QUALITY ENHANCEMENT AND SKILL DEVELOPMENT IN HIGHER EDUCATION

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Kolhapur.

41st Year of Publication

ISSN:0253 - 7141
R.N. 40280/83

INDIAN JOURNAL OF ENVIRONMENTAL PROTECTION

VOLUME 41, NUMBER 5, MAY 2021

Published by :

KALPANA CORPORATION

email : kalpanacorp81@gmail.com
Website : www.e-ijep.co.in

IJEP 41 (5) : 596-600 (2021) (ISSN : 0253-7141)

Comparative Analysis Of Soil Quality Of Surface Mined Land In Allipura, Ballari District, Karnataka

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Agriculture and mining practices have been the earliest endeavours of humankind. It is the extraction of mineral wealth from the earth. An indiscriminate mining activity causes massive damage to land fertility and biological communities. The study was conducted to evaluate the soil quality and impact of surface mining activities on different physico-chemical parameters of soils of agricultural land in Allipura which is located outside Ballari town, Karnataka. During the present study, the sand composition was found to be high at study sites, 66% and 64%, respectively. The silt proportion was less than clay at both sites. The moisture content was high station II than station I whereas the bulk density did not vary in both sites. The other chemical parameters, such as pH (6.5 ±0.126), organic matter (2.8±0.346), phosphorus (3.53±0.30), calcium (1.14±0.188) and magnesium (0.37±0.092) were high at station II. The total nitrogen (0.17 ±0.011) and potassium (0.36 ±0.18) values were comparatively high in the station I than at station II. Soil analyses demonstrated that there is a distinct variation in the level of nutrient elements of the surface soil. The possible reasons and reclamation measures are discussed.

KEYWORDS

Surface mining, Soil texture, Soil moisture, Bulk density, Nutrients

1. INTRODUCTION

Soil is the main natural habitat for thousands of species of flora and fauna. It allows the production of food and raw materials, recycles waste, creates forest-agricultural land, filters and retains water, maintains a diversity of plants and animal species [1]. Variation in the soil quality, pasture and water holding capacity, mainly depends on the porosity and composition of soil particles [2]. Surface mining and agriculture are fundamental to the development and continuation of civilization [3]. Depending on the economic, geologic, engineering, type of location and nature of the resource, there are surface and subsurface mining [4]. Quarries are a kind of surface mining activities, generally used for extracting materials for construction, such as dimension stone, ornamental stones, road building and industrial raw materials. The demand for these quarry material is increasing at an alarming rate with increasing urbanization and the demands of urban dwellers [5]. Irrespective of its economic benefits, mining operations also have adverse impacts on the environment. Mining disturbs the land surface, affects the topography and change the hydrogeological conditions of the earth's surface.

The mined soils usually contain low concentrations of soil organic carbon (SOC), nitrogen (N), and phosphorus (P), high bulk density (BD), rock fragments, unfavourable soil pH, poor water-holding capacity and low biomass productivity [6,7,8,9]. This lowers the overall fertility of the soil and increases water movement through the soil and landscape [10]. Mining activities impose environmental problems throughout the extraction and subsequent processing of the resources and at times persist even after the entire operations are over [11]. Mining brought new potential hazards and risks to the environment and creates wasteland as a byproduct [12,13]. Poulin has stated that mining has environmental impacts such as deforestation, loss of biodiversity, water, soil and air pollution, land-use conflicts, socio-economic impacts and depletion of non-renewable resources, subsidence, aesthetic degradation and noise [14,15]. According to mining and quarrying, state environmental report (2003), Ballari is one of the districts in the state of Karnataka where abandoned mines are present where environmental degradation is very high around 8,896.89 ha (15.12%) followed by Chikkaballapura district (8,028.33 ha, that is 13.64%).

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Regarding :
Indian Journal of Environmental Protection
(as international monthly journal)
ISSN : 0253 – 7141

2020-21

Dated : 29-Jul-20

Subject : Acceptance of paper No. U 10

It is to inform that paper number **U 10** entitled **" HYDROCHEMICAL FACIES OF GROUND WATER OF PANCHAGANHA RIVER BASIN, KOLHAPUR, MAHARASHTRA "** authored by **Dr. A.R.Kulkarni** (College of Non-Conventional Vocational Courses For Women (CNCVCW), affiliated to Shivaji University Kolhapur-Kolhapur) has been accepted for publication in the Indian Journal of Environmental Protection, ISSN - 0253-7141, after peer-review process and will be published soon in our journal.

The journal is indexed / abstracted in SCOPUS, ULRICH, CAS and ICI etc. The Indian Journal of Environmental Protection is included in the Group A of UGC-CARE List of Recommended Journals.

