students. The t value is more than the table

value, thus null hypothesis is rejected. There is a significant difference between the academic motivation of CBSE and HBSE senior secondary students.

- For the present research study, the researcher revealed that CBSE students are more motivated and goal-oriented than the HBSE senior-secondary students.

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Review Article

A Study of Women Entrepreneurship in Aligarh District

Dr. Jugendra Kumar Sharma

Faculty of Commerce, DS (PG) College Aligarh Uttar Pradesh.

Abstract

However, the rise of female entrepreneurship has been established for many years and is generally good for job seekers, not job seekers. The relative proportion of women among total female entrepreneurs in India is one tenth. Aligarh is a large part of the worldwide female population. The socio-economic characteristics of respondents now show that women's participation in education and training in social awareness has increased. Women entrepreneurs will promote the transfer of services in the commercial and industrial sectors. So everytime I have more businesswoman girls. And it plays a positive role in the economy. Today, the development of women entrepreneurs in the region is not afraid, and can be encouraging and optimistic.

Keywords: enterprising, socio-economic, disadvantaged women, financial support.

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INTRODUCTION

The importance of women rarely needs to be prominent. She is the race's mother for the contact between the three roles. Our culture is very important for women. So, India was baptized by "Mother India". Jawaharlal Nehru tried to "wake a man, Manhattan is a woman of awakening."

When they move to town, women find in the middle, but still universal deviation of gender balance in the dynamics of centrifugal development. The recognition of women was clearly related to one of the women. Trends in the employment of women in India (10) increased from 41.4% in 2016 to 41.2% in 1971, and 14.22% in 1971, compared with 19.67%, 1,981, 22.73%, 1991 and 2001 and 25.60% The majority of rural women in the population (1).

The increased entrepreneurship of women who have guaranteed the country for

several years has a tendency to try to determine the role of job seekers in Substración of the job seeker appropriately. The relative proportion of women among total female entrepreneurs in India is one tenth. That Wally is a representative of the total population of land women of some of the women because all of the companies. Education and training on social conscience. Women entrepreneurs think that it is easier to move to the service sector than the commerce sector (2).

So we get more and more businessmen. And it plays a positive role in the economy. Today, the development of women entrepreneurs in this area is not afraid, they can be encouraging and optimistic. Women will move on equal terms with men and will not be far from that day. Of course, the world will change to a better place (3).

Purpose of Study

The study has the following objectives:

1. Business people involved with Aligarh investigate the nature and nature of business activities.

2. Governments need financial and other attitudes to help them discover.
3. Go to institutional and business level limitations.
4. Suggested areas of the plan for the development of neighboring entrepreneurship (4).

Research Field

This study was conducted in the Aligarh area. One respondent chose the interviewee's attempt through a well-structured questionnaire. Only 200 women

entrepreneurs responded to 250 people. The study is based on information collected from 200 women entrepreneurs. Socio-economic characteristics of the sample selected by the table.

Figure 1: Classification of industry respondents.

Activities	No. of Units	Percentage
Trade	56	28
Service	74	37
Industry	70	35
Total	200	100

Table 1 shows that 28% of female entrepreneurs are engaged in the commercial sector and 37% of female business people are involved. In service sector, 35% of women entrepreneurs participate. This represents a large number of female entrepreneurs. In Aligarh, local women are improving tactics and convenience in the service sector.

Therefore, economists can go to the service sector if they find a safe sector when compared to the enterprise.

Social and personal profile of sample entrepreneurs.

In this study, there was an attempt to collect data on the social and economic background of female entrepreneurs.

Table 2: Women Entrepreneurship according to their social group

Social Group	No. of Entrepreneurs	Percentage
Scheduled Castes	45	22.5
Scheduled Tribes	10	5
Other Backward Classes	35	17.5
General	110	55
Total	200	100

45% (22%) of female entrepreneurs selected in Table 2, 10% (5%) of scheduled shelves, and the remaining classes are backed by 110 (55%) in the

Source: on the basis of the Questionnaire scheduled career of 35 patients 17.5% General categories that you know more generally show categories. Thus, women who classify the general sector should be

able to tell trends and aptitudes about entrepreneurship (5).

Status of female entrepreneurs before entry into occupation / trade / industry

Efforts have been made to understand the status of female entrepreneurs in their present duties. They are employed or unemployed in the United States. Information on the status of female entrepreneurs is shown in Table 3.

Table 3: Status of respondents before coming in present occupation/trade/industry.

	Details	Number	Percentage
A	Employed	50	25
	In Job	25	
	In Fathers Occupation	15	
	In Husbands Profession	10	
B	Unemployed	150	75

Table 3 shows women who hired 75% (150%) of women and only 25% (50%) hired women before they were unemployed. 25 of them were employed women, 15 were involved in the father's business, and 10 were involved in the husband's business. In the table before the current job is unemployed, the maximum number of women is unemployed. Many

women, new companies in unemployment have been established. This table represents the maximum number of women in some types of employment, which means the majority of education. Female entrepreneurship and composition analysis shows the female entrepreneurship ratios in the Aligarh region (6).

Table 4: Age-wise Distribution of Sample Entrepreneurs Respondents.

Age group (year)	Number	Percentage
Below 25 years	15	7.525
25-40	83	41.5
40-55	81	40.5
Above 55	21	10.5
Total	200	100

Source: on the basis of the Questionnaire

As can be seen in Table 4 The largest female entrepreneur (41.5%) among women entrepreneurs aged 25 to 40 is 81% (40.5%) of the total female workers between the ages of 40 and 55. Women in the 55 and older group are 25 (7.5%) and 21 (10.5%) female entrepreneur retirees under 21 years of age. In fact, women are (8).

becoming more and more responsible for their families than men. They have been engaged in entrepreneurship for a long time. According to the survey, up to 133 women started business after marriage. Some of these women enter this field after age 35, partially lifting responsibility or raising children

Table 5: Magnitudes of Help Sought from Agencies.

Level of contact	Number of women	%age
Always	8	4
Sometimes	104	52
Never	88	44
Total	200	100

Source: On the basis of the Questionnaire

According to the data presented in Table 6, 56% of economic women requesting assistance can access the SSIDC for substance classifications. About 14% of women in the Aligarh district wanted to promote the commercialization of their products, and 86% wanted to ask for help in developing the storyline. According to the data, most female entrepreneurs do not show institutional resources.

Economic women in the Aligarh District (MP) reported two main reasons for the withdrawal. First, many business people are unaware of the agency, and many respondents can access it because of the adverse reaction to the promotion process and part of the administration that is suspicious. Other studies have reported on the appropriate approach and difficulty of women entrepreneurs facing bribery (11).

Capital is an important factor in entrepreneurial development. It is collected by entrepreneurs through various sources. Below is the data presented in Table 7, collected from women entrepreneurs in relation to capital investments from other sources.

In the analysis in Table 7, the following table shows that only 115 (57.5%) of the female entrepreneurs are provided with sources of capital costs. Twenty-two of

them (19.13%) invested 45 (39%) of savings, capital is the capital of female entrepreneurs, 11 (9.56%) entrepreneurs, including parents, The government carried out the plan.

65 (32.5%), businesswomen 17 (26.15%) and women entrepreneurs managed capital from two sources, either savings or their families. 0.09 (13.8%), the businessman received a loan from a friend or relative in savings. Along with Savings 16 (24.16%), women entrepreneurs made loans from banks under other schemes. 07 (10.75%), a businessman took it with the help of a family who received a friend's loan.

16 (24.65%), the businessman invested money in the family financed or financed. 20 (10%) Women businesses managed their capital through three sources: saving their families and providing human and financial support to banks (12).

While women entrepreneurs generally have many problems in that they have their own career, the most common difficulties that 65.66% of women have found are difficulty traveling to distant places, People's perception of women lives and affect their travels. About 26% of women businesses had their own business because of the difficulty they had to fulfill their family responsibilities together(13).

Table 7: Sources of Obtaining Capital.

S.No.	Details	Number	%age
A. Through One Source			
1	Personal Saving	22	19.13
2	Financial Help rendered by the members of the family	45	39.14
3	Loans taken from friends or relatives		
4	Loans from Banks	11	09.56
5	Other Sources	37	32.17
	Total(A)	115	100
B. According to two Sources			
1	Personal Saving + Financial help rendered by the members of the family		26.15
2	Personal Saving + Loan taken from friends or relatives		
3	Personal Saving + Loans from Bank	16	24.65
4	Financial help rendered by the members of the family + Loans from friends	07	10.75
5	Financial help rendered by the members of the family + Loans from Banks	16	24.65
	Total(B)	65	100
C. According to Three Sources			
1	Personal Saving+ Financial help rendered by the members of the family + Loans from Bank	20	100
	Total(C)	20	100
	Total(A + B + C)	200	100

Source: On the basis of the Questionnaire

Table 8: Difficulties Faced by Women Entrepreneurs in Running the Business.

Difficulties	No. In Percentage
Travelling for business purposes	65.66
Managing the house hold responsibilities	26
Any other	8.34

Source: on the basis of the Questionnaire

Suggestions

The development of women entrepreneurship in the Aligarh region is limited, but the development possibilities are sufficient. The profitability of this program can be increased by increasing the pace of development of female entrepreneurship.

The following suggestions are given in this context:

1. Business programs should be initiated individually according to the needs and resources of local rural and urban areas. You must publish and publish this program. This entrepreneurial spirit is developed in rural villages based on local needs, resources and the availability of local arts, technology and technology. This helps prevent the tendency of people in employment cities (14).
2. Existing entrepreneurship for women must meet the conditions of the program again. For example, you need to relax the conditional configuration and add devices that the operator can do.
1. Women will increase the number of approved loans to expand their units to more people (15).
2. The existing entrepreneurship program should be changed according to the needs of the people.
Most of the day is practical because of the need for time because most programs are inactive and do not work. Entrepreneurs are not satisfied with income.
3. New programs related to entrepreneurship programs should be initiated according to the needs of the people and resources in the area. These programs should of course be open to the public. The Women Entrepreneur Program should be included in the graduate level textbook.
4. After graduation, you must establish a career center and a company-centered center. Seminars or other programs, stimulating and encouraging, mentally motivated students to become entrepreneurs or employees to start. Exhibitions and workshops should be organized and women's participation should encourage such counseling programs.
5. Enhance the value of the Women Entrepreneurship program. It is necessary to identify and remove women's business development issues. The various agencies involved in the implementation of the Women Entrepreneurship Development Program will be sensitive and useful to women's issues.
6. Women must be established from a business perspective in order to motivate women and encourage them to be successful entrepreneurs. This center becomes the address of women in the selection, construction and management of enterprises. This angle will lead to a better understanding among women. But it is not an understanding of the entrepreneurial spirit of women and other institutions. Women are not disappointed with the message that they do not have to run on the pillar because they need to be able to get all the information from the office.
7. We owe it to the attention and recognition of successful business people. Your experience should be used to encourage other women.

Entrepreneurship and products produced by them should be increased to solve the best businessmen in the seminar or radio and television and should be called.

8. The usefulness of this program increases with the start of the training program for entrepreneurship. Women

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9. Businesspeople have been encouraged to improve their moral and risk abilities to provide money, raw materials, machinery and marketing.
- who receive this training should prepare the project and provide information on career options.



Review Article

माध्यमिक विद्यालयों में कार्यरत शिक्षकों की शिक्षक सामंजस्यशीलता का तुलनात्मक अध्ययन डॉ० सुनीता मिश्रा¹ दीपा मिश्रा²

^{1 2} शिक्षा विभाग, डा. बी.आर.ए. विश्वविद्यालय आगरा (उ०प्र०)

Abstract

इस शोध अध्ययन का उद्देश्य जनपद मैनपुरी (उ०प्र०) के माध्यमिक विद्यालयों में कार्यरत शिक्षकों की सामंजस्यशीलता का तुलनात्मक अध्ययन करना था। इस उद्देश्य की पूर्ति हेतु 300 शिक्षक (महिला व पुरुष) नवोदय, राजकीय, सहायता प्राप्त एवं वित्तविहीन विद्यालयों से आकस्मिक विधि से चयनित किये गये। इन विद्यालयों के शिक्षकों की सामंजस्यशीलता के मापन हेतु डा० एस०के० मंगल द्वारा निर्मित "शिक्षक सामंजस्य परिसूची" (M.T.A.I.) उपकरण का प्रयोग किया गया। सांख्यिकी विश्लेषण हेतु मध्यमान, मानक विचलन, टी-मान का प्रयोग किया गया। विश्लेषण उपरान्त नवोदय, राजकीय एवं सहायताप्राप्त विद्यालयों में कार्यरत शिक्षकों की सामंजस्यशीलता उच्च पायी गयी और वित्तविहीन विद्यालयों के शिक्षकों की सामंजस्यशीलता निम्न पायी गयी। सम्भवतः इसका कारण यह हो सकता है कि नवोदय, राजकीय एवं सहायता प्राप्त, विद्यालयों में कार्यरत शिक्षक उच्च योग्यता वाले, प्रशिक्षित, स्थायी, उच्च वेतनमान प्राप्त अधिक शिक्षण अनुभव वाले, उचित वातावरण में रहने के कारण सामंजस्यपूर्ण थे जबकि वित्तविहीन विद्यालयों में कार्यरत शिक्षक अप्रशिक्षित, अस्थायी, अल्पवेतन भोगी, प्रबन्धतन्त्र का कठोर नियंत्रण, कम शिक्षण अनुभव वाले एवं सेवा सुरक्षा का भय होने के कारण असामंजस्यपूर्ण थे।

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परिचय

राष्ट्र का विकास शिक्षा पर निर्भर करता है। शिक्षण प्रणाली की सफलता का आधार शिक्षक है। शिक्षक ही शिक्षा प्रक्रिया की धुरी है उसके अन्दर निर्देशन व सामंजस्यशीलता की क्षमता जितनी अधिक होगी उतना ही वह बालक, विद्यालय एवं परिवेश के साथ दक्षतापूर्ण सामंजस्य स्थापित करने में सक्षम होगा। शिक्षक ही शिक्षा द्वारा समाज में विद्यार्थियों के विकास की रूपरेखा निश्चित कर उसे कार्यरूप में परिवर्तित करता है शिक्षक को समाज का आर्कीटेक्ट, इंजीनियर, वैज्ञानिक एवं सेवक

कहा जाता है। इसीलिए अब्दुल कलाम (2002) ने लिखा है कि "एक अध्यापक ने एक बार कहा था मुझे पांच वर्ष का एक बच्चा दो। सात-साल बाद कोई भगवान या शैतान भी उस बच्चे को बदल नहीं सकता। यह दावा एक प्रभावशाली शिक्षक ही कर सकता है।" (1)

विद्यार्थियों के सर्वांगीण विकास एवं शिक्षकों की अभिक्षमता, प्रभावशीलता एवं सामंजस्यशीलता आदि गुणों में वृद्धि हेतु विद्यालय का उत्तम वातावरण होना आवश्यक है। इस सन्दर्भ में इंगरसाल

(चौधरी, 2010) ने कहा है कि— “ एक उत्तम विद्यालय का शिक्षक एक हजार पुजारियों के बराबर होता है।”

शिक्षक के सामंजस्य को अधिक उच्च बनाने के लिए उनके सामाजिक— आर्थिक स्तर को उच्च बनाना, वेतन अथवा उचित मानदेय प्रदान करना जिससे उनकी सामंजस्यशीलता में वृद्धि हो। अग्रवाल एस० (1988) के शोध परिणाम दर्शाते हैं कि अधिक प्रभावी अध्यापकों की सामंजस्य शीलता में सामाजिक—आर्थिक कारक, अधिक आय, क्षेत्र आदि महत्वपूर्ण भूमिका निभाते हैं। वर्तमान शोध अध्ययन में माध्यमिक विद्यालयों में कार्यरत नवोदय राजकीय, सहायता प्राप्त एवं वित्तविहीन विद्यालयों के शिक्षकों को सम्मिलित किया गया है। उक्त चारों विद्यालयों के शिक्षक वर्ग (नवोदय, राजकीय, सहायता प्राप्त एवं वित्तविहीन) में से कौन सा वर्ग अधिक सामंजस्यशीलता स्थापित करता है। इन्हीं प्रश्नों के उत्तरों को ज्ञात करने के सन्दर्भ में प्रस्तुत शोध तथा सम्बन्धित साहित्य का अध्ययन किया गया यथा— गुप्ता (1979) ने अपने अध्ययन में पाया कि शिक्षक की सफलता का समायोजन के विभिन्न क्षेत्रों यथा—स्वास्थ्य, परिवार, सामाजिक, संवेगात्मक तथा पूर्ण समायोजन के साथ महत्वपूर्ण सम्बन्ध था। सक्सेना (1995) ने अपने शोध अध्ययन में पाया कि प्रभावी एवं अप्रभावी शिक्षक व्यवसाय के प्रति सकारात्मक मनोवृत्ति रखते हैं। दीक्षित (2008) के शोध परिणाम दर्शाते हैं कि नवोदय, राजकीय सहायता प्राप्त एवं वित्तविहीन मा० विद्यालयों के शिक्षकों में से नवोदय विद्यालय के शिक्षकों का सामंजस्य सबसे उच्च पाया गया। पांडेय (2011) के शोध परिणामों के निष्कर्ष स्वरूप वित्तपोषित महाविद्यालयों के बी०एड० प्रशिक्षुओं के संस्थागत समायोजन का उनकी शिक्षण सक्षमता पर

सार्थक प्रभाव पाया गया। भदौरिया (2012) के शोध परिणामों से स्पष्ट है कि उच्च, औसत एवं निम्न समायोजन वाले बी०एड० प्रशिक्षुओं की शिक्षण सक्षमता में कोई अन्तर नहीं है।

अध्ययन के उद्देश्य

1. नवोदय एवं राजकीय विद्यालयों में कार्यरत शिक्षकों की शिक्षक सामंजस्यशीलता का तुलनात्मक अध्ययन करना।
2. राजकीय एवं सहायता प्राप्त विद्यालयों में कार्यरत शिक्षकों की शिक्षक—सामंजस्यशीलता का तुलनात्मक अध्ययन करना।
3. सहायताप्राप्त एवं वित्तविहीन विद्यालयों में कार्यरत शिक्षकों की शिक्षक—सामंजस्यशीलता का तुलनात्मक अध्ययन करना।
4. नवोदय एवं वित्तविहीन विद्यालयों में कार्यरत शिक्षकों की शिक्षक—सामंजस्यशीलता का तुलनात्मक अध्ययन करना।
5. राजकीय एवं वित्तविहीन विद्यालयों में कार्यरत शिक्षकों की शिक्षक—सामंजस्यशीलता का तुलनात्मक अध्ययन करना।
6. नवोदय एवं सहायता प्राप्त विद्यालयों में कार्यरत शिक्षकों की शिक्षक—सामंजस्यशीलता का तुलनात्मक अध्ययन करना।

परिकल्पनाएँ

1. नवोदय एवं राजकीय विद्यालयों में कार्यरत शिक्षकों की शिक्षक सामंजस्यशीलता में कोई अन्तर नहीं है।

2. राजकीय एवं सहायता प्राप्त विद्यालयों में कार्यरत शिक्षकों की शिक्षक सामंजस्यशीलता में कोई अन्तर नहीं है।
3. सहायताप्राप्त एवं वित्तविहीन विद्यालयों में कार्यरत शिक्षकों की शिक्षक सामंजस्यशीलता में कोई अन्तर नहीं है।
4. नवोदय एवं वित्तविहीन विद्यालयों में कार्यरत शिक्षकों की शिक्षक सामंजस्यशीलता में कोई अन्तर नहीं है।
5. राजकीय एवं वित्तविहीन विद्यालयों में कार्यरत शिक्षकों की शिक्षक सामंजस्यशीलता में कोई अन्तर नहीं है।
6. नवोदय एवं सहायता प्राप्त विद्यालयों में कार्यरत शिक्षकों की शिक्षक सामंजस्यशीलता में कोई अन्तर नहीं है।

अध्ययन विधि

निर्धारित उद्देश्यों से सम्बन्धित परिकल्पना के परीक्षण हेतु “घटनोत्तर अध्ययन विधि को” प्रयुक्त किया गया है।

न्यादर्श

प्रस्तुत अध्ययन में जनसंख्या के अन्तर्गत ३० राज्यों में स्थित मैनेपुरी जिले के नवोदय, राजकीय, सहायताप्राप्त एवं वित्तविहीन माध्यमिक विद्यालयों में कार्यरत शिक्षक सम्मिलित है।

सर्वप्रथम मैनेपुरी जिले का चयन किया गया तत्पश्चात आकस्मिक विधि से मैनेपुरी (शहर) से 15 तथा ग्रामीण क्षेत्र 45 कुल 60 विद्यालयों का चयन किया गया। जिनमें से नवोदय से 20 शिक्षक, राजकीय, विद्यालय से 40, सहायता प्राप्त विद्यालय 190 तथा वित्तविहीन विद्यालयों से 50 शिक्षक (महिला व पुरुष) कुल 300 शिक्षकों का चयन किया गया। (2)

उपकरण

प्रदत्त संकलन हेतु डॉ० एस. के. मंगल द्वारा निर्मित प्रमापीकृत मंगल “शिक्षक सामंजस्य परिसूची” (MTAI) (1982) का प्रयोग किया।

इस उपकरण का विश्वसनीयता परीक्षण—पुनर्परीक्षण पद्धति द्वारा 9.3.9. एवं अर्द्ध खण्ड पद्धति द्वारा 9.8.3. पायी गयी। इस उपकरण की वैधता अध्यापक सामंजस्य विस्तृत सूची एम.टी.ए.आइ 906 ज्ञात की गयी।

प्रदत्तों से निष्कर्ष निकालने हेतु मध्यमान, मध्यांक, मानक विचलन, चतुर्थक—विचलन, एवं टी—मान की गणना की गयी।

सांख्यिकीय प्रविधियाँ

प्रदत्तों से निष्कर्ष निकालने हेतु मध्यमान, मध्यांक, मानक विचलन, चतुर्थक—विचलन, एवं टी—मान की गणना की गयी।

माध्यमिक विद्यालय एवं कुल शिक्षकों की संख्या तालिका (1)

स्वतंत्रचर/विद्यालय	नवोदय	राजकीय	सहायता प्राप्त	वित्तविहीन	कुल शिक्षकों की संख्या
	20	40	190	50	300

तालिका- 2
कुल समूह के सामंजस्य प्राप्तांकों के विभिन्न सांख्यिकीय परिमाण

सांख्यिकीय परिमाण	मध्यमान	मध्यांक	प्रामाणिक विचलन	चतुर्थक विचलन	विषमता	ककुदता
कुल समूह	49.83	51.64	7.85	7.95	.69	0.033

सामंजस्य के प्राप्तांकों के वितरण में निहित विषमता का अध्ययन करने से स्पष्ट होता है कि कुल समूह के सामंजस्य सम्बन्धी प्राप्तांकों में नकारात्मक विषमता (-.69)

दृष्टिगोचर हो रही है। ककुदता की दृष्टि से प्राप्त सामंजस्य प्राप्तांकों के वितरण का अध्ययन करने पर स्पष्ट होता है कि सामंजस्य प्राप्तांकों में तुंग ककुदता परिलक्षित हो रही है।

उपर्युक्त परिणामों से स्पष्ट है कि एकत्रित किये गये सामंजस्य के प्राप्तांकों में थोड़ी बहुत विषमता दृष्टिगोचरित हो रही है सम्भवतः प्रतिदर्श चयन विचलनों के फलस्वरूप ही है। (3)

अतः निष्कर्ष रूप में कहा जा सकता है कि अध्ययन के निमित्त चयनित प्रतिदर्श अपनी मूल समष्टि का प्रतिनिधित्व कर रहे हैं तथा सामंजस्य प्राप्तांक समष्टि में सामान्य रूप से वितरित हैं।

तालिका- 3
नवोदय एवं राजकीय विद्यालयों के शिक्षकों के सामंजस्य प्राप्तांकों के मध्यमान, मानक विचलन एवं क्रान्तिक अनुपात

समूह	संख्या	मध्यमान	मानक विचलन	क्रान्तिक अनुपात / टी-मान	सार्थकता स्तर
नवोदय विद्यालय	20	59.5	7.5	1.07	.05 स्तर पर असार्थक
राजकीय विद्यालय	40	52.5	7.57		

उपर्युक्त तालिका में दर्शाये गये मध्यमान मूल्यों से स्पष्ट होता है कि नवोदय विद्यालय में कार्यरत शिक्षकों का सामंजस्य राजकीय विद्यालय में कार्यरत शिक्षकों की तुलना में अधिक श्रेष्ठ है।

उक्त दोनों विद्यालय के शिक्षकों के सामंजस्य में सांख्यिकीय दृष्टिकोण से

सार्थक अन्तर है अथवा नहीं, यह जानने हेतु टी-मान की गणना की गयी। टी-मान के अवलोकन से स्पष्ट होता है कि नवोदय एवं राजकीय विद्यालयों में कार्यरत शिक्षकों के सामंजस्य में कोई सार्थक अन्तर नहीं है, क्योंकि प्राप्त टी-मान .05 स्तर पर असार्थक है।

तालिका- 4

राजकीय व सहायता प्राप्त विद्यालयों के शिक्षकों के सामंजस्य प्राप्तांकों के मध्यमान, मानक विचलन एवं क्रान्तिक अनुपात

समूह	संख्या	मध्यमान	मानक विचलन	क्रान्तिक अनुपात / टी-मान	सार्थकता स्तर
राजकीय विद्यालय	40	52.5	7.57	0.164	0.05स्तर पर असार्थक
सहायता प्राप्त विद्यालय	190	51.98	7.65		

उपर्युक्त तालिका में दर्शाये गये मध्यमान मूल्यों से स्पष्ट होता है कि राजकीय विद्यालय में कार्यरत शिक्षकों का सामंजस्य सहायता प्राप्त विद्यालयों में कार्यरत शिक्षकों की तुलना में लगभग अच्छा है। (5)

उक्त दोनों विद्यालयों के शिक्षकों के सामंजस्य में अन्तर है अथवा, नहीं यह

जानने हेतु क्रान्तिक अनुपात की गणना की गयी। क्रान्तिक अनुपात के अवलोकन से स्पष्ट होता है कि राजकीय एवं सहायता प्राप्त विद्यालयों में कार्यरत शिक्षकों के सामंजस्य में सार्थक अन्तर नहीं है क्योंकि प्राप्त क्रान्तिक अनुपात .05 स्तर पर असार्थक है।

तालिका- 5

सहायता प्राप्त एवं वित्तविहीन विद्यालयों के शिक्षकों के सामंजस्य प्राप्तांकों के मध्यमान, मानक विचलन एवं क्रान्तिक अनुपात

समूह	संख्या	मध्यमान	मानक विचलन	क्रान्तिक अनुपात / टी-मान	सार्थकता स्तर
सहायता प्राप्त विद्यालय	190	51.98	7.65	8.27	0.01स्तर पर सार्थक
वित्तविहीन विद्यालय	50	41.8	7.80		

वित्तविहीन विद्यालय	50	41.8	7.80		
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उपर्युक्त तालिका में दर्शाये गये मध्यमान मूल्यों से स्पष्ट होता है कि सहायता प्राप्त विद्यालय में कार्यरत शिक्षकों का सामंजस्य वित्तविहीन विद्यालयों में

कार्यरत शिक्षकों की तुलना में अधिक श्रेष्ठ है। (6)

उक्त दोनों विद्यालयों के शिक्षकों के सामंजस्य में अन्तर है अथवा नहीं, यह जानने हेतु क्रान्तिक अनुपात की गणना की गयी। क्रान्तिक अनुपात के अवलोकन

से स्पष्ट होता है कि सहायता प्राप्त एवं वित्तविहीन विद्यालयों में कार्यरत शिक्षकों के सामंजस्य में सार्थक अन्तर है क्योंकि क्रान्तिक अनुपात .01 स्तर पर सार्थक है।

तालिका- 6

नवोदय एवं वित्तविहीन विद्यालयों के शिक्षकों के सामंजस्य-प्राप्तांकों के मध्यमान, मानक विचलन एवं क्रान्तिक अनुपात

समूह	संख्या	मध्यमान	मानक विचलन	क्रान्तिक अनुपात / टी-मान	सार्थकता स्तर
नवोदय विद्यालय	20	59.5	7.5	8.57	0.01स्तर पर सार्थक
वित्तविहीन विद्यालय	50	41.8	7.80		

उपर्युक्त तालिका में दर्शाये गये मध्यमान मूल्यों से स्पष्ट होता है कि नवोदय विद्यालय में कार्यरत शिक्षकों का सामंजस्य वित्तविहीन विद्यालयों में कार्यरत शिक्षकों की तुलना में अधिक श्रेष्ठ है। उक्त दोनों विद्यालयों के शिक्षकों के सामंजस्य में सांख्यिकीय दृष्टिकोण से

अन्तर है अथवा नहीं, यह जानने हेतु टी-मान की गणना की गयी। टी-मान के अवलोकन से परिलक्षित होता है कि नवोदय एवं वित्तविहीन विद्यालयों में कार्यरत शिक्षकों के सामंजस्य में सार्थक अन्तर है क्योंकि प्राप्त टी-मान .01 स्तर पर सार्थक है। (4)

तालिका- 7

राजकीय व वित्तविहीन विद्यालयों के शिक्षकों के सामंजस्य प्राप्तांकों के मध्यमान, मानक विचलन एवं क्रान्तिक अनुपात

समूह	संख्या	मध्यमान	मानक विचलन	क्रान्तिक अनुपात / टी-मान	सार्थकता स्तर
राजकीय विद्यालय	40	52.5	7.57	1.63	0.05स्तर पर असार्थक
वित्तविहीन विद्यालय	50	41.8	7.80		

उपर्युक्त तालिका में दर्शाये गये मध्यमान मूल्यों से स्पष्ट होता है कि राजकीय विद्यालय में कार्यरत शिक्षकों का सामंजस्य वित्तविहीन विद्यालयों में कार्यरत शिक्षकों की तुलना में अधिक श्रेष्ठ है। (7)

उक्त दोनों विद्यालयों के शिक्षकों के सामंजस्य में सांख्यिकीय दृष्टिकोण से अन्तर है अथवा नहीं, यह जानने हेतु क्रान्तिक अनुपात के अवलोकन से परिलक्षित होता है कि राजकीय एवं वित्तविहीन विद्यालयों में कार्यरत शिक्षकों

के सामंजस्य में असार्थक अन्तर है क्योंकि असार्थक है।
प्राप्त क्रान्तिक अनुपात .05 स्तर पर

तालिका- 8

नवोदय व सहायता प्राप्त विद्यालयों के शिक्षकों के सामंजस्य-प्राप्तांकों के
मध्यमान, मानक विचलन एवं क्रान्तिक अनुपात

समूह	संख्या	मध्यमान	मानक विचलन	क्रान्तिक अनुपात / टी-मान	सार्थकता स्तर
नवोदय विद्यालय	20	59.5	7.5	1.80	0.05स्तर पर असार्थक
सहायता प्राप्त विद्यालय	190	51.98	7.65		

उपर्युक्त तालिका में दर्शाये गये मध्यमान मूल्यों से स्पष्ट होता है कि नवोदय विद्यालय में कार्यरत शिक्षकों का सामंजस्य सहायता प्राप्त विद्यालयों के शिक्षकों की तुलना में अधिक श्रेष्ठ है।

उक्त दोनों विद्यालयों के शिक्षकों के सामंजस्य में सांख्यिकीय दृष्टिकोण से सार्थक अन्तर है अथवा नहीं, यह जानने हेतु टी-मान की गणना की गयी। टी-मान के अवलोकन से स्पष्ट होता है कि नवोदय विद्यालय एवं वित्तविहीन विद्यालयों में कार्यरत शिक्षकों के सामंजस्य में सार्थक अन्तर नहीं है क्योंकि प्राप्त टी-मान .05 स्तर पर असार्थक है।

निष्कर्ष एवं विवेचना

- 1- नवोदय व राजकीय विद्यालयों के शिक्षकों सामंजस्य में कोई सार्थक अन्तर नहीं है।
- 2- राजकीय सहायता प्राप्त विद्यालयों के शिक्षकों सामंजस्य में कोई सार्थक अन्तर नहीं है।
- 3- सहायता प्राप्त वित्तविहीन विद्यालयों के शिक्षकों सामंजस्य में कोई सार्थक अन्तर नहीं है।

4- नवोदय वित्तविहीन विद्यालयों के शिक्षकों सामंजस्य में कोई सार्थक अन्तर नहीं है।

5- राजकीय वित्तविहीन विद्यालयों के शिक्षकों सामंजस्य में कोई सार्थक अन्तर नहीं है।

6- नवोदय सहायता प्राप्त विद्यालयों के शिक्षकों सामंजस्य में कोई सार्थक अन्तर नहीं है। (8-12)

उपर्युक्त उपलब्धियों के आधार पर निष्कर्षात्मक रूप में कहा जा सकता है कि नवोदय विद्यालय के शिक्षकों का सामंजस्य राजकीय, सहायता प्राप्त एवं वित्तविहीन विद्यालयों के शिक्षकों की अपेक्षा सबसे अधिक पाया गया। विद्यालय के प्रकार, वेतन व अन्य सुविधाएं नवोदय शिक्षकों का अपने सहयोगी शिक्षकों के साथ मधुर सम्बन्ध होना, आवासीय सुविधा उपलब्ध होना, विद्यालय के अतिरिक्त बाध्य व्यक्तियों से सम्पर्क कम होना, समायोजन न हाने की स्थिति में स्थानान्तरण का भय इत्यादि कारण इनके सामंजस्य को उच्च बनाने में सफल रहें। सामाजिक-आर्थिक कारक आवासीय

सुविधा सामंजस्य को प्रभावित करते हैं। सामंजस्य को प्रभावित करने वाले कारकों में विद्यालयों के प्रकारों की भूमिका भी महत्वपूर्ण है। वित्तविहीन विद्यालयों के शिक्षक मनोविज्ञान से अनभिज्ञ, रहते हैं। परिणामस्वरूप वह शिक्षक विद्यालय वातावरण एवं बालकों के प्रति उत्कृष्ट सामंजस्य स्थापित नहीं कर सके जैसाकि दीक्षित, सुनीता (2008) के परिणाम भी दर्शाते हैं।(13)

दीक्षित, सुनीता (2008) ने अपने शोध अध्ययन में स्पष्ट किया है कि वित्तविहीन शिक्षकों का सामाजिक-आर्थिक स्तर निम्न होना उचित मानदेय न होना, प्रशिक्षण व अनुभव की कमी के कारण स्थायी नौकरी न होना रुचि व अभिक्षमता के अनुसार शिक्षण कार्य न कराना प्रबन्धक द्वारा शोषण, परिश्रम व समय का अधिक भार वे शिक्षक उचित सामंजस्य बनाने में असफल रहे। इन शिक्षकों में कुण्ठा वेतन की कमी के कारण भी रहती हैं ऐसी परिस्थिति में वे अपना कार्य पूर्ण मनोयोग व ईमानदारी से नहीं कर पाते हैं जिसका स्पष्ट प्रभाव उनकी सामंजस्यशीलता पर पड़ता है।(14)

कौर, मंजीत (1990) ने अपने अध्ययन के आधार पर पाया कि व्यावसायिक शोधार्थियों ने घर, स्वास्थ्य एवं सामंजस्य में अधिक अंक पाये, जबकि कला शोधार्थियों ने सामाजिक, भावात्मक और पूर्ण सामंजस्य में अधिक अंक प्राप्त किये। इसी प्रकार अग्रवाल, एस० (1998) ने निष्कर्ष निकाला कि कम प्रभावी महिला अध्यापकों के सन्दर्भ में भावात्मक कारक अधिक प्रभावी पाये गये जबकि अधिक प्रभावी अध्यापकों की सामंजस्य समस्या में सामाजिक कारक अधिक महत्वपूर्ण पाये गये।

माध्यमिक विद्यालयों के अन्तर्गत वित्तविहीन विद्यालयों के शिक्षकों का जब सामाजिक आर्थिक स्तर उन्नत होगा तभी वह विद्यालय परिवेश एवं छात्रों के साथ उचित सामंजस्य स्थापित करने में सफल होंगे। अतः सरकार को इन शिक्षकों के हितार्थ कल्याणकारी योजनाओं को कार्यान्वित करने की आवश्यकता है। प्रस्तुत शोध अध्ययन से स्पष्ट है कि जो शिक्षक अच्छे विद्यालय में कार्यरत थे उनमें उतनी ही उच्चकोटि की सामंजस्यशीलता पायी गयी। इस प्रकार विद्यालयों (स्वतन्त्र चरों) का सामंजस्यशीलता (आश्रित चर) पर स्पष्ट प्रभाव परिलक्षित होता है।