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IJEP 41 (4) : 372-378 (2021) (ISSN : 0253-7141)

Hydrochemical Facies Of Groundwater Of Panchaganga River Basin, Kolhapur

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Groundwaters undergo changes in their chemistry and quality as they pass through rocks, soils and human settlement areas. The modification is manifested in variations in their cation and anion constituents. Attempt has been made to classify groundwater on the basis of their chemistry, the sources of the major ions and to categorize quality of groundwater for irrigation purposes. The physical parameters, such as pH (7.5 average 8.5), EC (400-3268 μmhos/cm) and TDS (1166-2451.25 mg/L) found to be higher in groundwater samples near the sugar factories. Average values of cations and anions were in the order of Ca (107.04 mg/L), Na (67.46 mg/L), Mg (61.31 mg/L), K (11.44 mg/L) and Cl (245.38 mg/L), HCO_3 (192.50 mg/L), SO_4 (59.51 mg/L), respectively. Average sodium adsorption ratio (SAR) was 1.35. Calcium - magnesium, cation hydrochemical facies is most dominant with 92% followed by 8% of sodium - calcium facies. Anion hydrochemical facies is dominated by chloride - sulphate - bicarbonate facies (65.39%), bicarbonate - chloride - sulphate facies (19.23%) and chloride - sulphate facies (15.38%). The dominance of calcium - sodium facies can be attributed to the leaching or ion-exchange reactions. Because of medium to high salinity hazard ground water is by and large suitable to moderate to high salt tolerant crops demanding for reclamation of soil for better agriculture yield.

KEYWORDS

Groundwater, Physico-chemical parameters, Hydrochemical facies, Hydrolysis, Salinity hazard

1. INTRODUCTION

The concept of groundwater composition also known as hydrochemical facies is useful for the identification of the hydrochemical facies, water type, hydrochemical processes, chemical character of the water, their similarities and differences in any given aquifer system [1,2]. The concept of hydrochemical facies was introduced by Back to indicate the diagnostic chemical characteristics of groundwater [3]. Earlier, Piper had used a triangular diagram for the graphical representation of water analysis [4]. The hydrochemical facies are the distinct zones that have cation and anion concentrations describable within defined composition categories. Handa recognized the different hydrochemical zones in India with respect to their geological and geographical distribution [5]. Handa correlated the dissolved mineral matter with changes in the ionic character of water in basaltic terrain [6]. Pawar studied the hydrochemical facies of shallow groundwater bodies in Basaltic terrain around Pune and reported the seasonal variation in the cation and anion hydrochemical facies [7]. The mechanisms that control the chemical composition of the major dissolved salts of the groundwaters have been discussed by Gibbs and Ramesam [8,9]. Viswanathiah and Sastri established the relationships of composition of water to aquifer lithology [10,11]. The degree to which rock/mineral weathering influences groundwater chemistry is a function of several factors, such as residence time of groundwater in the host rock, the ambient temperature and pH, among others [12,13,14,15].

In order to evaluate the geochemical changes in groundwater, hydrochemical facies are broadly classified into cation hydrochemical facies and anion hydrochemical facies. The cation hydrochemical facies give the proportions of the cations, that is sodium, potassium, calcium and magnesium, in the groundwater. The cation hydrochemical facies are subdivided into four types, namely calcium - magnesium [Ca + Mg] facies, calcium - sodium [Ca + Mg, Na + K] facies, sodium - calcium [Na + K, Ca + Mg] facies and sodium - potassium [Na + K] facies. The anion hydrochemical facies reflect the proportion of anions in the groundwater. This facies is further subdivided into four groups. Bicarbonate [CO_3 + HCO_3] facies, bicarbonate - chloride - sulpate [HCO_3, Cl + SO_4] facies, chloride - sulphate - bicarbonate [Cl + SO_4, HCO_3] facies, chloride - sulphate [Cl + SO_4] facies.

CURRENT WORLD ENVIRONMENT

ISSN: 0973-4929, Vol. 15, No. (3) 2020, Pg. 601-606

Current World Environment

www.cwejournal.org

Studies on Tropics of Fish Along Upper Tungabhadra Channel, Ballari District, Karnataka

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Abstract

Gut analysis is the tool to understand the feeding patterns of fishes and is an important aspect of fisheries management. It also provides the basis for understanding trophic interactions in aquatic food webs and to investigate the most frequently consumed prey or to determine the relative importance of different food types to fish nutrition. In the present study the gut content analysis was performed in Garra, Gobi, Notopterus and Tilapia fishes collected from Tungabhadra upper irrigation channel at Ballari, Karnataka. Bacillariophyceae showed maximum number in all the four fish species. Over all it showed 40 % followed by Detritus (30 %), Chlorophyceae (17 %), Cyanophyceae(7 %) and Zooplankton (6 %). Among fishes Garrashowed maximum food items (2272) followed by *Glossogobiusgiuris*(1538), *Notopterusnotopterus*(996) and *Oreochromismossambicus* (769). The relative abundance of food items in the guts also revealed the *Garra gotylastenorhynchus<Glossogobiusgiuris<Notopterusnotopterus<Oreochromismossambicus*. The variation is due to availability of foodorganisms during the study period and anthropogenic influence on channel water.

Article History

Received: 05 May 2020
Accepted: 21 September 2020

Keywords

Diatom;
Garra;
Gut analysis;
Notopterus;
Plankton;
Tilapia.