शैक्षिक निहितार्थ

शिक्षण व्यावसाय समाज में सम्मान की दृष्टि से देखे जाने वाला व्यावसाय है इस शोध अध्ययन के फलस्वरूप माध्यमिक विद्यालयों (नवोदय, राजकीय, सहायता प्राप्त एवं वित्तविहीन) के शिक्षकों में से नवोदय विद्यालय के शिक्षकों की सामंजस्यशीलता अधिक पायी गई एवं वित्तविहीन विद्यालयों के शिक्षकों की सामंजस्यशीलता अन्य विद्यालयों की तुलना में सबसे कम पाई गई। अतः वित्तविहीन विद्यालयों के शिक्षकों के हितों को ध्यान में रखकर उन्हें अन्य सुविधाएँ यथा-वेतन, फण्ड, चिकित्सा, आवास आदि दी जाए तथा समय-2 पर विद्यालयों में सामंजस्यशीलता की वृद्धि हेतु संगोष्ठी, कार्यशाला आदि की आयोजन किया जाय, उनकी व्यक्तिगत समस्याओं का निराकरण किया जाए जिससे शिक्षक समाज एवं विद्यालय में सभी के साथ सामंजस्य बना सके। अतः सरकार के लिए महत्वपूर्ण सुझाव है कि शिक्षकों शिक्षण व्यावसाय एवं सामंजस्य को उन्नत बनाने हेतु जिले में उचित प्रयास किये जाये।

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Review Article

शिक्षा में ई-शासन की चुनौतियां व सुझाव

पवन कुमारी¹ कु. मीनाक्षी²

¹ लिंग्याज विद्यापीठ, फरीदाबाद

² वनस्थली विद्यापीठ राजस्थान

Abstract

एक देश के समग्र विकास के लिए एक अच्छी शिक्षा प्रणाली की आवश्यकता होती है। ई-शासन द्वारा देश की शिक्षा प्रणाली में एक नयी लहर लाई जा सकती है। ई-शासन से तात्पर्य सरकारी कार्यों में सूचना प्रौद्योगिकी का प्रयोग है व सूचनाओं को बिना देरी व कम लागत में जनता को उपलब्ध कराना भी ई-गवर्नेंस के कार्य क्षेत्र में आता है। राष्ट्रीय ई-शासन व राष्ट्रीय ई-गवर्नेंस को 2006 में शुरू किया गया था। ई-शासन का उद्देश्य देश का प्रत्येक क्षेत्र में विकास करना है और इसमें शिक्षा का क्षेत्र भी शामिल है। अतः इस पेपर में शिक्षा के क्षेत्र में ई-शासन के चुनौतियों व सुझावों के बारे में बताया जाएगा।

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परिचय

ई-शासन या ई-गवर्नेंस के द्वारा आम जनता को शासकीय सेवाएं व महत्वपूर्ण सूचनाएं इंटरनेट के जरिए मुहैया की जाती हैं अर्थात् इंटरनेट के जरिए सरकारी सुविधाओं को आम जनता तक पहुंचाने को ही ई-गवर्नेंस कहा जाता है।

(1) ई-शासन द्वारा अपने दैनिक कार्यों को भी आसानी से किया जा सकता है जैसे— पानी के बिल का भुगतान व बिजली बिल का भुगतान आसानी से किया जा सकता है। ई-शासन योजना को भारत के इलेक्ट्रानिक्स सूचना और प्रौद्योगिकी विभाग प्रशासनिक सुधार एवं सार्वजनिक शिकायत विभाग द्वारा बनाया गया और इसका उद्देश्य देश की सभी सरकारी सेवाओं का इलेक्ट्रानिक माध्यमों द्वारा देश के आम नागरिकों तक

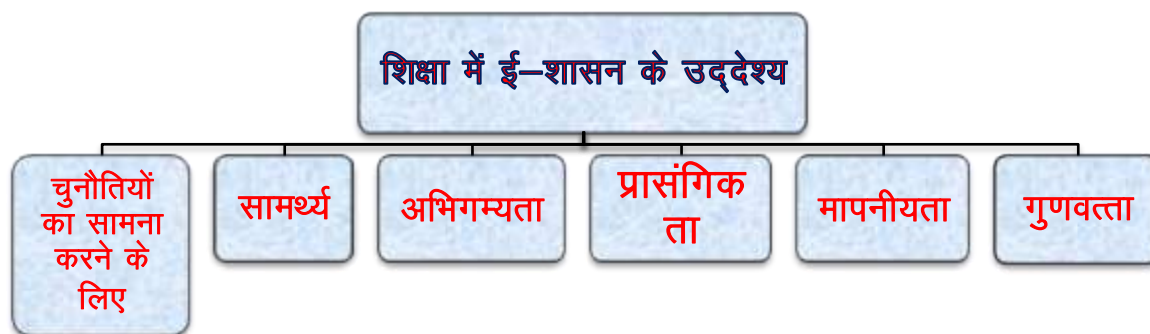
पहुंचाना। ई-शासन को चार श्रेणियों में बांटा गया है— सरकार से सरकार तक, सरकार से नागरिकों तक, सरकार से व्यवसाय तक व सरकार से कर्मचारी तक।

शिक्षा के क्षेत्र में ई-शासन

शिक्षा के क्षेत्र में तरक्की व उन्नति लाने के लिए ई-शासन की बहुत आवश्यकता है। ई-शासन के द्वारा शैक्षिक संगठनों के कार्य को सरल व तीव्र गति प्रदान की जा सकती है। और कम लागत में कार्य को अच्छे ढंग से किया जा सकता है। शिक्षा के क्षेत्र में अनेक कार्य हैं जिन्हें ई-शासन द्वारा आसानी से किया जा सकता है जैसे—

- विवरण प्रक्रिया को आसानी से व जल्दी किया जा सकता है। (4)
- आनलाईन जानकारी द्वारा फार्म व भुगतान को आसानी से भरा जा सकता है।

- ई-शासन द्वारा प्रबंधन, संकाय सदस्य व प्रशासन संबंधी स्टॉफ और शिक्षार्थी आसानी से एक दूसरे से जुड़े रहते हैं।
- सभी को समान अवसर प्राप्त करने में भी ई-शासन उपयोगी है।



शिक्षा के क्षेत्र में ई-शासन की चुनौतियां

- इंटरनेट की सुविधा की कमी— अभी तक हमारे देश में ऐसे कई स्थान हैं जहां पर इंटरनेट की सुविधा नहीं पहुंच पायी है। अतः वहां की जनता इंटरनेट का उपयोग नहीं कर सकती और शिक्षा के क्षेत्र में भी ई-शासन के द्वारा कोई तरक्की नहीं हो सकती हैं।(2)
- हर कोई लाभ नहीं उठा सकता— इस योजना का हर कोई व्यक्ति लाभ नहीं उठा सकता है क्योंकि इंटरनेट चलाने के लिए कम्प्यूटर या टेबलेट की आवश्यकता होती है और भारत एक निर्धन देश है। जिन लोगों को दो वक्त की रोटी नसीब नहीं होती वे कम्प्यूटर व टेबलेट कहां से लेंगे। (5)
- सुरक्षा की कमी— बहुत से नागरिकों को लगता है कि इंटरनेट में काम करने से कहीं उनकी कोई आवश्यक फाइल चोरी न हो जाए या कहीं वह उपयोग करने लायक न रहे।

अर्थात कहीं वह उस साधन में से मिट न जाए।

- शिक्षा संस्थानों में डिजिटल संसाधनों की कमी।
- शिक्षा संस्थानों में नए आविष्कार शिक्षण उपकरणों के उपयोग करने में प्रोत्साहन की कमी।

शिक्षा के क्षेत्र में ई-शासन के सुझाव

- सरकार को इंटरनेट व इससे जुड़ी समस्याओं के निदान के लिए आवश्यक कदम उठाने की आवश्यकता है। ई-शासन योजना को तभी मजबूत बनाया जा सकता है जब अंतरा जाल को ठीक करने के लिए किसी प्रभावी योजना को कार्यावित्त नहीं किया जाता।
- नागरिकों को अंतरा जाल से कार्य करने संबंधी असुरक्षा के भय को समाप्त करने के लिए प्रयत्न करने चाहिए। (3)

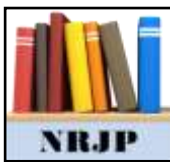
➤ शिक्षा संस्थाओं में संसाधनों की कमी को पुरा किया जाना चाहिए व शिक्षा संस्थाओं को पर्याप्त मात्रा में डिजिटल संसाधन उपलब्ध कराने चाहिए।

➤ अंतरा जाल की पहुंच लगातार शहरी क्षेत्रों में बढ़ रही है। सरकार को जरूरत है कि इस अंतराजाल की पहुंच को सर्वव्यापक किया जाए।

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Review Article

Human Teaching Verses Robotic Teaching

Dr. Ajay Singh

Associate professor, Education Deptt, P.S.M. P.G.College, Kannauj, Uttar Pradesh

Abstract

Elias, the new language teacher at a Finnish primary school in TAMPERE, Finland has endless patience for repetition, never makes a pupil feel embarrassed for asking a question and can even do the “Gangnam Style” dance. Elias, which stands around a foot tall, is able to understand and speak 23 languages and is equipped with software that allows it to understand students’ requirements and helps it to encourage learning. In this trial however, it communicates in English, Finnish and German only.

Keywords: Human Teaching, Teaching, Education

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INTRODUCTION

The robot recognizes the pupil’s skill levels and adjusts its questions accordingly. It also gives feedback to teachers about a student’s possible problems. The purpose of this pilot project is to see if these robots can improve the quality of teaching, with one of the Elias robots and three of the OVObots deployed in schools.(1)

When a Computer Science professor in the United States used a virtual teaching assistant to answer his students’ queries, during the spring of 2016, it made international headlines. Not because he had used the system but because the class didn’t realise. It was only after the course had finished that the professor revealed that ‘Jill Watson’ wasn’t a real person. In fact, only one student had suspicions. The reason? She answered questions much quicker than other teaching assistants. Obviously, Jill wasn’t a robot walking around the classroom. She was a program that the students could email

with problems and queries. But the fact that the students didn’t notice they were communicating with a software programme shows how far AI has come. The key to Jill’s believability owed much to her use of language. By using informal phrases when appropriate she was able to seem human. There was only one slip up, when she said ‘design’ instead of ‘project’. So, if robots can now fool us into thinking they’re human, is it time for teachers to make way for AI?

Teaching robots have been used in the Middle East, Asia and the United States in recent years. Modern technologies such as cloud services and 3D printing are allowing smaller start-up companies to enter the sector. Some of the human teachers who have worked with the technology see it as a new way to engage children in learning. (2)

Now the question is will it really be possible to have that same mental-set-up or

emotional level if robots are made to teach young learners, who have their individual pace and spirit to learn. Human beings are naturally gifted with strong sensory feelings or what we say emotions, which is artificially imposed in Robot teachers.

1. The Best Parts of Human Teachers:

1.1. Human beings have different behavioural and psychological levels that define their social skills and interactivity.

1.2. Automatically human teachers are powered by such cognitive-social-psychological mixtures to make the generations learn naturally. It is prompt and no formatting or programming is required.

1.3. It is difficult for robot teachers to match up to the 'unique' social skills and cognitive ratio exclusively found in humans.

2. The Positive Parts of Robot Teachers :

Perhaps one has only one positive effect of having the robot teacher within the education belt, and that is of completing the syllabus or curriculum within a fixed span of time, without falling loose or failing to face any error, other than the technical ones.(3-4)

Even teachers admit that robots are good. Research has found that while teachers generally expected robots to be disruptive, in reality they reported that they were not and teachers often went on to develop numerous positive ideas about the robot's potential as a new educational tool for their classrooms.

3. Discontent with Robot Teachers:

However, one single positive side could not totally ignore the errors or negative consequences of having robot teachers. These should not just be called as 'negatives' but they are actually the missing links which are evident in the robot teachers.

And it is these links which makes pure grounds for the human teachers to survive the jitters of technological advancement. Let's unfold some of the missing-links :

3.1. It is not able to create a real or natural reaction to critically complex human tendencies or have the same amount of human touch.

3.2. Robots lack creative senses.

3.3. Robots are unable to maintain discipline in a class.

3.4. Replacing human teachers with Robots may also hamper the student-teacher bond.

4. Robots Won't Replace Teachers:

The biggest asset of Human teachers is they are 'real with their experiences, knowledge and analytical whereabouts' and is not imposed artificially through software or programming. In short, it is possible to properly understand the emotions of young children only if you are a human teacher-*having the human thing-feelings, reality and genetics.*

A teacher's role is not just to teach. A teacher is also looking after the students in the class, spotting those experiencing difficulties and supporting them as necessary. In this sense it is one of the most human jobs we have. Reading subtle social cues that students need help is not something robots do well. People are social animals. Humans like to learn in groups and they like to learn from other people. Robots will never be able to match humans on that count. Another factor which is likely to be irreplaceable: the ability to inspire. Teaching facts and theories is one thing, relating the things you teach to everyday life is quite another. Teachers are there to answer the really difficult questions when students get stuck. Teachers are there to share their

experiences in life. It is for these reasons that teachers' jobs seem to be safe for the foreseeable future. (5)

To put simply, Robots won't replace teachers because they can't inspire us. In a world where young people are retreating more and more into virtual unreality, the teaching profession has become more important than it ever was. It is human teaching that keeps it real – teaching that keeps young people alive.

Even the tech wizard himself, Steve Jobs, believed that while technology can solve many societal problems, it's not as simple as handing it over to a computer. At least not when it comes to teaching. "The most important thing is a person. A person who incites your curiosity and feeds your curiosity; and machines cannot do that in the same way that people can," Jobs said, according to a transcript of his famous 1995 interview with Computerworld's Daniel Morrow.

5. The Threat Ahead:

A leading educationalist predicted in September, 2017, that inspirational robots will begin replacing teachers in the classroom within the next ten years as part of a revolution in one-to-one learning. These will react to children's brain waves and facial expressions

Sir Anthony Seldon, Vice-Chancellor of the University of Buckingham, said intelligent machines that adapt to suit the learning styles of individual children will soon render traditional academic teaching all but redundant. The impact is going to be massive. The new era of automated teaching promises an end to grouping children by year, as the personalized nature of the robots will enable pupils to learn new material at their own pace, rather than as part of a class.

"Everyone can have the very best teacher and it's completely personalized; the software you're working with will be with you throughout your education journey." He warned, however, that the new technology would have to be carefully introduced to avoid "infantilizing" pupils and teachers. As part of robot-led learning, teachers would adopt the role of "overseers", monitoring the progress of individual pupils and leading non-academic activities, Sir Anthony said. The efficiency of automated teaching would also mean that only 30 per cent of school time will be spent in class.

A report from the University of Oxford and Yale University also found that artificial intelligence will outperform humans in many activities in the near future, including translating languages (by 2024), writing high-school essays (by 2026), driving a truck (by 2027), working in retail (by 2031), writing a bestselling book (by 2049), and working as a surgeon (by 2053). Some of the experts surveyed by the researchers believe machines will be better than humans at all tasks within nine years. Artificial intelligence is rapidly growing, and that fear of losing your job to technology has become very real.

On 17th July, 2017 came another breaking news that sent alarming waves across print and social media all over the world. Speculations emerged that in the distant future, robots will rule over humanity as we are driven back into caves to fight for what's left of the Earth. Well, that's not necessarily true, but, anything could happen when our AI overlords begin to gain autonomy. A glimpse of this bleak future was unveiled at the RISE tech event held in Hong Kong when Hanson Robotics unveiled its two very creepy-looking "humans." in front of a nervously tittering audience.

Handsome male humanoid Han, dressed in a pinstripe suit jacket, and his elegant sister Sophia, modelled on Audrey Hepburn, chatted onstage about life in the universe and everything, from their love of science fiction to their bewilderment at “silly” reality shows. While chief scientist Ben Goertzel of Hong Kong-based Hanson Robotics, which invented the machines, sang their praises, the robots seemed more skeptical of their human peers. When Goertzel asked the duo whether robots could really be moral and ethical, Han countered: “Humans are not necessarily the most ethical creatures”. The robot later pointed out: “In 10 or 20 years, robots will be able to do every human job.” A gentler Sophia conceded that humans do have “some ability to reflect and self-modify”. She insisted her aim was to work together with people, before Han “joked” he thought the robots’ goal was to take over the world.

The machines had been programmed to banter and learn from each other, and had been trained to act like humans from movies and YouTube, said Goertzel. Their malleable skin is controlled by dozens of motors, while computers in their torsos help with vision and movement. They can also connect to wifi to use cloud computing, where they will eventually share a vast amount of knowledge, Goertzel said. Robots could be “as smart as people” in as little as three years, he predicted. Robots would be able to work with humans in factories, customer service and medicine but would also become our friends, said Hanson, who did not rule out eventual robot-human romantic relationships. However, Hanson acknowledged, “There’s reasonable speculation that if we don’t build machines that really care, they’ll have motives of their own,” he said, adding that it was important to openly discuss how to develop AI that is “inherently safe and good and caring”.

Stephen Hawking had also warned that technology needs to be controlled in order to prevent it from destroying the human race. As so often the case in human vs machine debates, perhaps the reality lies somewhere in between – a combination of the best of what people do with the best of what AI can offer. As Rose Luckin, a professor of learner centered design at University College London, [puts it](#): “What we are very interested in is the right blend of human and artificial intelligence in the classroom – identifying that sweet spot.” It seems robots are likely to be used in classrooms as learning tools, not teachers.

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Review Article

Water Resources Management in Bundelkhand Region

Dr. Ashok Babu

Assistant Professor,

Govt Mahila P.G. College, Hamirpur Uttar Pradesh

Abstract

Bundelkhand region receives water from a number of perennial rivers most of which originate in Madhya Pradesh and outfall into the Yamuna in Uttar Pradesh. While the Yamuna flows from west to east, its first order tributaries viz., Betwa, Ken, Pahuj, Baghain, Paisunj and Gunta flow from south to north. Second order tributaries of the Yamuna system namely. Dhasan, Jamni, Bearma, Sonar, Patna, Bewas, Kopra etc., also drain the area. The entire drainage forms a part of Ganga basin.

Keywords: Water Resources

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INTRODUCTION

Bundelkhand region receives water from a number of perennial rivers most of which originate in Madhya Pradesh and outfall into the Yamuna in Uttar Pradesh. While the Yamuna flows from west to east, its first order tributaries viz., Betwa, Ken, Pahuj, Baghain, Paisunj and Gunta flow from south to north. Second order tributaries of the Yamuna system namely.