Introduction

Riverine fishery plays an important role in supporting livelihoods for millions than lacustrine fisheries. It is particularly important to the rural population accounting for direct and subsidiary employment.[1] The riverine fishery resources in India are immense as large numbers of productive rivers are present. Geotropically the wealth of stream fishes appears to be influenced by both the abiotic and the biotic factors.[2]

Research on feeding behavior of freshwater fishes certainly helps in developing a successful management programme respect to capture and culture fisheries.[3] Feeding is the major activity of fish to sustain the nature by increasing growth and

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Doi: http://dx.doi.org/10.12944/CWE.15.3.23

EPRA International Journal of Economic Growth and Environmental Issues- Peer Reviewed Journal
ISSN: 2321-6247
Volume: 8| Issue: 2| September 2020 | Journal DOI : 10.36713/epra0713 | SJIF Impact Factor (2020): 8.007

MINING AND ENVIRONMENT

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"Sustainable development" is that pattern of development which "meets the needs of the present without compromising the ability of the future generations to meet their own needs [World Commission on Environment and Development, 1987"

1.0 INTRODUCTION

Minerals are valuable natural resources that are finite and non-renewable. The history of mineral extraction in India dates back to the days of the Harappan civilization. The wide availability of minerals in the form of abundant rich reserves and the eco-geological conditions make it very conducive for the growth and development of the mining sector in India. As a major resource for development the extraction and management of minerals has to be integrated into the overall strategy of the country's economic development. The exploitation of minerals has to be guided by long-term national goals and perspectives. Thus, minerals play a key role in the evolution of human society and its overall economic development. metals/stones, electrical & electronics equipment, glass and ceramics etc. There will be huge demand for minerals in view of the rapid urbanization and projected growth in the manufacturing sector in India. India occupies a dominant position in the production of many minerals across the globe.

Mining sector, being one of the core sector of economy, provides basic raw materials to many important industries like power generation (thermal), iron and steel, cement, petroleum and natural gas, petro-chemicals, fertilizers, precious & semi-precious.

On one hand mining is essential for the socio-economic development of our country and at the same time there are number of health and environmental impacts at various stages of mining. There are different phases of a mining project, beginning with mineral ore exploration and ending with the post-closure period. What follows are the typical phases of a proposed mining project. Each phase of mining is associated with different sets of environmental impacts. It is need of the time to understand and address the environmental issues at the beginning of the projects so that adverse impacts can be minimized. The development of mining industry should be sustainable in nature. This can be done by the implantation of Sustainable Development Framework (SDF) Developed by the Ministry of Mines, Government of India. The sustainability of the mining industry stands on three pillars: economic, environmental and social. Striving for sustainable development involves balancing the inevitable conflicts in these three areas.

2.0 MINING AND ECONOMIC DEVELOPMENT

India is home to 1,531 operating mines and produces 95 minerals – 4 fuel-related minerals, 10 metallic minerals, 23 non-metallic minerals, 3 atomic minerals and 55 minor minerals ((including building and other materials and the recently notified 31 additional minerals). Area occupied by mining in India just less than 2%. Area occupied. Area occupied major and minor minerals are approximately 60% and 40 % respectively.

India is the 3rd largest producer of coal. Coal production grew at CAGR 5.17% over FY14-FY19 (to 739.36 MT) and is expected grow 6-7% Y-o-Y over FY20 as miners focus on surface mining of coal. Coal's share in India's primary energy consumption is expected to be 48% in 2040. India is the 2nd largest crude steel producer in the world, generating an output of 106.5 MT in 2018, a growth of 3.7% Y-o-Y (https://www.investindia.gov.in › sector › metals-mining).

Papers Published (2020-21)

International Journal of huma
Published biannually by New Archa
Kanpur India
Vol. VIII, Issue I (Summer) 2021

'DINACHARYA' (Daily Regimen): AN AYURVEDIC APPROACH FOR PREVENTION OF COVID-19

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Abstract
Ayurveda is the Science of Life. An ancient Indian system of medicine deals with almost all aspects of human life related to physical, mental and social health and overall development of a man. The basic principle of Ayurveda is prevention. Modern science also focuses on prevention when it comes to any viral infection. And thus vaccines (half killed virus) are injected to stimulate acquired immunity. Ayurveda also deals with the maintenance and enhancement of immune power. All of which have become an integral part of our lives nowadays in this pandemic situation. *Dinacahraya* is the one part of Ayurveda which talks about daily regimen. It includes rules and regulations to be followed by an individual to maintain a happy, healthy, active and disease free life. COVID-19 is certainly a preventable disease which can be kept away by following the Ayurvedic principles mentioned in Dinacharya. If one follows the Dinacharya as per Ayurvedic treatises, he will be able to keep himself away from infections and if at all exposed to the infection, can overcome again with a good immune power.
Key words: Ayurveda, viral infection, vaccine, pandemic, dinacharya, COVID-19, immune power.

Introduction

Health is a state of complete physical, mental and social well-being and not merely absence of any disease or infirmity. According to Ayurveda- an individual is said to be healthy whose humours (*doshas*), tissues (*dhatus*), excretory products (mala) and digestive capacity (*agni*) are in the state of equilibrium along with mental sensory and spiritual pleasantness and happiness. Ayurveda is an ancient Indian Medicine. It is the oldest system of Indian Medicine. Ayurveda means the Science of Life. It teaches us the basic principles of life which are eternal. Ayurveda basically focuses on preventive approach. It deals with the rout causes of any disease rather than focusing symptomatic approach as in allopathic medicine or modern medicine. Ayurveda has given a very comprehensive approach for the prevention

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Indian Journal of Public Health Research & Development
Year : 2019, Volume : 10, Issue : 7
First page (1582) Last page (1587)
Print ISSN : 0976-0245 Online ISSN : 0976-5506
Article DOI : 10.5958/0976-5506.2019.01229.9

Serving Vegan Palates Nutritiously: Fortification of Vegan Cake with Garden Cress Seeds and Rose Petal Preserve as Functional Ingredients

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Online published on 19 August, 2019

Abstract

Background

Vegan lifestyle is gaining impetus all over the world in view of its health benefits and environmental impact. With the growing diet trends a demand for vegan bakery products are rising.