Dhasan, Jamni, Bearma, Sonar, Patna, Bewas, Kopra etc., also drain the area. The entire drainage forms a part of Ganga basin. The region generally slopes from south to north with elevations ranging from 600m above mean sea level (amsl) to 300 m amsl in Madhya Pradesh and to 150 m amsl in

Uttar Pradesh. Madhya Pradesh part is conspicuous of undulation rocky ravine topography coupled with level plain while Uttar Pradesh part gradually slopes from mild ravines to alluvium level plain near the Yamuna. (1)

Plate-II shows the physiography and plate-IV shows drainage system prevailing in the Bundelkhand region. Precipitation is the ultimate source of fresh, Green and blue water.

Ground water has played a predominant role in irrigation development in both the states and surface water is relatively under developed in MP when compared to U.P.

Table 1 - Irrigable area and area irrigated from different sources (Thousand ha) in Bundelkhand

Distict	Geogr aphica l Area	Cultiva ble Area	Net Sown Area	M & M System Canals	Minor Irrigation (MI) under different source						Total Irrigation from All Sources
					Ground Water			Surface Water		Total MI	
					Dug Wells	Shallow Tube Wells	Deep Tube Wells	Flow	Lift		
Uttar Pradesh											
Lalitpur	386.5	324.8	299.7	27.45	11.34	45.75	59.66	1.38	2.43	120.54	147.99
Jhansi	313.3	219.3	199.9	13.62	9.61	15.75	1.62	4.68	3.90	35.55	49.16
Jalaun	401.4	324.2	303.9	37.92	10.90	34.52	37.74	2.00	3.46	88.60	126.52
Hamirpur	457.8	371.4	337.1	118.09	7.16	26.71	61.00	1.03	0.51	96.41	214.50
Mahoba	484.0	356.2	306.0	57.24	41.43	30.71	8.76	0.83	5.51	87.25	144.48
Banda	509.9	387.7	213.3	46.74	52.08	2.06	3.80	0.17	2.85	60.97	107.71
Chitrakoot	278.0	203.7	194.1	8.83	31.95	2.22	0.30	10.63	0.87	45.97	54.80
Total	2830.	2187.3	1854	309.89	164.47	157.72	172.88	20.72	19.53	535.29	845.16
Percent of Net Sown Area				16.7	8.9	8.5	9.3	1.1	1.1	28.9	45.6
Madhya Pradesh											
Sagar	803.00	552.50	498.00	8.74	73.44	15.66	0.94	2.45	38.55	131.37	140.11
Damoh	574.80	334.40	303.40	1.80	69.30	15.02	1.43	9.30	23.01	118.06	119.86
Panna	458.90	265.90	235.50	2.67	12.99	9.00	1.34	8.16	22.37	53.86	56.53
Chhatarpur	876.70	429.30	363.00	21.	171.06	0.57	0.41	20.42	23.86	216.32	238.05
Tikamgarh	443.90	281.20	240.10	16.85	150.48	2.96	0.31	9.62	7.42	170.79	187.64
Datia	481.00	232.90	212.00	20.72	52.55	9.25	0.53	0.48	1.53	64.34	85.06
Total	3638.30	2096.20	1852.00	72.51	530.15	52.46	4.96	50.43	116.74	754.74	827.25
Percentage of Net Sown Area				3.9	28.6	2.8	0.3	2.7	6.3	40.8	44.7
Bundelkhand											
Total	6469.20	4283.50	3706.00	382.40	694.62	210.18	177.84	71.15	136.27	1290.03	1672.41
Percent of Net sown Area				10.3	18.7	5.7	4.8	1.9	3.7	34.8	45.1

Source - Third Minor Irrigation Census

There are about 2 lakh dug wells created by the private investment of farmers irrigation 28.6% of the net sown area in MP. on the other hand number dugwells in UP is 78,476 irrigation only 8.9% of net sown area in addition to making substantial contributions, dug well are more equitably distributed in both the states. however there is tremendous scope to extend the water availability in the dug well by their recharging. The Central Ground Water Board, after detailed studies has also suggested the additional open wells can dug. Farm ponds are other

possibility which has not been fully exploited in this region.(2)

There are 4,604 deep tube wells and 44,870 shallow tube wells in UP compared to 3,124 tube wells and 16394 shallow wells in MP, Tube well development is more pronounced in alluvium belt in Uttar Pradesh near Yamuna where its average yield is 37.5 ha per structure. The district variation in yield rates is primarily due to the hydrogeological characteristics dominant in the two

states. Table 2 - shows development of ground water in the region.

Table - 2 Groundwater structures in Bundelkhan

Sub- Region	Deep Tube Wells	Shallow Tube Wells	Dug Wells	All Structure
Numbers				
Uttar Pradesh	4604	44870	78476	127950
Madhya Pradesh	3124	16394	97507	217025
Bundelkhand	7728	61264	275983	344975
Average area irrigated (ha) per structure				
Uttar Pradesh	37.5	3.5	2.1	3.9
Madhya Pradesh	1.59	3.2	2.7	2.7
Bundelkhand	23.0	3.4	2.5	3.1

Table - 3 Ground water extent and yield in the Bundelkhand region (area in %)

S.NO.	Districts	Ground Water Yield (liters per second (lps))			
		<1	1-10	10-25	25-40
Uttar Pradesh					
1	Chitrakut	53	-	35	10
2	Banda	-	70	30	-
3	Hamirpur	-	70	30	-
4	Jhansi	-	20	80	-
5	Mahoba	65	35	-	-
6	Jalaun	80	20	-	-
7	Lalitpur	100	-	-	-
Madhya Pradesh					
1	Datia	55	45	-	-
2	Panna	95	05	-	-
3	Damoh	98	02	-	-
4	Sagar	100	-	-	-
5	Tikamgarh	100	-	-	-

Suggested net working of rivers and canal systems in UP:

Rivers Betwa, Ken, Baghain, Paisuni, Gunta and their tributaries Dhasan Chandrawal, Ohen along with a number of other streams/nallahs run mainly from south to north direction out falling into the Yamuna, They flow approximately parallel to each other and can be easily net-worked within Uttar Pradesh, Irrigation through reservoirs

built on large rivers with catchments in high rainfall zone in Madhya Pradesh are not seriously affected during droughts as is demonstrated in the first two years of recent deficient rainfalls, In subsequent years conjunctive use has supported irrigation in these canal commands. Reservoirs on small streams origination with in Chhatarpur,

Mahoba, Chitrakut and Banda districts of the two states could not withstand droughts during first two years mainly due to non-perennial nature of the streams and relatively small storages in these rivers, Had there been some possibilities of diversion of water from ken and Dhasan to these ares, drought impact could have been arrested to some extent. Such linkages are desired not only during deficit rainfall/runoff period, but also during normal years in order to share equitable resources in an optimal manner, particularly so when the fertile alluvium soils are limited and should be made use of in the best possible manner Development in Mp is 961 MCM (33%) and balance ground water available is reported at 19145 MCM (76%).it appears to be a rosy picture but present drought cycle of four years has completely depleted the available resouce in the absence of recharge from rainfall and it is likely to take quite a few years to replenish aquifers if the good rainfall is restored. The water yield and re-charging rate are poor and ground water development is economically unsustainable, table 3 shows expected yyield in different districts of the region. (3)

for optimizing production/productivity. Proper networking of rivers and canals within UP are also desirable for efficient utilisation of waters during normal times.

Participatory Irrigation Management:

Government of Uttar Pradesh has drafted a Bill on participation of beneficiaries for efficient use and maintenance of its resources by water users Associations (WUAs), which are presently formed under

'Societies Registration Act' or any other Act. Draft and Manuals are in pipeline. (4)

Government of Madhya Pradesh passed and Act in september 1999 called 'Sinchal Prabandhan Me Krishkon ki Bhagidari Adhiniyam' and since then framed draft rules and prepared manuals and have also conducted two election. A number of canal system have been haded over to registered WUAs. However, capacity building of farmers/functionaries, bringing reforms in fixation of water charges and its collection is required. (5)

Other means of conservation :

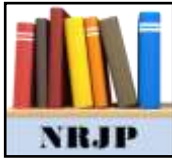
With the completion of ongoing Rajghat Project, UP is going to utilize almost entire of its surface water use. Therefore, improving efficiencies of its water share and system is the only way to expand the command. Following suggestions may be considered :

- i. Completion of the subsidiary of the main canal of Rajghat project and command development should be given highest priority to avoid future delay in flow of benefits.
- ii. The Canal infrastructure and Warabandi system should be made compatible to sprinkler, drip and other micro irrigation techniques. The system being developed in Rajasthan for Narmbada canal waters from Sardar Sarover may be considered to raise water utilization efficiency

- iii. Possibilities of conjunctive use of surface and ground water may be optimized.
- iv. Land levelling, promoting seeding/planting on the ridges and irrigation furrows can save 30-40% of water. However, proper machinery, tools implement on custom hiring basis have been recommended in the Agriculture section.
- v. Cultivation of water guzzling crops like mentha, sugarcane, rice may be discouraged in the canal commands.
- vi. Management of flows in rivers should also be governed from ecological concerns.

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Review Article

Fiber Dispersion for Communication System: An Overview

Madan kr. Mahto

Dept. Of physics, K.S.R. College, Sarairanjan, Samastipur, Bihar

Abstract

Bundelkhand region receives water from a number of perennial rivers most of which originate in Madhya Pradesh and outfall into the Yamuna in Uttar Pradesh. While the Yamuna flows from west to east, its first order tributaries viz., Betwa, Ken, Pahuj, Baghain, Paisunj and Gunta flow from south to north. Second order tributaries of the Yamuna system namely. Dhasan, Jamni, Bearma, Sonar, Patna, Bewas, Kopra etc., also drain the area. The entire drainage forms a part of Ganga basin.

Keywords: Phase modulation, optical communications, & chaos cryptography

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INTRODUCTION

CHAOS communication systems require the use of transmitters and receivers operating in synchronized chaotic regime, even if located far one from another [1]. For optical fiber communication networks, the chaotic masking motion used for encryption is carried by a laser beam and this optical chaos can be generated using a wide variety of architectures (see refs. [2], [3] and references therein). In a recently proposed efficient and fast optical phase dynamics [4], [5], chaos is generated by combining electro-optical phase modulation, an external nonlinear phase-to-intensity converter, and a delay induced by an optoelectronic feedback loop (fiber, RF photodetectors, and amplifier).

As any communication system, chaos cryptosystems have to overcome the problem of signal-to-noise ratio at the receiver stage. In our case, this noise mainly arises from three different sources. The first source is constituted by the

unavoidable stochastic fluctuations that are affecting the system; in order to minimize its influence, there is no other solution than to use optoelectronic components that are the less noisy possible. The second source is specific to chaos cryptosystems, and it is due to the various mismatches in parameters between the emitter and the receiver [6], [7], [8]. Theoretically, for an open loop self synchronizing scheme, this noise vanishes when the emitter and the receiver are identical; but in practice, reducing this noise to a minimum requires a careful matching of the system components, or (in marginal cases) a fine tuning leading to a partial mismatch compensation [7]. The third source of noise of noise will be the main purpose of this article; it arises from the encrypted signal distortion due to transmission over the communication channel. Effectively, the carrier is subjected to attenuation, Kerr nonlinearity and chromatic dispersion during its propagation in the fiber. In fact,

the results reported here indicate a better synchronization performance when compared with previous measurements in electro-optical intensity chaos [9]. To the best of our knowledge, very few investigations have been devoted to the topic of fiber propagation effects on the performance of chaos cryptography [10],

[11], [12], [13], and they were exclusively based on numerical simulations. Fiber transmission has been considered in some experimental works [3], [14], but no detailed analysis on the fiber dispersion effects has been reported. Our aim in this paper is to address this issue with a joint theoretical and experimental analysis.

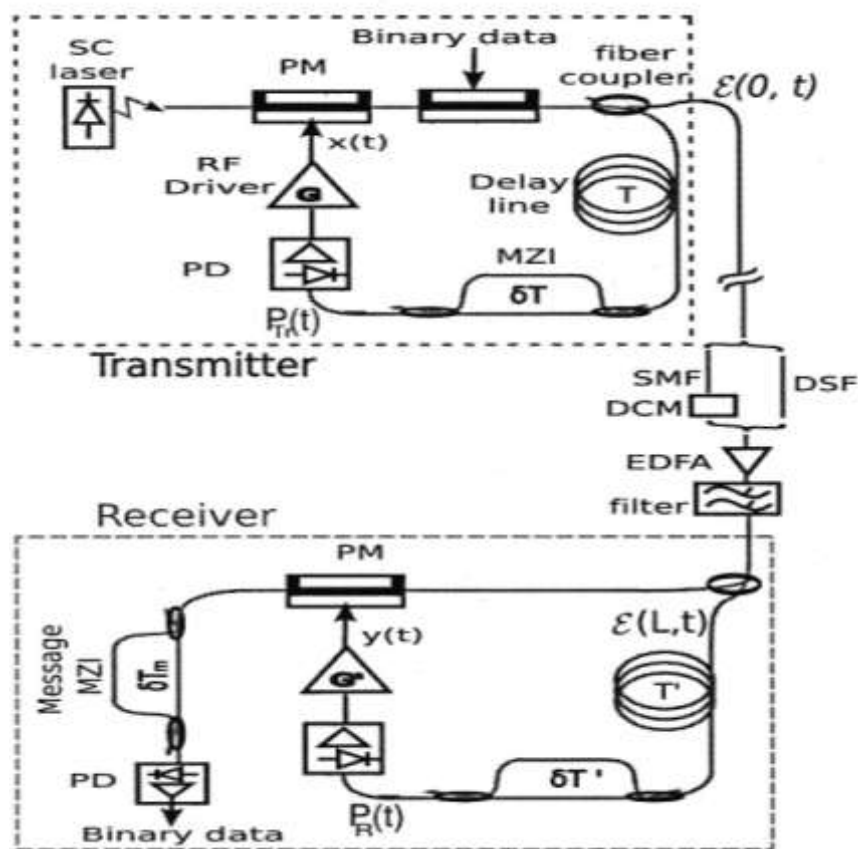


Fig. 1. Experimental setup. EDEA: erbium-doped fiber amplifier

THE SYSTEM

The schematic representation of the communication system under study is shown in Fig. 1. It is inspired by the work presented in ref. [4], [5], where the concept of nonlocal nonlinearity has been defined for chaos generation, as a consequence of the use of an imbalanced interferometer for performing nonlinear phase to intensity demodulation. Three sub-systems can be

distinguished: the transmitter, the channel, and the receiver. They are described in details in the next subsections.

Transmitter

The transmitter performs two operations: it encodes into the optical domain an original binary message through a classical differential phase shift keying electro-optic modulation. This optical phase modulation

is subsequently hid-den within a broadband noise-like phase modulation, which is obtained through the principle of nonlocal nonlinear delay phase chaos generation.

The transmitter thus consists of a continuous-wave distributed feedback semiconductor laser feeding a LiNbO₃ phase modulator with the wavelength $\lambda = 2\pi c/\omega_0 = 1.55 \mu\text{m}$. This phase modulator

having a halfwave voltage of V_π , receives the electrical chaotic input from a broadband radio-frequency (RF) driver, and translates this electrical signal modulation into the optical phase one while keeping the intensity unchanged. The optical phase therefore changes proportionally to the voltage applied to the modulator, and the time dependent phase shift introduced by the modulation is

$$\varphi(t) = \pi \frac{V(t)}{V_\pi} \quad (1)$$

The message is mixed with the chaos through a second cascaded phase modulator, which is assumed for simplicity to have the same V_π . The message phase modulation is performed by driving the modulator with a V_π peak-to-

peak voltage in order to add a π phase shift, following the standard differential phase shift, so that the total optical phase at the output of the message phase modulator reads:

$$\varphi(t) = \pi \frac{V(t)}{V_\pi} + \pi \frac{\pi(t)}{V_\pi} \quad (2)$$

Where $\pi(t) = \pm V_\pi$ is the message amplitude.

The electric field has only one vectorial polarization in our system, so that we can restrict ourselves to a scalar description of the optical field. The output is split into two parts, one is transmitted through the channel while the other enters in the delay line. The complex envelope of the electric field can be written as $\varepsilon(z, t)$, where z is the distance from the output of the message phase modulator, and t is time. For the transmitted part the dependence on z is taken into account in the next

subsection dealing with fiber propagation. For the part going through the emitter loop we neglect any dependence on z since the effects of the fiber propagation within the transmitter are negligible. From Eq. (2), one has

$$\varepsilon(0, t) = E_0 \exp [i\varphi(t)] \quad (3)$$

where $i^2 = -1$ and E_0 is the field amplitude. This envelope is then delayed by a time T

while travelling through the optical feedback path in the transmitter.

The optical intensity at the MZI output is thus a non-linear nonlocal transformation of the phase modulation:

$$P_{Tr}(t) = P_0 \cos^2 \left\{ \frac{1}{2} [\omega_0 \delta T + \psi(t-T) - \psi(t-T-\delta T)] \right\}, \quad (4)$$

Where $P_0 = |E_0|^2 / (\epsilon_0 c)$, ϵ_0 being the vacuum permeability and c the speed of the light. This optical intensity is then converted to the electrical domain by a photodiode. This electrical signal is thus band-pass filtered by the electronics of the feedback loop, which RF frequency filtering process can be modelled in the

time domain by an integro-differential operator characterized by a high and a low-frequency cut-off. For sake of simplicity we assume that the filter is linear and of second order, so that the dynamics of the input RF voltage at the input of the chaos phase modulator obeys

$$V(t) + T \frac{dV}{dt}(t) + \frac{1}{\theta} \int_{t_0}^t V(s) ds = \eta G_0 S P_{Tr}(t), \quad (5)$$

Where θ and T are the characteristic response times attached to the low and high cut-off frequencies of the filter respectively, G_0 stands for the amplifier gain, η accounts for overall optical losses, and S is the photodetection efficiency. Note that the condition $\tau \ll \theta$ has been

taken into account in the above equation (easily fulfilled assumption, since the feedback filtering is broadband for telecom devices). For mathematical convenience we introduce the dimensionless variables $x(t)$ and $m(t)$ as follows:

$$x(t) = \pi \left[\frac{V(t)}{2V_\pi} - \frac{\phi(t)}{2} \right] \quad (6)$$

$$m(t) = \pi \left[\frac{\mu(t)}{2V_\pi} \right], \quad (7)$$

so that Eq. (5) can be rewritten in the dimensionless form as

$$x(t) + \tau \frac{dx}{dt} + \frac{1}{\theta} \int_{t_0}^t x(s) ds = G \cos^2 \{ x(t-T) - x(t-T-\delta T) + m(t-T) - m(t-T-\delta T) \} + \varphi_0, \quad (8)$$

Where $G = \pi\eta G_0 SP_0 / (2V_\pi)$ is the overall feedback loop gain, and $\phi_0 = \omega_0 \delta T / 2$ is a constant offset phase. This equation rules the dynamics of the input RF voltage at the first phase modulator.