Aim

The aim of the study was to develop whole wheat vegan cake by enriched with local plant derivatives and assess its overall acceptability compared to vegetarian cake available commercially.

Method

Vegan cake was standardized and enriched with garden cress seeds and rose petal preserve against a commercially available vegetarian cake. Sensory trials on flavor profile were conducted using 9 point hedonic scale on 30 semi trained panelists. Minimum good acceptance range considered was 70% and above. Nutritive value of the cake was determined by proximate analysis. Shelf life of the developed product was checked by microbial analysis. The overall acceptability of the developed product was checked against the control product statistically using paired t test.

Result

The experimental and the control product had sensory acceptability of 84% and 83% respectively. There was no significant difference between the overall acceptability scores of two products ($p > 0.05$). The proximate analysis suggested the experimental cake was high in calcium, proteins iron and fibre compared to control per 100 grams of the product. The shelf life of control and experimental product was two days at room temperature.

Conclusion

The developed product has a good scalability as a nutritive alternative to the contemporary vegan cakes available in the market.

Keywords

Fortified vegan cake, Rose petal preserve, Garden cress seed

Energy Production From Agricultural Waste: A Case Study In Kolhapur District Of Maharashtra (India)

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Abstract: Nearly half of the population of India depends on agriculture for their livelihood. Mainly the people from rural society depends on agriculture and domestic animals. The waste generated from these areas is disposed in various ways. The present study is carried out in three villages i.e. Ispurli, Naralewadi and Kauloge of Kolhapur district of Maharashtra to understand the disposal of agricultural waste, mainly waste from domestic animals for the purpose of energy production. Total 100 respondents were selected and interviewed with the help of self structured questionnaires. The study reveals that many people from rural society fulfil their energy needs in sustainable manner with the help of biogas plants and it is proved to be beneficial for them in various ways. It helps to reduce the environmental issues such as deforestation and air pollution and provides employment opportunities to the people from rural areas.

Keywords : Rural, Energy, Biomass, Waste

INTRODUCTION:

Agriculture is the backbone of our economy and nearly 70% people depends upon agricultural sector. Domestic animals are inseparable part of Indian agriculture. In rural parts of India, fuel wood is often used as source of energy, which leads to air pollution. Instead of that, in some areas this waste is used for production of biogas. This biogas converts cattle dung and other waste into biogas through anaerobic fermentation in absence of oxygen. The generated gas consists of 65% methane and it burns cleanly similar to LPG. In developing country like India, this gas is a source of energy for rural poor. Biogas is a mixture of gases consisting of methane and carbon dioxide. These gases are waste products of respiration of decomposing microorganisms. The sludge generated after decomposition of waste can be again used as manure for agricultural crops. Thus it proves to be a sustainable and economically feasible way of energy production in rural areas. It helps to protect the women from rural masses from various respiratory diseases which can be caused due to burning of fuel wood. There are various factors affecting the process of biogas production such as pH, temperature, loading rate, nutrients, pressure etc. As this energy is produced from animal waste products, the source of fuel is never going to run out. So biogas is a good substitute to traditional fuel such as wood, kerosene and coal.

OBJECTIVES :

1. To study the generation and potential of biogas use in rural areas of Maharashtra.
2. To study the benefits of biogas for energy generation over traditional measures.

METHODOLOGY :

1. Primary data

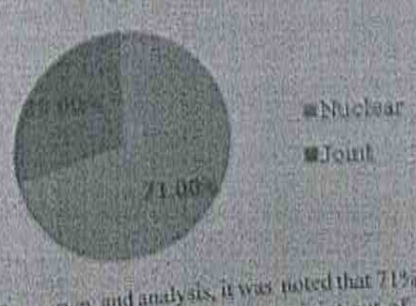
Present study is based on primary data collection. Primary data was collected through questionnaires. A self structured questionnaire was used to collect the information regarding generation and use of biogas. The samples were selected by Simple Random sampling. For this, total 100 respondents were selected from 3 villages of Kolhapur district. Questionnaire contained various questions about number of domestic animals, type of domestic animals, purpose of using biogas plant, efficiency of biogas plant and energy production from biomass.

RESULT AND DISCUSSION :

1. Type of Family

During present study, the type of family was taken into consideration. Type of family has effect on consumption of biogas. Generally joint families have more biogas consumption as compared to nuclear families.