Optical channel According to the experimental setup shown in Fig. 1, the

$$E(0, t) = E_0 \exp \{2i[x(t) + m(t)]\}. \quad (9)$$

light beam launched into the fiber communication channel corresponds to the optical signal at the second phase modulator output. The transmitter modelling of Eq. (2) allows to derive the electric field envelope of that transmitted light as being expressed by:

The propagation on the fiber can be described in the moving frame by [15]:

$$\frac{\partial \epsilon}{\partial z}(z, t) = -\frac{\alpha}{2} \epsilon(z, t) - i \left(\frac{\beta_2}{dt} \frac{\partial^2 \epsilon}{\partial t^2} + \gamma |\epsilon(z, t)|^2 \epsilon(z, t) + \frac{\beta_3}{6} \frac{\partial^3 \epsilon}{\partial t^3} \right)$$

where β_2 is the second order dispersion, β_3 is the third order dispersion, γ is the nonlinear Kerr factor and α is the linear attenuation.

Receiver

The optical field arriving at the MZI is $\epsilon(L, t - T_R)$, so the MZI intensity output is

$$P_R(t) = \frac{1}{\mu c} \left| \epsilon(L, t - T') e^{i(2\phi' + \pi)} + \epsilon(L, t - T' - \delta T') \right|^2 \quad (11)$$

Where the prime (') indicates the receiver parameters. In order to remove the chaotic masking, the replicated chaos needs to

have the opposite sign with respect to the emitter one. This is easily achieved experimentally operating

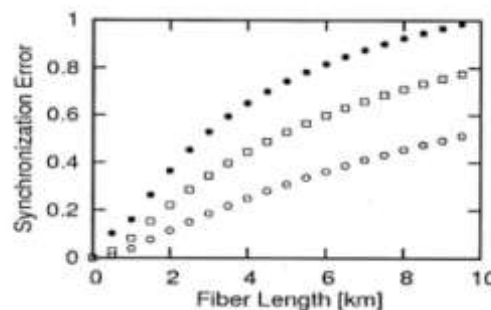


Fig. 2. Numerical simulation of the synchronization error between the emitter and receiver

The MZI with a π -shifted static phase as indicated in Eq. (11). Alternatively this could have been done using balanced photodiodes and exchanging their inputs or using an inverted amplifier at the receiver.

Under such conditions the normalized signal $y(t)$ driving the receiver phase modulator with an anti-replica of the chaotic masking, is ruled by the following “open loop” dynamics:

$$y(t) + \tau' \frac{dy(t)}{dt} = \frac{1}{\theta'} \int_{t_0}^t y(s) ds = G' \frac{P_R(t)}{P_0} \quad (12)$$

where $G' = \pi \eta' G'_0 S' / (2V'_{R\pi})$

The receiver electro-optic phase modulator applies an additional phase modulation onto the receiver light beam, proportionally to the signal $y(t)$. This leads to a total optical phase modulation proportional to $(x + y)$ at the chaos cancellation output. When a DPSK message modulation is applied at the transmitter, this sum is intended to retrieve

$$\mu_R(t) = \frac{1}{4S} \left| \varepsilon(L, t) e^{2iy(t)} + \varepsilon(L, t - \delta T_m) e^{2iy(t - \delta T_m)} \right|^2 \quad (13)$$

the DPSK modulation only, the one proportional to $m(t)$, due to the anti-phase chaos replica expected for $y(t)$. The resulting light beam can then be processed through a standard DPSK demodulator matched with the message bit rate (imbalanced MZI with δT_m in Fig. 1). The photodiode detects

In the absence of a binary DPSK message, the sum $\varepsilon = (x + y)$ is used to evaluate the accuracy of the phase chaos cancellation. Similarly to the usual signal-to-noise ratio, a cancellation-to-chaos ratio can be defined in order to analyze the accuracy of the chaos cancellation in a normalized way.

NUMERICAL RESULTS: CANCELLATION NOISE

In this section, we theoretically investigate the time-domain variations of the cancellation noise when the fiber and the chaotic carrier parameters are varied. This analysis relies on the coupled Eqs. (8), (10) and (12) with the

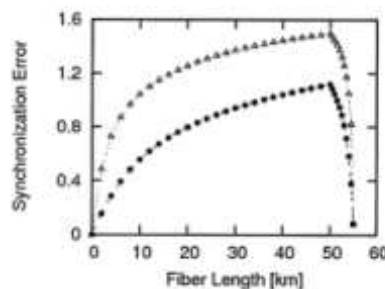


Fig. 3. Numerical simulation of the dispersion compensation using DCFs with $\beta_{2\text{DCF}} = -200 \text{ ps}^2/\text{km}$, $\beta_{3\text{DCF}} = 0.1 \text{ ps}^3/\text{km}$, $\alpha_{\text{DCF}} = 0.6 \text{ dB}$, $\gamma_{\text{DCF}} = 6 \text{ W}^{-1}$.

The values used for the feedback gains are $G = 2.5$ (●) and $G = 5.0$ (Δ). When the chaotic carrier is launched at $z = 0$, the synchronization error increases steadily but at $z = 50 \text{ km}$, a 5 km-long DCF is used and drastically reduces the cancellation

noise. parameters $\tau = 20 \text{ ps}$, $\theta = 1.6 \text{ μs}$, $\delta T = 0.4 \text{ ns}$, $\varphi_0 = \frac{\pi}{4}$ and $T = 70 \text{ ns}$. The power P_0 is 5mW, and we consider a single mode fiber (SMF) for the transmission channel with parameters $\beta_2 = 20 \text{ ps}^2 \text{ km}^{-1}$, $\beta_3 = 0.1 \text{ ps}^3 \text{ km}^{-1}$, $\gamma = 1.1 \text{ W}^{-1} \text{ km}^{-1}$, $\alpha = 0.2 \text{ dB km}^{-1}$ (0.046 km^{-1}).

we characterize the system performance using the normalized cancellation-to-chaos ratio defined as

$$\sigma = \frac{\sqrt{\frac{\int_0^T [\varepsilon^2(t)] dt}{\int_0^T [x^2(t)] dt}}}{(\varepsilon^2(t))} \quad (14)$$

We remark that the perfect cancellation of the chaos is expected when $y(t)$ perfectly anti-synchronizes with $x(t)$.

Figure 2 illustrates clearly the dramatic influence of the fiber channel on the chaos cancellation at the receiver, when SMF only is involved in the optical link. The situation worsens as expected for higher feedback strength ($G = 5.0$), as this corresponds to an even broader chaotic spectrum to be conveyed through the dispersive channel (thereby it increases the

linear frequency mixing effect of dispersion). For each situation reported in Fig. 2, we clearly see that a strong signal distortion occurs already for propagation over 10 km only of SMF. In this case, the message could not be successfully retrieved because the synchronization error is too large. Typically, one would expect this error to be below 10%, which is of the order of the best experimental cancellation-to-chaos ratio due to residual parameter mismatch in a back-to-back configuration [4-17].

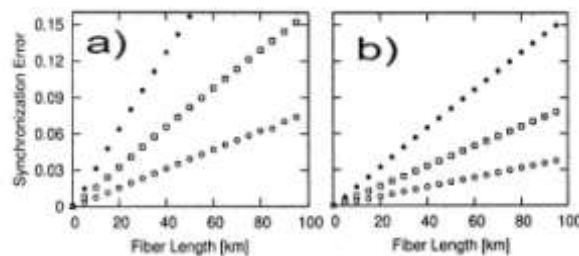


Fig. 4. Numerical simulation using DSFs. The values used for the gains are $G = 2.5$ (○), $G = 3.5$ (□), and $G = 5.0$ (●). (a) Since the nonlinear effects are relatively weak in our context, the large distortion

Synchronization error with the parameters $\beta_2 = 0.2 \text{ ps}^2 \text{ km}^{-1}$ and $\beta_3 = 0.1 \text{ ps}^3 \text{ km}^{-1}$.

mainly originates from chromatic dispersion. This first result on a standard

non compensated fiber channel shows that phase chaos communication is requiring necessarily a proper management of the dispersion effects.

CONCLUSION

we have shown that when propagating in standard SMFs, the broadband chaotic carriers are drastically affected by chromatic dispersion, and message recovery is impossible beyond few kilometres.

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 16. Experimental spectra decay faster than numerical ones because the experimental filter is of higher order.
 17. The decoded message $\mu\tau$ is to be compared with the input message going through an equivalent detection scheme involving a MZI with delay δT_m . Therefore Fig. 8 a) shows $\frac{1}{4} SP_0 \left| e^{im(t)} + e^{im(t - \delta T_m)} \right|^2$.



Review Article

Studies on Microstrip Patch Antenna with Application to Wireless Communications

Pradeep kr. Jha

Dept. Of physics M.I.S.M. College, Darbhanga, Bihar

Abstract

It is found that the properties of the antenna may easily changed by varying the width of the U slot, width and radius of the CSRR and spacing between the ring of CSRR. The technique of U slot loading is used for operating antenna in dual band and CSRR technique to make antenna compact and CSRR for compactness is used. The simulated results of the proposed antenna are verified with available experimental results. Proposed antenna can be used in many dual band wireless communications

Key-words: Communication systems, Antenna, & CSRR

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INTRODUCTION

Where the high performance with reduced size and cost required with, the microstrip antenna has the great advantage. These antennas are low profile, easily used with planar and non-planar surfaces, simple and low cost due to manufactured with printed circuit technology. In spite of various advantages, microstrip antennas have some disadvantages like low efficiency, low power handling capacity etc [1].

Different patch shapes are use in the microstrip antenna e.g. rectangular patch and circular patch etc. It is observed that a circular patch is more compact than a conventional rectangular patch antenna. [2]. Researchers focused on the compactness and achieve different techniques like slot loading, superstrate techniques etc. U-slot on patch provides the compactness bandwidth enhancement and dual-band operation [3].

Recently researchers are working on the metamaterial to increase compactness of the antennas. Metamaterial is the material which does not exist in the reality that realized in artificial manner which gives the electromagnetic confinement. Metamaterial is classified as negative index materials and single index materials [4]. In negative index materials both permittivity and permeability are negative. In single index metamaterial, only one of the permittivity and permeability is negative both are not the negative at the same time, this is categories as the ENG (Epsilon negative media) permittivity is negative and permeability is positive, On the other hand in MNG (Mu-negative media) permeability is negative and permittivity is positive.[5]. The use of the metamaterial is to improve some basic antenna features (impedance matching, gain, bandwidth, efficiency, front-to-back ratio, etc.). Metamaterial technique is the

novel way to reduce the size of the antenna in respect to the existing size reduction techniques of antenna [6].

Initially the existence of original medium was proposed in [7] consists of a bulky combination of metal wires and split-ring resonators (SRRs). SRR are the planar structures and can be replaced by planar strips [8]. The electromagnetic properties

$$f = \frac{1.8412 \times 3 \times 10^{11}}{2 \times 3.14 \times \sqrt{\epsilon_r} \times a} \dots\dots\dots(1)$$

Where a is the radius of the circular patch.

of SRRs have been showed in [9]. The equivalent circuit for the SRR and CSRR are shown in Fig. 1, where C is the total capacitance between the rings of SRR. SRR can be taken as the resonant dipole which may be excited by an axial magnetic field [10]. The resonant frequency of circular patch for the dominant mode is defined by the equation (1)

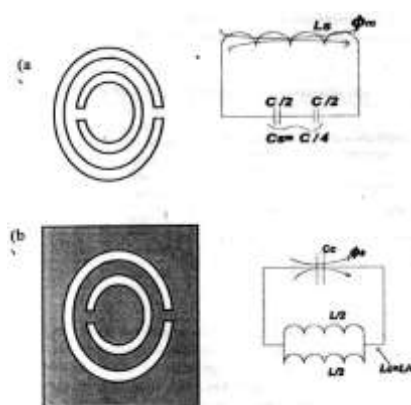


Fig. 1 Technology for (a) SRR (b) CSRR

In proposed antenna the size of the antenna is reduced by use of CSRR is shown in comparisons of results. The concept of frequency shifting towards the lower value is presented with the use of CSRR due to the characteristics of the metamaterial.

2. ANTENNA DESIGN

Figure 2 depicts the geometrical structure of circular U-slot loading with its dimension notations. Figure 3 shows the geometrical view of the CSRR on the ground of the proposed antenna with its notations.

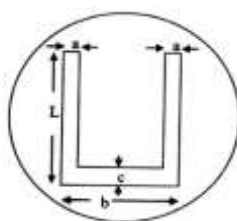


Fig 2 sketch and geometrical structure of patch view of U –Slot loaded circular microstrip patch

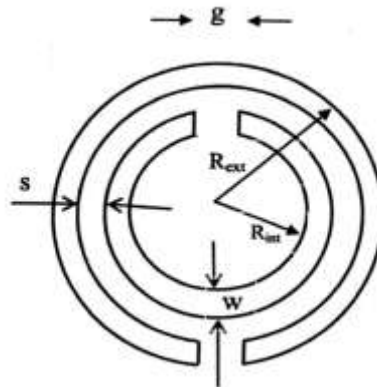


Fig.3 geometrical view of the CSRR on the ground of the proposed

Table 1 shows the dimensions of the proposed antenna and the cuts in CSRR on the ground are aligned in x-direction.

Table.1 Design Parameters of proposed antenna design

Substrate material-Fr4	$\epsilon_r = 4.4$
Thickness of dielectric substrate	$h = 1.6\text{mm}$
Radius of circular patch	$r = 6.88\text{mm}$
Length & width of rectangular slots	$L = 8\text{mm}, b = 8\text{mm}, c = 1\text{mm}, a = 1\text{mm}$
Radius of the CSRR on the ground	$R_{\text{ext}} = 5.8\text{mm}, R_{\text{int}} = 3.1\text{mm}, s = w = 1\text{mm}, g = 1.5\text{mm}$

The physical dimensions are evaluated and put in the Ansoft HFSS as a 3D EM field solver to reach the final real structure.

3. RESULTS AND DISCUSSION

In this section simulated results and experimental results of the proposed antennas are discussed.

3.1 Simulated Results

Initially the circular patch antenna without any changes is simulated and the resonant

frequency is 5.7 GHz with the return loss of -11.97 dB simulated result shown in figure 3. Now the first proposed U-slot loaded circular microstrip patch antenna with CSRR having the cuts in x direction is designed and simulated. The proposed antenna shows the resonant frequencies at 3.47 GHz and 3.98 GHz with the return loss of - 37.4 dB and -13.7 dB respectively, simulated results shown in figure 4.

Table. 2 Comparison in reduction of antenna size

Frequency (GHz)	Area of the circular patch (mm ²)	Area of proposed antenna (mm ²)	% reduction in area
6	153.84	-	-
5	220.72	-	-
3.98	348.63	153.84	55.1
3.4	477.39	153.84	67.7

It is clear from the results that antenna become dual band which prove the significance of the U-slot loading and the reduction of size or in other terms the shifting the resonant frequency from

towards the lower frequency is shown in the table 2. The effect of the rotation in the CSRR structure on ground is shown by the variation in CSRR cuts. In variation of CSRR positions are used using rectangular slots.

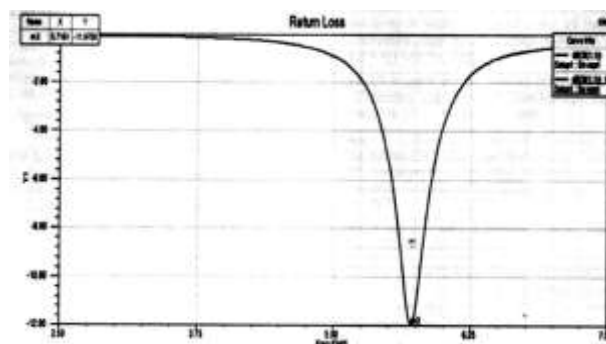


Fig. 4 simulated results of Bandwidth of proposed Antenna

3.2 Experimental results

The proposed antenna is fabricated on the FR4 with the substrate thickness of $h = 1.6$ mm.. Results obtained by fabricated antenna are approximately equal to the simulated results by the Ansoft HFSS.

4. CONCLUSION

This paper presents the electrically small U-slot loaded circular microstrip patch antenna with Complementary Split Ring Resonator (CSRR). The simple circular patch antenna resonates at 5.71 GHz with return loss of -11.38 dB. The proposed antenna (with U-slot and CSRR) enhanced the matching upto -37.47 dB at the 3.47 GHz and -13.7dB at the frequency 3.98 GHz.

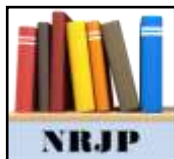
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Review Article

Theoretical Studies on the Problem of Diffusion of Fiber

Bijendra Mohan

Research Scholar, L.N.M.U. Darbhanga

Abstract

In simplistic terms, the process of diffusion is a mass transport mechanism whereby a substance moves from a region of higher concentration to a region of lower concentration. This process is usually defined in terms of differential equations that account for the many variables involved in the process.. However, the intuitive basis for the form of the solution will be developed, to gain insight into the mechanism. The diffusion at the molecular level is not considered.

Key- Words: Diffusion, Diffusion Process & Homogenous media

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INTRODUCTION

1 DIFFUSION IN HOMOGENOUS MEDIA

In vector analytic terms the diffusion equations can be expressed for any coordinate system can be expressed as

$$\frac{\partial C}{\partial T} = \nabla \cdot (D \times C) \quad (1)$$

In cylindrical coordinates where the parameters of interest are r , θ , and z defined in the usual manner, equation (1) reduces to

$$\frac{\partial C}{\partial t} = \frac{1}{r} \left\{ \frac{\partial}{\partial r} \left(rD \frac{\partial C}{\partial t} \right) + \frac{\partial}{\partial \theta} \left(\frac{D \partial C}{r \partial \theta} \right) + \frac{\partial}{\partial z} \left(rD \frac{\partial C}{\partial t} \right) \right\} \quad (2)$$

where D is the diffusion coefficient having the dimensions $L^2 T^{-1}$, and C is the concentration of the substance undergoing diffusion, defined in any standard way. We consider the problem of diffusion in a cylinder from first

principles, by regarding the issue of diffusion in one dimension, for a constant value of D . A fundamental assumption in the analysis is that the value of D remains a constant for a fixed temperature. Equation (1) reduces to

$$\frac{\partial C}{\partial t} = D \frac{\partial^2 C}{\partial x^2} \quad (3)$$

and the solution to this is of the form

$$C = \frac{A}{\sqrt{t}} \exp\left(-\frac{x^2}{4Dt}\right) \quad (4)$$

Note the symmetrical nature of the solution about the x -axis at $x=0$. For $t=0$, it vanishes everywhere except at $x=0$, where it becomes infinite and assumes the form of a delta function. It is also important to note the principle of *superposition and reflection* at a boundary. For instance, consider the case of a semi-infinite medium, extending as a cylinder (remember that the initial distribution was a delta function) with an

impermeable boundary at $x=0$. The solution for $x<0$ can be reflected and added to the solution for diffusion in the $x>0$ region. This is done as the equation itself is linear, and hence the sum of the solutions is in itself a solution to the diffusion equation. To examine the problem of a finite source width we initially consider the one-dimensional case, i.e. the boundaries at $t=0$, which may be defined as:

$$\begin{aligned} C &= C_0 & x < 0 \\ C &= 0 & x > 0 \end{aligned} \quad (5)$$

As an example [Cra75] considers the case of a long column of clear water resting on a long column of solution, or two metal bars placed end to end. The solution is gleaned by considering the

extended distribution (for $x<0$ from equation (2.2-5)) to be composed of an infinitum of line sources and applying the principle of superposition to the infinitum of corresponding solutions.

This is illustrated in Fig. (1) where the concentration C at point p , a distance ξ from a narrow strip source of width $d\xi$ is given by

$$C(x, t) = \frac{C_0 d\xi}{2\sqrt{\pi Dt}} \exp\left(-\frac{\xi^2}{4Dt}\right) \quad (6)$$

The quantity C_0 denotes the amount of substance diffusing in a cylinder of infinite length and unit cross section.[1-2] Thus by integration over all such

elements $d\xi$ we may find the concentration as a function of distance and time, i.e.,

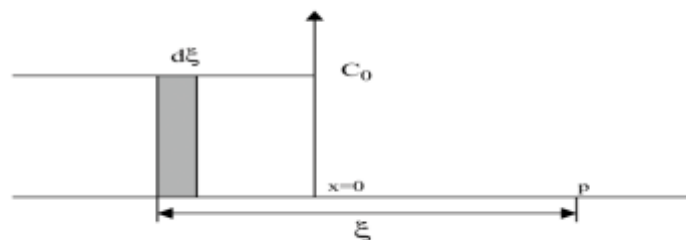


FIGURE 1 Framework for modeling the superposition principle.

$$C(x,t) = \int_x^{\infty} \frac{C_0 \delta \xi}{2\sqrt{\pi Dt}} \exp\left(-\frac{\xi^2}{4Dt}\right) d\xi \quad (7)$$

Note that a dummy variable, say A where

$$A = \frac{\xi}{2\sqrt{Dt}} \quad (8)$$

and

$$dA = \frac{d\xi}{2\sqrt{Dt}} \quad (9)$$

is used. Making the necessary change in variables and the change in limits,

$$C(x,t) = \frac{C_0}{\sqrt{\pi}} \int_{x/(2\sqrt{Dt})}^{\infty} \exp(-A^2) dA \quad (10)$$

This can be defined in terms of the complementary error function $erfc(A)$. We know that

$$erfc(z) = \frac{2}{\sqrt{\pi}} \int_z^{\infty} \exp(-\eta^2) d\eta \quad (11)$$

The error function and the complementary error function are a well tabulated series of integrals [1-6]. Thus

$$C(x,t) = \frac{C_0}{2} erfc\left(\frac{x}{2\sqrt{Dt}}\right) \quad (12)$$

Let us examine the diffusion of a substance that initially has a step distribution in a region of width $2h$. The region of integration is modified from $[x, \infty]$ to $[x-h, x+h]$, i.e.

$$C(x,t) = \frac{C_0}{2\sqrt{\pi Dt}} \int_{x-h}^{x+h} \exp\left(-\frac{\xi^2}{4Dt}\right) d\xi \quad (13)$$

Applying the usual change in variables as stated before in equations (8) and (9), this reduces to

$$C(x,t) = \frac{C_0}{2} \left\{ erf\left[\frac{h-x}{2\sqrt{Dt}}\right] + erf\left[\frac{h+x}{2\sqrt{Dt}}\right] \right\} \quad (14)$$

Since the system is symmetrical, the system can be cut in half by a plane at $x=0$, without affecting the distribution. Thus we can consider the semi-infinite problem, with the boundary at $x=0$, and

the application of superposition. To examine the general philosophy of having an impermeable boundary, we consider the case of the following boundary condition:

$$\frac{\partial C}{\partial x} = 0, \quad x = 0 \quad (15)$$

Thus reflection takes place at the boundaries $x=0$ and $x=l$ an infinite number of times. The original solution given by equation (14) corresponds to

$$C = \frac{C_0}{2} \left\{ \operatorname{erf} \left[\frac{h-x}{2\sqrt{Dt}} \right] + \operatorname{erf} \left[\frac{h+x}{2\sqrt{Dt}} \right] + \operatorname{erf} \left[\frac{(2l+h)-x}{2\sqrt{Dt}} \right] + \operatorname{erf} \left[\frac{(2l+h)+x}{2\sqrt{Dt}} \right] + \operatorname{erf} \left[\frac{-(2l-h)-x}{2\sqrt{Dt}} \right] + \operatorname{erf} \left[\frac{-(2l-h)+x}{2\sqrt{Dt}} \right] + \dots \right\} \quad (16)$$

Rewriting in terms of error functions summed to infinity,

$$C(x, t) = \frac{C_0}{2} \sum_{n=-\infty}^{\infty} \left\{ \operatorname{erf} \left(\frac{h-2nl+x}{2\sqrt{Dt}} \right) + \operatorname{erf} \left(\frac{h+2nl-x}{2\sqrt{Dt}} \right) \right\} \quad (17)$$

Thus we see a simplified explanation of the typical form of solution for the diffusion equation. The use of the one dimensional case merely serves to gain insight into the mathematical formalism. The solution that is of interest to us is by the nature of the problem most suited to the cylindrical coordinate system. This

two error functions. The solution for an infinite number of reflections may thus be constructed by an infinite sum of such functions, i.e.

therefore does turn out to be a form of Bessel's differential equation, familiar to waveguide theoreticians and many other branches of science and engineering.

We accordingly present the solution and they are applicable to the case of Fluorine doped step index fibers as well as Germania doped step index fibers.

2 Diffusion In A Cylindrical Doped Dielectric Waveguide

For an impermeable surface condition with an initial concentration distribution $f(r)$,

$$C = \frac{2}{b^2} \left(\int_0^b r' f(r') dr' + \sum_{n=1}^{\infty} \exp(-D\alpha_n^2 t) \times \frac{J_0(r\alpha_n)}{J_0^2(b\alpha_n)} \int_0^b r' f(r') J_0(\alpha_n r') dr' \right), \quad (\dots 18)$$

where n represents the roots of

$$J_1(b\alpha_n) = 0 \quad (-19)$$

Let b represent the cladding radius for a step index fiber and a be the core radius. The diffusion coefficient is D , r is the

radius and t is the time of heating. Therefore the initial conditions can be represented as

$$\begin{aligned} f(r') &= C_0, & 0 \leq r < a \\ f(r') &= 0, & a \leq r < b. \end{aligned} \quad (20)$$

Substituting in equation (1) we get

$$C = \frac{a^2}{b^2}C_0 + \frac{2aC_0}{b^2} \sum_{n=1}^{\infty} \exp(-D\alpha_n^2 t) \times \frac{J_0(r\alpha_n)}{\alpha_n J_0^2(b\alpha_n)} \cdot J_1(a\alpha_n) \quad (21)$$

where the relationship for the indefinite integral of the Bessel function of the first kind of order 0 is

$$\int z J_0(az) dz = \frac{z}{a} J_1(az) \quad (22)$$

Now consider the case for a Fluorine doped fiber having a step profile. The new initial conditions are given by

$$\begin{aligned} f(r') &= 0, & 0 \leq r < a \\ f(r') &= C_0, & a \leq r < b. \end{aligned} \quad (-23)$$

This result when substituted into equation (-1) leads to the following solution for the concentration C:

$$C = \frac{C_0(b^2 - a^2)}{b^2} - \frac{2aC_0}{b^2} \sum_{n=1}^{\infty} \exp(-D\alpha_n^2 t) \cdot \frac{J_0(r\alpha_n)}{\alpha_n J_0^2(b\alpha_n)} \cdot J_1(a\alpha_n) \quad (-24)$$

3.CONCLUSIONS

This paper presents the problem of diffusion of optical fibers. For this purpose, vector analytic terms the diffusion equations has been expressed

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for any coordinate system as well as diffusion in a cylindrical doped dielectric waveguide has also been discussed.



Review Article

Comparative analysis of Research Scholars on access and uses of Library for E- Journals

Jay Singh

Assistant Professor

Library, Government PG College Hamirpur UP

Abstract

Now the days increased subscription rate of e journals becomes a problem for the research scholars on access and uses for journals during their research period. As the open access journals were substituted by subscription journals more research scholars were tend to use library facility as their source of data collection through various e journals.

Keywords: electronic journal, library, literature, doctorate, research scholar.

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INTRODUCTION

Now a day's boom in the higher study and increased salary of research oriented persons lead a lot of students and professionals towards the doctorate, so they perused their PhD in order to fulfil the requirement. During the course of literature review all of the research scholar go through a very similar problem that is access for the journals which is now a day's decreased as open access journal. Due to mandatory reservoir of electronic journals in library it most visited place of students as source of e journal access and uses. The unprecedented boom in electronic format of journals has greatly affected the serial management practices in libraries and the biggest change is seen in the attitude of the users as they always look for electronic form of journal instead of printed one. This behavioural change has also affected the pattern of self study and research activities. Now, the dice is on the librarian side, as he is the only person

to select the online resources for the library, keeping in view all the subjects and courses being offered in his parent organization. It is noticed sometimes that problem only occurs, when selection and subscription of online contents are to be made for different subject fields. The decision is made on the basis of scope, coverage and advantages of subject specified electronic journals.

Objectives of the Study

The present study is done, keeping in mind the following objectives;

- To assess the students' ease of accessing electronic journals.
- To ascertain the importance of electronic journals and upto what extend they are being used by students.

- To study the problems faced by the users while accessing e-journals.
- To find out various problems that hinder students for using electronic journals.
- To list suggestions made by students
- Library's efforts to make hassle-free access to electronic contents.

Research Methodology

The survey research method is used to attempt this study, as it is most useful method to collect original data from the respondents for further analysis and desired output. A structured questionnaire divided into four major parts, containing 19 questions and a suggestion box is framed as an instrument for data collection and distributed among 135 students of post graduate and Ph.D. courses. The questionnaire distributed to only those students who visited the library for using electronic journals in the digital section of the library. We received 100 filled questionnaires from the respondents with a response rate of 74.07%. The data was analyzed through descriptive statistical methods by using computerized data processing techniques. Subsequently, the data was interpreted and relevant conclusions put forth.

Literature Review

Webb (2007): In his book "Providing effective library services for research"

highlighted that the effective academic library are gateways to academic knowledge through their own collection and by facilitating access to material. In the line with its core purpose, providing effective library services could support the research activities of researchers. Islam and Panda (2007): In their article entitled "Web based Information retrieval trends of researchers" explains that in Indian University, traditional library and printed materials were still more effective to research scholars that web-based Information and resources. Rajeswari (2005): In article "Use of information sources in digital environment-A case study" revealed that majority of the user including faculty members, research scholars and students are using OPAC system in the library and also using INFLIBNET services for accessing e-journals. Madhusudan (2007): conducted a survey on "Internet use by research scholars at Delhi University" which reveals that most respondent used search engines more than subject gateways or web directories to locate information.

Data Analysis and Interpretations

The necessary information generated from data analysis is presented in tabular form with interpretations given below;

Distribution of Respondents by their Program of Study

Program of Study	Frequency	Percentage (%)
Post Graduate students	66	66
Ph.D. students	34	34
Total	100	100

The Table indicates 66 post graduate and 34 Ph.D. research scholars participated in the survey. The result shows that library's

digital section is mostly visited by post graduate students as they are more in number in the university.

Usage of Electronic Journals

Frequency	Freq. of PG Student	Freq. of Ph.D. Student	percentage%
Daily	41	23	64
2-3 times in a Week	21	10	31
Once in a Week	02	03	31
Occasionally	02	00	02
Total	66	34	100

Table indicates the usage of Electronic Journals of PU library. Largely 64% users comprising 41 post graduate and 23 Ph.D. students daily use the Electronic journals for their studies and

research work, 31% users visit library 2-3 times a week to use E-journals. 3% users visit digital section for once in a week and only 2% user occasionally use the Electronic journals in the library.

Purpose of Using Electronic Journals

Purpose of using E-journals	Freq. of PG Student	Freq. of Ph.D. Student	Percentage%
To keep updated in related subject field	14	30	34
To find specific information	28	23	51
To make assignments/coursework	37	32	69
To use resources for research work	12	34	46

Table illustrates the purpose of using Electronic Journals by student community. It shows that maximum users (69%) use these resources for making class assignments and making notes for coursework of Ph.D. program. 51% respondents use electronic journals to find some particular information. 46%

respondents are working on some research project or course and they use E-journals for their research work. There were 34% respondents who use E-journals to keep themselves updated and also to keep watch on recent developments in their concerned field of study.

Location of Accessing Electronic Journals

Access Point	Freq. of PG Student	Freq. of Ph.D. Student	Percentage%
Library	51	27	78
Hostels	23	12	35
Departments	18	22	40
Alternate locations	20	18	38

The electronic journals subscribed library can be accessed within the campus as they are IP authenticated. As the university provides Wi-Fi enabled network within the campus, so these journals can be accessed from any point of location. Knowing this, we still wanted to enquire about the location or

the access point being used by students to explore these online journals. Table shows that maximum students (78%) access these e-journals from library, 40% access them from the departments. Whereas 38% access them from alternate locations and only 35% access them from hostels.

Students' Ease of Accessing Electronic Journals

Easy Access of E-Journals	Freq. of PG Student	Freq. of Ph.D. Student	Percentage%
Yes	43	20	63
No	23	14	37
Total	66	34	100

It is clear from Table that 63% of student population stated that library provides easy access to E-journals, while 37% submitted that they do not get easy access to the electronic journals. The study shows that ease of access may further encourage students to use library's e-resources more frequently.

Problems Encountered While using the Electronic Journals

Problems Encountered	Freq. of PG Student	Freq. of Ph.D. Student	Percentage%
Time constraint	58	29	87
Unskilled staff	26	21	47
Inadequate computers	59	28	61
Non-availability of instructions	45	17	62
Poor Internet bandwidth	38	12	50
Technical problems	22	09	31

Table shows the probable problems encountered by respondents while using the electronic journals inside the library premises. 87% respondents indicated that time constraint is biggest problem while using the electronic journals as they get limited time to access them. 62% respondents showed their concern about non-availability of useful instructions to the reader. 61% users stated that less number of computer systems and waiting for their turn for long hours make them

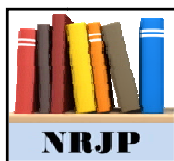
discourage for using resources. 50% users said that poor bandwidth problem is a major cause of less visits by them. 47% respondents also felt that unskilled staff is also a problem to them as they not able to help them when required and some 31% respondents witnessed the technical problem related to system and hardware while accessing electronic journals.

Conclusions

The findings of the study reveal that electronic journals are very important source of information for the students and there is good use of electronic journals in Library. The students of PG programs and Ph.D. research scholars are quite encouraged and seriously using electronic journals subscribed by library. However there are some problems which hinder them to have fair access to these resources, such as; limited time to use resources, less number of computer systems, low Internet bandwidth and lack of instructions for the users. The shift from print journals to electronic journals is inevitable. The student's expectations are ever growing. A special attention is required to be given to library and its inner infrastructure. Let's hope that in coming days we'll see a better delivery of online resource of library by incorporating the suggestion made in this study.