Type of Family



After survey and analysis, it was noted that 71% families were nuclear and 29% families were joint out of total 100

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Media Partner : Pudhari Publications Pvt. Ltd., Kolhapur

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20th February 2020

By Registered Post

To,
Jyoti Ravindra Hiremath
Department of Fashion Design,
College of Non-Conventional Vocational Courses for Women CSIBER,
Shivaji University Road,
Kolhapur, Maharashtra -416004

Greetings form IIFM, Bhopal

It's my pleasure to make available a copy of edited book titled *"MULTI-DISCIPLINARY APPROACH TOWARDS SUSTAINABLE DEVELOPMENT"*. The book contains selected full paper received in the International Conference on 'Multi-Disciplinary Approach towards Sustainable Development: Role of Government, Academicians, Corporate, Civil Societies and Citizens, organized by Indian Institute of Forest Management (IIFM), Bhopal. The book is published from M/S Bookwell Publisher, New Delhi.

We thank you for participating in the conference and sharing your valuable knowledge. We look forward to your participation in our next international conference.
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Sincerely

(Jayashree Dubey)

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Sustainability and Role of Fashion Design Institutes

Jyoti Ravindra Hiremath
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Kolhapur Maharashtra

Abstract

Sustainability speaks all about development and elevating the quality of life without depleting economic, social and environmental balance. The present approach of sustainability has undergone remarkable positive change than that of previous wherein economic development had an adverse impact on social and environmental factors. Usage of newer products was the measure of economic growth. Buying behavior, frequency of buying, disposal of garments drives to produce goods at a reduced cost which has foremost implications on society and environment. It was often observed that in the process of fashion designing and garment making and product life cycle; concern about generated squanders through the entire process of pattern making, production process and usage is overlooked. Technology and science alone cannot solve the above said issues; it needs precautionary action to circumvent serious, irreversible social and environmental hazards. To overcome these problems it is necessary to adopt a wholistic approach towards ethical, sustainable designing, manufacturing and usage of garments. This approach will add significantly for creating a greener planet and producing new jobs. Ethical, sustainable designing as an integral part of the education process may be an added advantage in the industry, whereas inculcating sustainable practice makes more competitive and encourage eco-designing. Present work emphasizes on developing methods and models for designing, garment making which equips fashion designer at inception level to adopt QBD approach wherein natural resource extraction, manufacturing, usage, recycling and disposal of fashion clothing and garments minimize social, economic and environmental impacts. Moreover, developed design projects will significantly add to knowledge and skills of students in textiles and fashion designing for sustainable development of business, economy, and environment as well.

Keyword: Sustainable, Fashion, Garments, Textiles, Eco-design, QBD

Introduction

UNESCO expresses sustainable development as "Ultimate goal of the Man-environment relationship" this drives to adopt a newer approach wherein the entire educational framework is to be modified towards achieving sustainability (UNESCO, 2012). In recent years the concept of Environmental education for sustainable development has come in to focus. Environmental education emphasizes on different methodologies for optimum, careful utilization of natural resources. It's of prime concern to ensure adequate natural resources for us as well as for our generations to come (Sauve, 1996). In this context, sustainable development refers to ameliorating or improvising but not necessarily arresting social and economic development (Robinson, 2004). Conservation of environmental resources has become the need of the hour. The prime aspects revolve around diminishing nonrenewable natural resources, increased population resulting in increased consumption and pollution threat. These are found to be the root cause of environmental degradation. Human has substantially moved away from pure nature. This pure nature is one which is responsible for the enriched quality of human life. Presently, this biophysical nature has affected enormously due to pollution, industrialization, and overpopulation along with irrational extraction of natural

Recycling of worn and torn textile clothing

In a broader sense garment recycling encircles upcycling (i.e. converting old or obsolete garment into usable one, or using cuttings / pieces produced during garment production for isolating yarn) (Fig 1); downcycling (stripping exhausted cloth for insulation); Further, even exchanging, trading off, or any suitable method to reutilize which will save or delay garment / cloth from being wasted or reclaiming excavated pits (Goldsmith, 2012)

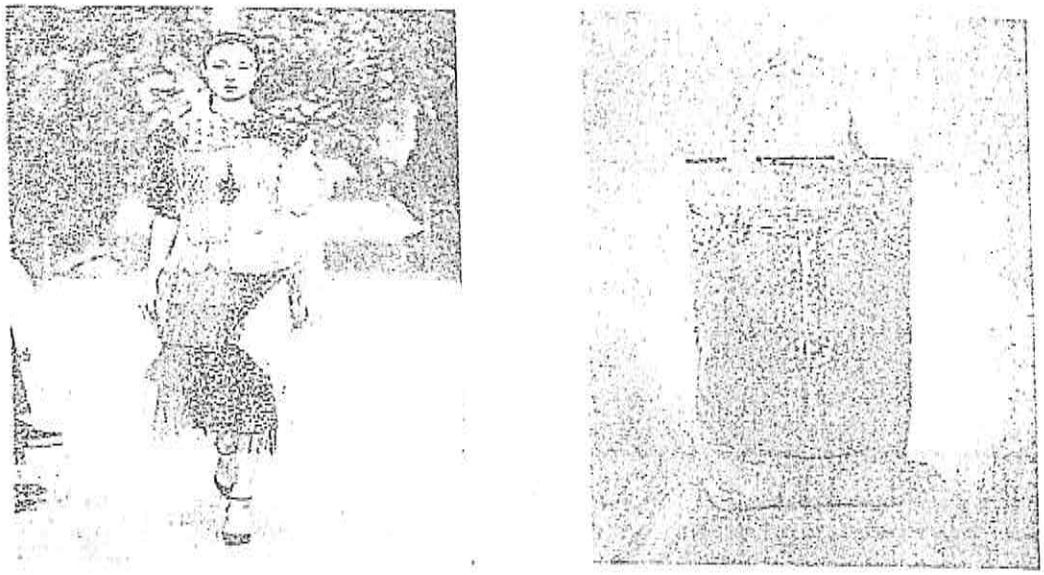

Fig 1: Up cycling and recycling of Textile Clothing

Multifarious approaches for sustainability

Fashion is a gigantic business having significant influence on social aspects, financial status and environment in varied way. Being a constantly changing trend in fashion; leads to environmental abuse and puts immense pressure on natural resources. Taking into consideration these problems, adopting sustainability in each and every act of human is important and fashion world is remarkably influenced by this constrain. Institutes and people working in fashion or garment industry should shoulder the responsibility to practice sustainability in their field. Concept of sustainability should be implemented while designing be designers i.e. at concept initiation stage. The paper design concepts are adopted for designing more rational and accountable design patterns; which contributes towards sustainability in fashion world. Up to a certain level sustainable fashion has reached by exploring and by making optimum use of existing material, further bringing out best in waste, recycling of cloths, finding diverse applications of finished products, and putting a break on rapidly changing fashion trends, etc (Sharda, 2012).

Developing Sustainable Fashion Design

a. Wardrobe Staple Piece
b. Multi Functionality of Garments
c. Re-construction-Second Life
d. Emotive Designing for Slow Fashion
e. Reduce Material and Process Using Modern Technology
f. Recycle – Best out of Waste
g. Choosing Artisans Products to Support Small Craft
h. Modular Clothing

7. Putting limits on use of hazardous material.
8. Providing stage for stakeholders and giving financial support to discover and implement suggestions and recommendations drafted in this report.

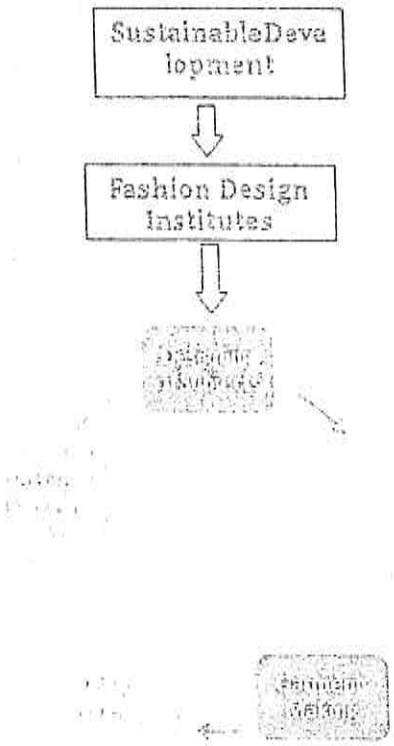

Fig 3 : Curriculum development for sustainable development in Fashion and Textile Education Institutes

1. Designing Subjects: Drawing figures, Illustrations, Portfolio development
2. Pattern Making: Use of Eco-paper, reuse of paper, marker making
3. Garment Making: Use of eco-material, waste management
4. Business Aspects: Fashion marketing, Customer Buying behavior
5. Textile Concern: Use organic fibers, Eco-production technologies, Recycling

Conclusion

In the past few years, a significant change in approach towards education design was increased. This change emphasizes on consumer demand with more sustainable product development. The present study emphasized on, to address possible aspects in reframing the curriculum in fashion design and textile institutes towards sustainable development. Issues such as crafting, recycling, diverse use and garment designing for sustainability are discussed. This study helps in value addition in end product thereby making it more competitive in changing trends. A garment designer serves to bridge a gap between manufactures and end user. A good design, eco process in textiles, efficient waste management and effective recycling of worn garments adds significantly for sustainable development. This article emphasizes on multifaceted and promising sustainable approach by Fashion and Textile Institutes by imparting and transforming specially designed eco education aspects for sustainable development. This will help improve garment designer knowledge, appropriate extraction of natural resources. These approaches will potentially lower the undesired impact on the environment and bring in a balance between the social, economic and environmental aspect in achieving sustainable development.

ISBN : 978-93-81249-29-1

Food Security in India: Current status and challenges of the future; A Nutritional Perspective.

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Abstract *: Food Security as defined by the United Nations' Committee on World Food Security, means that all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their food preferences and dietary needs for an active and healthy life. Food access, food availability and food utilization are said to be the three important pillars of Food Security. According to the Food and Agricultural Organization (FAO) estimates in 'The State of Food Security and Nutrition in the world,' 2018' report, about 14.8% of the population is undernourished in India. India ranked 76th in all 113 countries assessed by the Global Food Security Index (GFSI) in the year 2018, on parameters such as; affordability, availability, quality and safety. As per the Global Hunger Index, 2018, India was ranked 103rd out of 119 countries. The National Food Security Act (NFSA), 2013, legally entitles up to 75% of the rural population and 50% of the urban population to receive subsidized food grains under the Targeted Public Distribution System. Climate change, lack of access to remote areas, rural to urban migration, overpopulation, gender inequality, inadequate distribution of food, corruption etc. add to the issue of food insecurity that needs to be addressed. Some National and International initiatives are taken to address these issues affecting Food Security. Newer Agricultural techniques, strategies for food storage, the blue revolution, biotechnology, community education on key family health and nutrition practices, strengthening of existing nutrition programmes and policies to bring together diverse issues such as inequality, food diversity are some of the critical strategies India needs to adopt to ensure sustainable food security.*