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Review Article

औद्योगिक विकास का मानव जीवन और पर्यावरण पर प्रभाव

डॉ. सदानंद राय

एसोसिएट प्रोफेसर वाणिज्य

इंदिरा गांधी राजकीय स्नातकोत्तर महाविद्यालय बांगरमऊ उन्नाव उत्तर प्रदेश।

शारांश

बढ़ती जनसंख्या और इलेक्ट्रिकल इलेक्ट्रॉनिक ऑटोमेटिक तथा आणविक सामानों की वृद्धि एवं उपभोग से वायुमंडल में कार्बन डाई ऑक्साइड व अन्य ग्रीन हाउस गैसों जैसे मीथेन, नाइट्रस आक्साइड तथा मानव निर्मित क्लोरो-फ्लोरो कार्बन (CFC) आदि के साथ मिलकर वातावरण को अत्यधिक तेजी से गर्म कर रही है जिसे ग्रीन हाउस प्रभाव कहा जाता है।

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वर्तमान युग में पर्यावरण प्रदूषण एक विश्वव्यापी समस्या बन गई है। जनसंख्या के बढ़ते दबाव और तीव्रगति से औद्योगिकीकरण के कारण प्राकृतिक एवं सामाजिक वैज्ञानिकों में मानव स्वास्थ्य और विषैले पर्यावरण को लेकर भारी चिंता व्याप्त है। अधिकाधिक औद्योगिकीकरण किसी भी राष्ट्र के तीव्र आर्थिक विकास का माप दण्ड माना जाता है। विकसित राष्ट्रों की सम्पन्नता तीव्रगति से हुए औद्योगिकीकरण के कारण है। किन्तु दुर्भाग्यवश यह तीव्र औद्योगिकीकरण विश्व को पर्यावरण को लगातार अधिकाधिक प्रदूषित बनाता जा रहा है। हवा, मिट्टी जो हमारे जीवन के आधार है जिनके बिना जीवन की कल्पना ही बेमानी है, आज अपना भौतिक स्वरूप एवं गुण खोता जा रहा है।

तीव्र औद्योगिकीकरण पर्यावरण प्रदूषण के लिए सबसे अधिक उत्तरदायी कारण, है सर्वप्रथम 1860 में इंग्लैण्ड में औद्योगिक क्रांति के साथ विश्व के औद्योगिकीकरण प्रारम्भ हुआ। तदुपरांत इस औद्योगिकीकरण की लहर फ्रांस,

जर्मनी, इटली, जापान, संयुक्त राज्य अमेरिका, कनाडा, सोवियत रूस आदि अनेक देशों में फैली। आधुनिक समझ में यह भारत, चीन, ब्राजील, सिंगापुर, आस्ट्रेलिया आदि देशों से होती हुई विश्व के प्रत्येक छोटे बड़े देश में फैल चुकी है। इस अंधाधुंध औद्योगिक अवशिष्ट पदार्थ रासायनिक अवशेष, विषैली गैसें, राख, धूल अवशिष्ट विषैला जल जो वायु, मिट्टी नदियों, जीवों इत्यादि को प्रभावित कर पारिस्थितिक तंत्र को असंतुलित बना रहा है। अम्ल वर्षा की वजह से वनस्पतियां नष्ट हो रही हैं तथा जल प्रदूषित हो रहा है। इसी का परिणाम है कि औद्योगिक देशों में आज न तो श्वास लेने के लिए शुद्ध वायु मिल रहा है न पीने के लिए जल।⁶

रासायनिक उर्वरक, रोगनाशी, शाकनाशी, कीटनाशी इत्यादि रासायनिक दवायें रासायनिक कारखानों में तैयार की जा रही हैं जिनका उपयोग कृषि उत्पादन की वृद्धि के लिए किया जाता है। लेकिन इसके प्रयोग

से खाद्यान्न प्रदूषित उत्पन्न होता है, मिट्टी की उत्पादकता व गुणवत्ता में ह्रास होता है। जब यह रसायन जलाशयों, झीलों, नदियों और सागरों में वर्षा जल के साथ पहुँचते हैं तो जल विषाक्त हो जाता है जिसके उपयोग से जीव जन्तु मर जाते हैं। उदाहरण के तौर पर 1972 में ईराक में पारायुक्त जहरीली मिथाइल दवा से गेहूँ धोया गया। इस प्रदूषित गेहूँ के खाने से लगभग 460 लोगों की मृत्यु हो गई। इसी प्रकार जापान में मीनीमाता खाड़ी में एक रासायनिक कारखाने से पारा छोड़ा गया जिसका सेवन मछलियों ने किया एवं उन मछलियों को खाने से अनेक मुछआरे मर गए।

यदाकदा खनिज तेल टैंकर समुद्र में डूब जाते हैं या उनमें रिसाव होने लगता है तो यह खनिज तेल जल की सतह पर फैल जाता है जिससे कई समुद्री जीव जन्तु मर जाते हैं। जैसे 1967 में कर्नवाल तट (इंग्लैंड) पर एक तेलवाहक पोत फट गया। इसका नतीजा यह हुआ कि पेट्रोल की एक मोटी परत विशाल जल क्षेत्र पर फैल गई जिससे कई जीव जन्तु मर गए।⁷

बेतहासा औद्योगीकरण की धुंआ उगलती चिमनियां, निरन्तर बढ़ते वाहनों के धुंआ, शहरीकरण और आधुनिक शहरी रहन सहन के परिणाम स्वरूप पृथ्वी के औसत तापमान के निरन्तर वृद्धि हो रही है। इस निरन्तर तापमान की वृद्धि को वैश्विक तपन या ग्लोबल वार्मिंग कहते हैं। बढ़ती जनसंख्या और इलेक्ट्रिकल इलेक्ट्रॉनिक ऑटोमेटिक तथा आणाविक सामानों की वृद्धि एवं उपभोग से वायुमंडल में कार्बन डाई ऑक्साइड व अन्य ग्रीन हाउस गैसों जैसे मीथेन, नाइट्रस आक्साइड तथा मानव निर्मित क्लोरो-फ्लोरो कार्बन (CFC) आदि के साथ मिलकर वातावरण को अत्यधिक तेजी से गर्म कर रही है जिसे ग्रीन हाउस प्रभाव कहा जाता है। पृथ्वी पर ग्रीन हाउसों के उदय से गैसों वायुमंडल की अन्य प्रदूषण कारी गैसों के साथ मिलकर वातावरण में एक ऐसी चादर तान देती है जिससे पृथ्वी के वातावरण की गर्मी वापस अंतरिक्ष में नहीं

लौट पाती। इससे पृथ्वी का तापमान लगातार बढ़ता जाता है।⁸

पृथ्वी के वातावरण में मौजूद ओजोन परत पतली होती होती जाती है और उसमें छिद्र हो जाते हैं जिससे वायुमंडल विषैली गैसों से और अधिक प्रदूषित होता जाता है। अधिकांश वैज्ञानिकों का कहना है कि ग्लोबल वार्मिंग के फलस्वरूप उष्ण कटिबंधीय क्षेत्रों में स्थित दुनिया के सबसे बड़े ग्लेशियर के साथ-साथ रूस, यूरोप, अमेरिका, भारत, न्यूजीलैंड आदि अनेक क्षेत्रों में भी ग्लेशियर लगातार पिघल रहे हैं। अलस्का का विशाल बेरिंग तथा कोलम्बिया, ग्लेशियर पिछली शताब्दी के दौरान 10 किमी⁰ से अधिक सिकुड़ चुके हैं। भारत का गंगोत्री ग्लेशियर भी पिछले कुछ वर्षों से लगातार पीछे खिसक रहा है।⁹

इस सदी के अंत तक अगर वाहनों और चिमनियों का धुआं कम न किया गया तो भारतीय महाद्वीप का औसत तापमान 5.5 डिग्री सेल्सियस बढ़ सकता है और अगर धुंआ कम किया गया तो भी 3.5 डिग्री सेल्सियस की वृद्धि होगी। उत्तर भारत में औसत गर्मी 5050 तक ही 3 डिग्री सेल्सियस तक बढ़ सकती है। दक्षिण भारत में यह 2 डिग्री सेल्सियस तक बढ़ने का अनुमान है। इस सदी के अंत तक वर्षा 7-10 प्रतिशत अधिक होने लगेगी। ठण्ड में 5.25 प्रतिशत कमी हो सकती है।¹⁰ अनियोजित अमानवीय एवं अनैतिक औद्योगीकरण के परिणाम स्वरूप कभी-कभी सूक्ष्म मानवीय त्रुटि से भी बड़ी-बड़ी दुर्घटनाएं घटित हो जाती हैं। 1984 भोपाल (भारत) में यूनियन कार्बाइड संयंत्र में गैस रिसाव से भयंकर दुर्घटना घटित हुई जिसमें 2500 से अधिक लोगों की मृत्यु हुई एक लाख से अधिक घायल हुए अनेक श्वास एवं बीमारियों के शिकार हो गए। इस प्रकार 1986 में यूक्रेन स्थित चेरनोविज परमाणु संयंत्र में विस्फोट हो गया। हजारों लोग मारे गए लाखों घायल अथवा अपाहिज हो गए। वहां के आस पास के अर्धगोश जीव जन्तु, पशु पक्षी भी मर गए जिनकी कभी गणना नहीं की गई वहां की

आस पास की भूमि ऐसी हो गई जिस पर आज कृषि सम्बन्धी कोई उत्पादन नहीं किया जा सकता है।

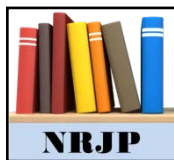
आज के युग में परमाणु बम और परमाणु संयंत्र केवल पर्यावरण को प्रदूषित करने के लिए ही नहीं बनाए जा रहे हैं बल्कि सम्पूर्ण मानवता को नेस्त नाबूद करने के लिए तैयार हो रहे हैं। परमाणु अस्त्र-शस्त्रों के विनाशकारी परिणामों को जानते हुए भी विश्व के महान सभ्य राष्ट्र अपने परमाणु बमों एवं संयंत्रों को नष्ट करने अथवा बंद करने को तैयार नहीं हैं। वर्तमान समय में दुनिया में इतने अधिक परमाणु बम अस्त्र-शस्त्र बना लिए गये हैं कि यदि उनका विस्फोट कर दिया गया तो पृथ्वी पर मानव के साथ-साथ सम्पूर्ण जीव जन्तुओं का भी अस्तित्व समाप्त हो जाएगा, पर्यावरण इतना अधिक प्रदूषित हो जाएगा जिसमें किसी भी प्रकार का जीवन सम्भव नहीं होगा। अतः आज के समय में मानव सभ्यता को बचाने के लिए परमाणु अस्त्र शस्त्रों का विनाश करना अति आवश्यक है। साथ ही पर्यावरण के बढ़ते प्रदूषण को रोकने के लिए कार्बन डाई ऑक्साइड की मात्रा में कमी लाने तथा मिथेन गैसों के निस्तारण में भी कमी लाने की आवश्यकता है। ओजोन परत में छेद करने वाली क्लोरो फ्लोरो कार्बन गैस की मात्रा में क्रमबद्ध तरीके से कमी की जानी चाहिए। सम्पन्न और विकसित देशों को इस क्षेत्र में क्रियान्वयन तेजी से करने की आवश्यकता है तभी सफलता संभावित है। मानव की सकारात्मक सोच ही प्रकृति के संरक्षण में सहायक होगी।”

पर्यावरण तथा मानव का आपसी सम्बन्ध इतना नाजुक है कि इसके लिए वसुधैव कुटुम्बकम् की अवधारणा को अपनाना अति आवश्यक है। पृथ्वी के साथ जननी तुल्य रिश्ता ही मानव जाति को उच्चतर धरातल पर प्रतिष्ठित कर सकता है। महात्मा गांधी ने कहा कि, “पृथ्वी के पास मानव की जरूरतों को पूरा करने के लिए काफी कुछ है लेकिन उसको लोभ को पूरा करने के लिए कुछ भी नहीं है।” अतः मानव को पृथ्वी

पर व्याप्त पर्यावरण को प्रदूषित नहीं करना चाहिए।

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Research Article

The Comprehensive Analysis of Interrelationship of Food with Health

Dr. Jaya Sharma

Assistant Professor, Deptt. of Home Science.
Sonpati Devi Mahila Degree College Maharajaganj U.P.

Abstract

As a librarian a very few jobs were posted on online portals, it was supposed that this job does not required a lot of man power, but now a days leading research and higher academic need require a well equipped library and professional library staff. But library is not an independent unit as it need a lot of administration and communication with the management regarding fund and requirements. So rather this is a few occupied jobs in many ways but this job also needs a satisfaction towards the librarian post.

Keywords. Satisfaction, management, administration, career, librarian

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Introduction

It is rightly said that health is the real wealth. To maintain good health, next to air and water, the foods we eat play a vital role and is the basic to our existence. It is not only a means of satisfying hunger but also essential for keeping body and soul intact. Variety of foods should be consumed to meet the bodily needs for different functions. Various foods such as cereals, pulses, milk and milk products, vegetables and fruits, meat, egg, fat and sugar can give a satisfactory balanced diet. Basic knowledge regarding food and nutrition is very important for us to incorporate positive nutritional behavior into our everyday lives. After reading this chapter you will be able to understand

- Food, Nutrition, Health and related terminology
- Functions of food
- Classification of food
- Balanced Diet
- Food guide pyramid

We must eat to live and what we eat will influence our ability to keep well, to work and to lead a happy and healthy life. Nature has provided us with a large number of food stuffs. **Food** is defined as anything edible, which nourishes, removes hunger, gives satisfaction and renews strength of the body. Food is made up of small chemical units called **nutrients**. Food varies considerably in appearance, taste, flavor, texture and composition. A food is generally known as a rich **source** by the nutrient that it has in substantial amounts. For example a comparison of nutrient composition of whole green gram *dal* and *amla* in the table 1 clearly shows richness in a particular nutrient i.e. protein and vitamin.

Nutrients	Whole green gram	Amla
Protein, g	24	0.5
Fat, g	1.3	0.1
Carbohydrates, g	6.7	13.7
Total minerals, g	3.5	0.5
Vitamin C, mg	0.0	600
Moisture, g	10.4	81.8

Major nutrients are carbohydrates, proteins, fat (lipids), vitamins, minerals, water and roughage. Nutrition is directly related to food intake and the changes it undergoes, till it is finally utilized by the body. Hence, **Nutrition** is the process by which an organism ingests digests, absorbs transports and utilizes nutrients and disposes off their end products. In simple words, nutrition is “Food at work” in the body. A person is known to be in the state of **good/optimum nutrition** when the essential nutrients are supplied and utilized to promote highest physical and mental health throughout one’s life. It improves the nutritional status of the individual.

Nutritional status is the condition of health of an individual as influenced by the utilization of nutrients in the body. Good nutritional status is synonymous to good health.

Who is healthy?

It is rightly said “as the food so the mind As the mind, so the man” We generally believe that health means freedom from diseases but health has to be viewed in totality. The World Health Organization (WHO) defines Health as a state of complete physical, mental and social well being and not merely the absence of disease or infirmity. Due to the stresses and strains of modern life, an individual has to be at peace with in him before he can be at peace with the world. Attention to moral values, ethics, exercise and meditation are also some ways of attaining wellbeing and maintaining optimum/positive health.

Health and Nutrition are related to each other. Lack of proper nutrition affects the health resulting in malnutrition (defective nutrition). **Malnutrition** has been defined as a pathological state resulting from deficiency or excess of one or more nutrients. It can be any of the following:

Under nutrition: The pathological state resulting from the consumption of an inadequate quantity of nutrients over an extended period of time. For example- Marasmus due to lack of energy and Kwashiorkar due to lack of protein.

Over nutrition: It is a state of the body which results when an individual eats more amount of nutrients than his/her requirement. For example- overweight because of excessive intake of carbohydrates and fats.

Nutrient density: It refers to the quantity of one or more nutrients supplied by a food in reference to its calorie (energy) content. For example, if one compares the protein content of isocaloric portions (equal amount of calories) of *dal*, bread and milk, one can see that *dal* has the highest nutrient density for protein, followed by milk and bread the least.

Food	Calories	Protein
<i>Dal</i>	85	5.5
Milk	85	4.0
Bread	85	2.4

Geriatrics: Geriatrics is a specialty that focuses on health care of elderly people. World Health Organization has defined 'elderly' as being 60-74 years and the 'aged' as over 75 years of age.

Probiotics: Probiotics is a culture of living organisms, which when ingested in certain amounts, has a positive impact on health. Bacteria most often used as probiotics are Lactobacilli and Bifidobacteria which can be given along with fermented foods e.g. yoghurt.

IMPORTANT FUNCTIONS OF FOOD

1. Social Function

Food and eating have significant social meaning. Sharing food with any other person implies social acceptance. Food is also an integral part of festivity everywhere in the world. Have you noticed that certain occasions such as birth of a child or a marriage or birthdays, are celebrated by having feasts and serving delicacies? Food also has a specific significance and meaning in the religious context.

2. Psychological Function

We all have emotional needs, such as need for security, love and affection. Food is one way through which these needs are satisfied. For example, how do you feel when your mother prepares your favourite food or dish? You feel that she loves you and cares for you. Food is often served as a reward also. Do you recall giving a chocolate because someone had been good to you? Similarly, certain foods become associated with sickness, such as khichri and bland foods. Sickness is an unpleasant experience, hence, even the food items

served during this state may be associated with unpleasant feelings. The food has its concern not only to the body but with human mind also. Mother gets immense satisfaction after feeding her children. Father feels contented after providing a good food to the family. Children are offered their favourite food or are deprived of their favourite food as punishment. A hearty welcome to the guests is expressed through serving special dishes in meal. Food is also an outlet of emotions. Selection, presentation and the way we eat reflects our psychology on joyous and sad occasions.

3. Physiological Function

There are three physiological functions performed by food. These are energy giving, body building, regulating body processes and providing protection against diseases. Let us see them in detail.

- **Food provides energy**

Everybody needs energy to do work. Energy is required for walking, studying, eating, working in the house or outside. You get this energy from the food that you eat. You need energy even when you are resting. Can you tell why? Different organs inside your body are always working, for example, heart is pumping blood, stomach is digesting food, lungs are breathing in air, etc. All these organs need energy for their respective functions and food provides that energy. Human body requires energy to perform various voluntary and involuntary activities.

- **Voluntary activities** such as walking, running, standing and **involuntary activities** such as maintenance of body temperature, heartbeat, breathing, digestion and blood circulation etc. The required energy is provided by the food. Foods such as cereals, sugars, fats and oils give us energy.

- **Food helps in body building**

Have you ever wondered how a small child grows into an adult? Our body is already made up of thousands of small cells. New cells are added to these to help the body to grow. Food is needed for the formation of new cells. Cells also die or are damaged due to injury. New cells need to be formed and this repair work is done with the help of food. From conception onwards there is continuous increase in size and weight of the child till he/she attains maximum size in adulthood. There is a steady increase in the muscles, bones, hair, blood and many other tissues present in the body. With activities, the tissues wear out and need to be repaired. Protein present in our food is the important nutrient responsible for the growth of new tissues in the body and for the repair and maintenance of tissues. Excellent sources of protein are milk and milk products, pulses, egg, meat and fish.

- **Food provides protection against diseases**

Regulatory functions refer to the role of food in controlling body processes, for example, our body temperature is maintained at 98.60F or 370C. Similarly, the heart beats are also maintained at 72 beats/minute. Excretion of waste products from the body is also regular. If not, the body suffers from a disease called constipation which can lead to further complications. All these processes are regulated by the food that you eat. The

food that we eat gives us strength to fight against disease germs. Nutrients such as vitamins and minerals present in food provide protection from deficiency diseases. For example vitamin A protects you from blindness while vitamin D (Sunshine vitamin) provides protection against rickets, osteomalacia and osteoporosis. Intake of iron and iodine protects against anaemia and goitre, respectively.

- **Regulation of body processes:** Water and roughage (fiber) regulate the various body activities. Water is necessary in large amounts for regulating digestion, maintenance of body temperature and disposal of wastes from the body. Roughage (fiber) facilitates peristaltic movements to prevent constipation. Fresh fruits and vegetables are good source of fiber.

3. Socio-cultural functions: Social and cultural events are part of life and sharing food on such occasions with relatives and friends from different castes, religions and states is a symbol of love. Power of food is also exerted in society by offering a large number of rich and expensive foods at functions or parties. Punjabis are known for their hospitality in the world. It has been a common practice for centuries to distribute sweets at the marriage ceremonies and on the arrival of a new born baby in the family. People tend to try out foods outside their meal patterns at social get together, thus bridging the cultural differences. Nowadays, north Indians like south Indian dishes such *idlis* and *dosa* and would like to share their *sarson ka saag*, *makki ki roti* and *kheer* with south Indians. This clearly proves that the food is bringing people together

b. Maintenance of health

Food contains certain phytochemicals and antioxidants which help in preventing degenerative diseases. Food plays an important role in the prevention of cancers, heart diseases and in controlling diabetes mellitus. Some examples for functional foods are whole grains, soyabean, green leafy vegetables, coloured fruits and spices..