Key Words: *Food security, food access, food availability, food utilization, FAO, GFSI, Global Hunger Index, NFSA, Targeted Public Distribution System, biotechnology.*

INTRODUCTION

India has made substantial progress in improving life expectancy at birth and reducing infant and mortality since independence. Still it shelters a large proportion of population suffering from preventable undernutrition. Undernutrition contributes to 35% of all deaths due to all major causes like diarrhoea, pneumonia, malaria, measals etc [1]. Despite an commitment in the Constitution of India that "State shall regard the raising of the level of the nutrition and the standard of living of its people and the improvement of public health among its primary duties", malnutrition continues to be an important public health problem in India, with a major part of undernourished people in the world.

The UN General Assembly, in the year 2000, adopted the Millennium Development Declaration with nutrition related goal. i.e to have the proportion of the World's people who suffer from hunger by the year 2015; to reduce maternal mortality by three quarters; and under five year child mortality by two thirds, of their current rates. India is signatory to the Millennium Development Goals. Adequate food and good nutrition are the basic human needs. And thus are recognized in the Millennium Development Goals (MDGs), which emphasize eradication of extreme poverty and hunger and promote the empowerment of women as effective ways to combat poverty, hunger and disease and to stimulate sustainable development. [2]

HUNGER INDEX IN INDIA

The international Food Policy Research Institute (IFPRI) developed the Global Hunger Index (GHI) as an approach to measuring and tracking progress on hunger and to find solutions to prevent hunger with improvement in nutrition.

India ranked 76th in all 113 countries assessed by the Global Food Security Index (GFSI) in the year 2018, on parameters such as; affordability, availability, quality and safety. As per the Global Hunger Index, 2018, India was ranked 103rd out of 119 countries [3]

FOOD SECURITY

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containing mainly the coarse grains like millets is showing a significant decline. The surveys conducted by the NNMB indicate that the intake of coarse grains is confined mostly to the States of Gujarat (maize, bajra), Maharashtra (jowar), Karnataka (ragi), and Madhya Pradesh. Even the NSSO surveys indicate that there has been a significant decline in the consumption of millets during 1972-73 and 1999-2000 [6]

Though a majority of the population is non-vegetarian, the contribution of animal foods is very small and infrequent, mainly because of economic reasons. The diets consumed thus are poor in micronutrients. High levels of poly-phenols and phytates (cereal and pulse based diets) in the Indian diets further interfere with the absorption of nutrients leading to inadequacy of micronutrients.

TRENDS IN NUTRIENT INTAKE LEVELS

About 70% of the Indian children in the age group 1-3 years and 4-6 years consume inadequate amounts of energy. The protein intake is inadequate (< 70 percent RDA) in 40 percent of 1-3 years old children while less than 10 per cent of the 4-6 years old children. Therefore, it is clear that the primary limiting factor in the Indian diets, amongst the poorest segments of rural India, is 'food gap'. However decreasing trend in consumption of pulse is of concern since it would adversely influence the quantity and quality of protein. More than two-thirds of the households and individuals consume less than 70% of RDA of other vital micronutrients like vitamin A. While almost 70 percent consume less than 50% RDA of iron.

The proportion of the adolescent girls consuming less than 50 percent RDA of energy was found to be increased between the years 2002 to 2006. The intake of iron, calcium and vitamin A is still low in this age group.

The average energy nutrient intake among adult women seems to be decreased in all groups of adult women such as non-pregnant-non-lactating as well as pregnant and lactating women. In the case of micronutrients, a very high percentage of women consume less than 50 percent of RDA. [7]

INTRA-FAMILIAL DISTRIBUTION OF NUTRIENTS

An analysis of intra-family distribution of dietary energy in the households was carried out by comparing the adequacy of energy intakes, as per the RDI, of preschool children in each household with their parents and other elders. The intra-family distribution of dietary energy was assessed from 24-hour dietary recall data which was collected by NNMB in seven states in India during 1996-97. The energy consumption, expressed as percentages of recommended dietary intake (% RDI) for preschool children, schoolchildren, and adolescents as compared with that of adult men and women in the same households. The results revealed that about one third of the preschool children had inadequate intake of energy even when their adult counterparts had an adequate intake. There were no difference between sexes in any of the age groups, with respect to intra-family food distribution [8].

The time trends in the intra-family distribution of dietary energy were assessed by comparing the data with those collected in 1975-80 using the same procedures in the same villages. The analysis revealed a significant increase in the proportion of preschool children consuming inadequate energy, although both adult men and women were consuming energy adequate diets during 1996-97 as compared to those surveyed in 1975-80. These results are suggestive of the inappropriate child feeding and caring practices prevailing in our society, perhaps due to mother's ignorance about the child's energy requirements which indicates the need for effective nutrition education for parents regarding appropriate feeding of their children for meeting the nutritional needs.