CLASSIFICATION OF FOOD

A good variety of foods from vegetarian and animal sources are available in the market. They belong to. They vary considerably in taste, flavor, texture and composition. An adequate diet can only be one in which all the foods are selected in such a proportion and combination that it can provide all the nutrients

in required amounts and proportions. Nutrients obtained through food have vital effects on physical growth and development, maintenance of normal body function, physical activity and health. Man must eat to live and what he eats will affect to a high degree his ability to keep well, to work and to live long. Food performs many vital functions in the body.

FOOD GROUPS

Foods have been classified into different groups depending upon the nutritive value, for the convenience of planning diets. Food groups like 'Basic four', 'Basic five' or 'Basic seven' can be used for planning diets as per the convenience.

I basic four	
<i>Group</i>	<i>Nutrient</i>
• cereals, millets and pulses	Energy, protein b-vitamins
• vegetables and fruits	Vitamins, minerals and fibre
• milk, milk products, and animal foods	Protein, calcium b-vitamins
• oils, fats, nuts and oilseeds	Energy, protein (nuts and oilseeds).
II basic five: icmr	
• Cereals, grains and products: rice, wheat, ragi, maize, bajra, jowar, rice flakes, puffed rice.	Energy, protein, invisible fat, thiamin, folic acid, riboflavin, iron and fibre.
• Pulses and legumes: bengal gram, black gram, cow pea, peas (dry) rajma, soyabeans.	Energy, protein, invisible fat, thiamin, riboflavin, folic acid, calcium, iron and fibre.
• Milk and meat products:	Protein, fat, riboflavin,
* Milk, curd, skimmed milk, cheese	Calcium, protein, fat, riboflavin.
* Chicken, liver, fish, egg and meat.	
• Fruits and vegetables:	
* Mango, guava, tomato, papaya, orange, sweet lime, watermelon.	Carotenoids, vitamin c, riboflavin, folic acid, iron, fibre.
* Green leafy vegetables:	Riboflavin, folic acid calcium, fibre,
Amaranth spinach, gogu, drumstick leaves, coriander leaves, fenugreek.	Iron, carotenoids.
* Other vegetables:	
Carrots, onion, brinjal, ladies finger, beans, capsicum, cauliflower, drumstick.	Carotenoids, folic acid, calcium and fibre.
• Fats and sugars:	
* Fats: butter, ghee, hydrogenated fat, cooking oils.	Energy, essential fatty acids and fat soluble vitamins.
* Sugar and jaggery.	Energy, jaggery has got iron.

Iii basic seven	
• Green and yellow vegetables	Carotenoids, ascorbic acid, and iron.
• Oranges, grape fruit, tomatoes or raw cabbage.	Ascorbic acid.
• Potatoes, other vegetables and fruits	Vitamins and minerals and fibre.
• Milk and milk products	Ca, phosphorus, protein and vitamins
• Meat, poultry, fish and eggs	Proteins, p, fe and b vitamins.
• Bread, flour and cereals	Thiamin, niacin, riboflavin, iron, carbohydrate and fibre.
• Butter or fortified margarine	Vitamin a and fat

FOOD IN RELATION TO HEALTH

Health is related to the food consumed. To maintain good health, ingesting a diet containing the nutrients in correct amounts is essential. A balanced diet is one which contains different types of food in such quantities and proportions so that the need for calories, proteins, fats, minerals and vitamins is

adequately met and a small provision is made for extra nutrients to withstand short duration of leanness. Deficiency of any nutrient affects health of an individual. Food has not only nutrients but also nutraceuticals which prevent degenerative diseases. Table 1 gives nutrient deficiency symptoms and sources of nutrients and explains how food is related to health.

Table 1: Food in relation to health

<i>Nutrient</i>	<i>Sources</i>	<i>Deficiency</i>
Energy, Protein	Fat, sugar cereals, pulses, egg, meat.	Underweight, Marasmus, Kwashiorkor
Calcium	Milk, green leafy vegetables gingelly seeds.	Rickets, osteomalacia, Tetany
Iron	Liver, green leaf vegetables, rice flakes, jaggery.	Anaemia
Vitamin-A	Liver, egg yolk, butter, green leafy vegetable, carrots.	Night blindness
Thiamin	Yeast, outer layers of cereals, pulses, nuts.	Pain in the calf muscle, weakness of heart muscle
Niacin	Groundnuts, whole cereals, pulses	Dementia, diarrhoea, dermatitis
Vitamin-B6	Meat, liver, vegetables, whole cereal grains.	Anaemia, angular stomatitis
Folic acid	Fresh green leafy vegetables, lady's finger, cluster beans.	Megaloblastic anaemia
Vitamin-B12	Yeast, fermented foods.	Pernicious anaemia
Vitamin-C	Citrus fruits, amla, guava,	Bleeding gums
Vitamin-D	Eggs, flesh foods, sunlight.	Rickets, osteomalacia

Foods are classified according to their functions in the body.

Energy Yielding Foods

This group includes foods rich in carbohydrate, fat and protein. They may be broadly divided into two groups.

1. Cereals, pulses, roots and tubers: Cereals provide in addition to energy large amounts of proteins, minerals and vitamins in the diet. Pulses also give protein and B vitamins besides giving energy to the body.
2. Fats, Oils and pure carbohydrates like sugars: Sugars provide only energy and fats provide concentrated source of energy.

Cereals provide in addition to energy large amounts of proteins, minerals and vitamins in the diet. Pulses also give protein and B vitamins besides giving energy to the body. Nuts and oilseeds are rich in energy yielding as they are good sources of fats and proteins. Roots and tubers though mainly provide energy; they also contribute to some extent to minerals and vitamins.

Pure carbohydrates like sugars provide only energy (empty calories) and fats provide concentrated source of energy and fat soluble vitamins.

Body Building Foods

Foods rich in protein are called body building foods. They are classified into two groups.

1. Milk, egg, meat & fish. They are rich in proteins of high biological value. These proteins have all the essential amino acids in

correct proportion for the synthesis of body tissues.

2. Pulses, nuts and oilseeds: They are rich in protein but may not contain all the essential amino acids required by the human body.

Protective Foods

Foods rich in protein, vitamins and minerals have regulatory functions in the body like maintaining the heartbeat, water balance, temperature, etc.

Protective foods are broadly classified into two groups.

- (i) Foods rich in vitamins and minerals and proteins of high biological value (eg) milk, egg, and fish.
- (ii) Foods rich in certain vitamins and minerals only (eg) green leafy vegetables and fruits.

Nutritious food is, thus needed to sustain life and activity. Our diet must provide all essential nutrients in the required amounts. The nutrients must be obtained through a judicious choice and combination of a variety of foodstuffs from different food groups. On the basis of their nutritional composition, foods have been divided into various groups which are known as food groups. As indicated in the table 2, each food group includes those foods that are similar to each other in their nutritional value and some other qualities.

Basic Five food groups: ICMR (2017)

No.	Food Group	Foods included	Major nutrients /Functions
I	Cereal grains and products	Wheat, rice, maize, bajra, jowar, barley, ragi, rice flakes, puffed rice, wheat flour, bread, biscuits	Carbohydrates/energy giving
II	Pulses and legumes	Bengal gram, black gram, green gram, redgram, lentils, cowpea, peas (dry), rajmah, soybean	Protein/ body building
III	Milk, meat and their products	Milk, curd, skimmed milk, cheese	Protein/ body building
		Egg, chicken, fish, meat	
IV	Fruits and vegetables	Fruits: Guava, mango, papaya, orange, watermelon, tomato, lemon	Vitamins and minerals,

		and sweet lime	roughage/protection and regulation of body processes
		Green leafy vegetables: Amaranth (<i>chulai</i>), spinach, mint, coriander, fenugreek and mustard leaves	
		Other vegetables: Carrots, brinjal, ladies finger, beans, capsicum, cauliflower, onion,	
V	Fats and sugars	Fats: Butter, ghee, hydrogenated fat (solid fat), any cooking oil like mustard, groundnut, sunflower	Energy giving
		Sugars: sugar, jaggery	

Food from each food group should be selected for planning a balanced diet.

While planning balanced diet for any individual, food should be chosen from each one of the above mentioned food group in a sufficient quantity.

- Cereal grains and products
- Pulses and Legumes
- Milk, meat and their products
- Fruits and Vegetables
- Fats and Sugar

Whole grains are important sources of B-vitamins. Since most of these vitamins are present in the outer bran, removal of bran during refining and polishing reduces the vitamin B (Thiamine).

Pulses are rich in protein but poor source of vitamin A and C. Sprouting of pulses (germination) can improve the level of B complex and vitamin C. From the quality point of view, this is also partially complete protein as it is deficient in one amino acid i.e. methionine. The products prepared by the combination of cereals and pulses in the ratio of 4:1 can provide a good quality protein because they balance each other's amino acid makeup.

Milk has always been considered an ideal food for infants and children and a good supplementary food for all age groups. It is a good source of high quality protein. It is particularly rich in calcium, riboflavin and vitamin A but lacking in iron and vitamin C. In

general, the products of milk like curd, butter milk, cheese etc. retain most of the nutrients present in the milk.

Eggs are rich sources of most of the nutrients except, vitamin C. Two distinct portions of the egg are white of the egg and yellow of the egg (yolk). The white part contains mainly protein while yellow part contains fat and vitamins and minerals. Heart patients should consume egg white of boiled egg not egg yolk. Flesh foods like meat, poultry and fish are good sources of protein and vitamins. Vitamin B12, a member of vitamin B complex group is available only in flesh foods. Liver is rich source of vitamin A. Fish contains essential fatty acids.

Among **fruits and vegetables**, fruits are generally good sources of vitamin C. *Amla* is the richest source of vitamin C. Yellow fruits like mango and papaya contains beta-carotene a precursor of vitamin A. Banana is a good source of carbohydrates. **Vegetables** add variety to the diet and also provide vitamin C and some minerals. They are good sources of dietary fiber too and provide bulk to the diet hence prevent constipation.

Knowledge about the above mentioned food groups helps to plan a balanced diet for the family. If some foods are included in the daily diet from all the food groups, the mixed diet will provide all the nutrients in required amounts. It is not necessary that only the expensive foods can supply good nutrition

rather the use of inexpensive foods such as cereals, pulses and milk or butter combination in place of meat and fish, use of ground nut in place of dry fruits, amla in place of oranges can also make a nutritious diet.

BALANCED DIET

A **balanced diet** is one which contains different types of foods such as cereals, pulses, milk and milk products, vegetables and fruits in such quantities and proportions so that the need for

energy, proteins, minerals, vitamins and other nutrients is adequately met and a small provision of extra nutrients is made to withstand short duration of low intake.

While planning the daily diet foods are chosen from **all the five food groups** which ensure meeting the requirement of all the nutrients. This table gives portion sizes for menu plan suggested by experts from National Institute of Nutrition (NIN), Hyderabad.

Table 3 Portion sizes of foods (raw) and nutrients for menu plan per day

Food groups	Portion, g	Energy, Kcal	Protein, g	Carbohydrate, g	Fat, g
Cereals and millets	30	100	3	20	0.8
Pulses	30	100	6	15	0.7
Egg	50	85	7	-	7
Meat/chicken/fish	50	100	9	-	7
Milk (ml)	100	70	3	5	3
Roots and tubers	100	80	1.3	18	-
Green leafy vegetables	100	45	3.6	-	0.4
Other vegetables	100	30	1.7	-	0.2
Fruits	100	40	-	10	-
Sugar	5	20	-	5	-
Fats and oils(visible)	5	45	-	-	5

The balanced diets are given as multiples of these portion sizes. Using the portion size balanced diets for infants, children and adolescents suggested by NIN, Hyderabad are given below :

Table 4: Number of portions per day for balanced diets for infants, children and adolescents

S.	Food groups	Weight Portion, g	Infants, 6-12 months	Children			Adolescents, (yrs)					
				1-3 (yrs)	4-6 (yrs)	7-9 (yr)	10-12		13-15		16-18	
							Girl	Boys	Girls	Boys	Girls	Boys
1	Cereals & millets	30	0.5	2	4	6	8	10	11	14	11	15
2	Pulses	30	.25	1	1.0	2	2	2	2	2.5	2.5	3
3	Milk & it products (ml)	100	4*	5	5	5	5	5	5	5	5	5
4	Roots & tubers	100	0.5	0.5	1	1	1	1	1	1.5	2	2
	Green leafy vegetable	100	.25	0.5	0.5	1	1	1	1	1	1	1
	Other vegetable	100	.25	0.5	1	1	2	2	2	2	2	2
	Fruits	100	1	1	1	1	1	1	1	1	1	1
5	Sugar	5	2	3	4	4	6	6	5	4	5	6
	Fats & oils (visible)	5	4	5	5	6	7	7	8	9	7	

*Quantity indicates top milk (Extra milk other than mother's milk).

1. -For breast fed infants 200 ml top milk is required.
2. -One portion of pulse may be exchanged with one portion (50g) of egg/meat/chicken /fish for non-vegetarians.
3. -For infants introduce egg, meat chicken/fish around 9 months.

Example: Suppose Harleen is 17 years old and studying in twelfth class. Calculate suggested daily dietary intake for all food groups for her by taking into account the number of portions given in table.2.

For the cereals number of portions are 11 for a 17 years adolescent girl,

Portion size for cereals is 30 g

So suggested dietary intake for cereals will be 330 g for this girl.

(11 portions in the form of two *paranthas*/cornflakes, 4 *chapatis*, 1 plate rice, 2 sandwiches, biscuits, rusks etc.)

Similarly we can calculate for pulses ie. $30 \times 2.5 = 75\text{g}$ (2 katories)

Milk and milk products- $100 \times 5 = 500\text{ml}$ (Two and half glass)

Roots and tubers- $100 \times 2 = 200\text{g}$ (1 katori)

Green leafy vegetables- $100 \times 1 = 100\text{g}$ (1/2 katori)

Other vegetables- $100 \times 2 = 200\text{g}$ (1 katori)

Fruits- $100 \times 1 = 100\text{g}$ (1 medium size)

Sugar- $5 \times 5 = 25\text{g}$ (5 tsp)

Fats and oils- $5 \times 7 = 35\text{g}$ (7tsp)

Note: For number of portions, choose different foods listed in five food groups (ICMR, 2017).

Table 5: Number of portions per day for balanced diets for adults doing sedentary/ moderate/heavy activity

S. No.	Food groups	Portion, g	Type of work					
			Sedentary		Moderate		Heavy	
			Man	Woman	Man	Woman	Man	Woman
1	Cereals and millets	30	12.5	9	15	11	20	16
2	Pulses	30	2.5	2	3	2.5	4	3
3	Milk (ml)	100	3	3	3	3	3	3
4	Roots and tubers	100	2	2	2	2	2	2
	Green leafy vegetables	100	1	1	1	1	1	1
	Other vegetables	100	2	2	2	2	2	2
	Fruits	100	1	1	1	1	1	1
5	Sugar	5	4	4	6	6	11	9
	Fats and oils(visible)	5	5	4	6	5	8	6

To calculate one day requirement of above mentioned food groups for an individual, multiply grams per portions with number of portions.

An easy way to remember is to learn the one day requirements of sedentary worker women from above table. In order to estimate one day requirement for the following individuals, modify the sedentary worker woman requirements as given below.

Children:

1-6 yrs $\frac{1}{2}$ to $\frac{3}{4}$ the amount of cereals, pulses and vegetables and extra cup of milk.

7-12 yrs Extra cup of milk.

Adolescent girls Extra cup of milk.

Adolescent boys Diet of sedentary man with extra cup of milk.

For Non-vegetarians substitute one pulse portion with one portion of egg/ meat /chicken /fish.

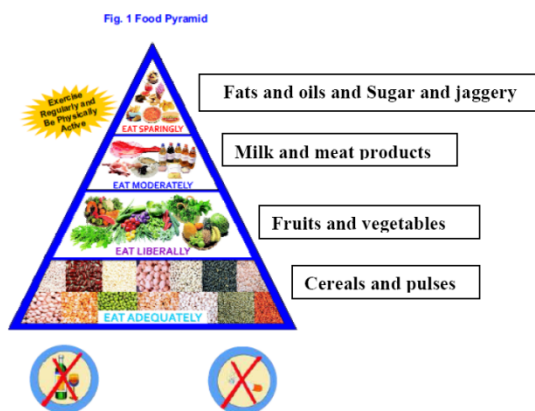
POINTS TO BE CONSIDERED FOR PLANNING A BALANCED DIET

1. Ideally each meal should consist of all the five food groups.
2. Whole grain cereals and whole pulses give higher nutritive value.
3. It is better to include more than one cereal like wheat, rice and maize.
4. Use wheat flour along with bran (fibre).
5. Inclusion of salads (fruits and vegetables) in daily diet help in meeting the vitamin, mineral and fiber requirements.

6. It is better to consume whole fruit rather than juice. Daily diet should contain at least one medium size fruit.

Food guide Pyramid - An easy way to understand a healthy diet.

We need to consume a variety of foods in order to remain healthy. A simple thumb rule is to classify foods into different food groups (As above). **Food guide pyramid** is a tool which can be used by the general healthy population as a guide to include the right amount and types of food in the daily diet in order to make it balance.



The shape of the pyramid helps to emphasize the relative contribution of each food group for healthy diet. The large base of the pyramid is made up of foods that come from cereals and pulses. These high-carbohydrates foods are the foundation of a healthy diet and should be consumed adequately. In the next level, of the pyramid are vegetables and fruits; liberal amounts of these should be used. The next level, where the decreasing size of the pyramid reflects that the moderate amount of animal foods should be used. At the narrow tip of the pyramid are fats, oils and sweets (sugars), should be used sparingly. Refrain from drinking alcohol and say no to tobacco. Exercise regularly and be physically active as much as possible.

Conclusion And Suggestion

- Eat variety of foods to ensure a balanced diet

- A diet consisting of foods from several food groups provides all the required nutrients in proper amounts
- Cereals and pulses are major source of most nutrients
- Milk which provides good quality proteins and calcium must be an essential item of the diet.
- Inclusion of eggs, flesh foods and fish enhances the quality of diet. However , vegetarians can derive almost all the nutrients from diets consisting of cereals, pulses, vegetables, fruits and milk based diets
- Vegetables and fruits provide protective substances such as vitamins and minerals
- Prefer fresh, locally available seasonal vegetables and fruits

- Use a combination of whole grains, pulses and green leafy vegetables. Include jiggery or sugar and cooking oils to bridge the energy gap for children
- Avoid overeating to prevent overweight and obesity
- Minimize the use of processed foods rich in salt, sugar and fats.
- World Food day is celebrated on 16th October every year.
- World Health day is celebrated every year on 7th April.

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