SOCIOECONOMIC STATUS AND DIET

The socioeconomic status of the households plays very important role in the dietary pattern of the families. The dietary consumption among the landless agriculture labors and the socially backward scheduled castes and scheduled tribes is not satisfactory. Poverty and ignorance are the major determinants of food consumption among these households. These families are not be able to meet the nutrient requirements. The average per capita consumption expenditure for rural and urban population as per 61st Round of NSSO (2004-05) is Rs. 558.78 and Rs. 1,052.36, respectively. In the rural households, an average consumption expenditure on food is about 55 per cent and remaining 45 per cent is on non-food items. Rural poor (below poverty line/BPL) are found to be spending about 31-35 per cent of their total consumption expenditure on non-food items and remaining on food items [9].

NSSO consumption expenditure surveys are suggestive of decline in expenditure on food declined without any apparent increase in the cereal consumption, except in the lowest income group.

Unfortunately, the pulse consumption among all the segments showed a decline due to continuous increase in prices. Consequently, dietary diversification is evident mainly in middle and high-income groups in urban and rural areas. There has been only a small increase in energy consumption among the poor despite widespread distribution of subsidized foods trough Public Distribution System (PDS) to the BPL families. On the other hand, the

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Development And Sensory Evaluation Of Cake Supplemented With Water Melon Seed *(Citrullus Lanatus)* Flour

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Sub Theme: Agriculture and Sustainability (Agricultural Waste Management)

Abstract *: Objectives: Watermelon fruit is eaten while seeds are thrown away as a waste. They are rich source of protein and fat such as polyunsaturated fatty acid i.e. omega 6 (Linoleic acid) and monounsaturated fatty acid (Oleic acid). This present study aimed to develop protein rich bakery product and to optimize utilization of watermelon seeds (agricultural waste) in cake. Methods: The basic ingredients used in the cake are whole wheat flour, ragi flour, eggs, butter, sugar and baking powder. Cake was prepared by supplementing water melon seed flour at different concentrations. The optimum concentration of water melon seed flour was determined by carrying out preliminary trials using 9-point hedonic rating scale. Cake was highly accepted at 50% concentration. Result: Proximate analysis of cake supplemented with 50% watermelon seed flour revealed that the cake provides 436.91 Kcal energy, 26.27 gm fat, 13.10 gm protein, 32.02 gm carbohydrate and 2.52 mg iron. In conclusion, the conversion of such agricultural waste into value added products would be a big step towards the global sustainability efforts.*

Key words *: Cake, Watermelon seeds, Ragi flour, Whole wheat flour, Supplementation.*

INTRODUCTION

Watermelon (Citrullus lanatus) a fruit crop, is a herbaceous creeping plant belonging to the family cucurbitaceae. It can be grown along the coastal areas of Ghana, the forest zone and especially along river beds in the Northern Savannah areas [1]. Watermelon seeds are one among the underutilized fruit by products. Watermelon seeds are known to be highly nutritional; they are rich sources of protein, vitamins B, minerals (such as magnesium, potassium, phosphorous, sodium, iron, zinc, manganese and copper) and fat [2]. The seeds of watermelons are known to have economic benefits especially in countries where cultivation is on the increase. The seeds are for instance used to prepare snacks, milled into flour and used for sauces. Oil from the seeds are used in cooking and incorporated into the production of cosmetics [3]. Recently there has been the practice of fortifying bakery with nuts [4] and beans to improve the

↓

Bake at 160oC for 30 minutes

↓

Cool the cake to room temperature

↓

Demould the cake

Figure 1. Flow diagram for cake preparation

Chemical Composition of Cake

Moisture, protein, fat, fiber, ash, iron, carbohydrates and Energy contents were determined according to the official methods of the AOAC (2005) [13].

Sensory Evaluation of Cake

Sensory evaluation was conducted to assess the degree of acceptability of cakes. A slice from

each lot of cake was presented to 15 semi trained panelists as randomly coded samples and the taste panelists were asked to rate the sample for color, flavor, texture, taste and overall acceptability on a 1-9 point hedonic scale where 1=dislike extremely; 2=dislike very much; 3 dislike moderately; 4=dislike slightly; 5= neither like nor dislike; 6=like slightly; 7= like moderately; 3= like very much; 9=like extremely [15].

RESULT AND DISCUSSION

Proximate Composition of Watermelon Seed Flour

Table 2 shows the proximate composition of watermelon seed flour. The chemical analysis showed highest percentage of crude protein and crude fat as compare to other chemical components. The results obtained are closer to the results reported by [16, 17] who used watermelon seed powder for preparation of cookies and soup respectively.

Table 2. Proximate composition of Watermelon Seed Flour

Parameters	Composition (%)
Moisture	8.35
Crude protein	16.37
Crude fat	15.44
Ash	3.32
Crude fiber	5.10
Carbohydrates	51.40

Chemical Analysis of Cake

In the present study, five different cake samples (T1 - T5) were prepared with the variation in their formulations. The different formulations were made using different levels of watermelon seed flour (20% to 60%). The proportions of whole wheat flour and ragi flour were in the ratio 1:1 in all the formulations. The moisture content of the control cake (T0) was 20.12 %. The percentages of moisture were 21.02, 22.78, 23.32, 23.94 and 24.50 for cake sample T1 to T5 respectively. There was direct relation of moisture and watermelon seed flour as the moisture percentage of cakes increases with increase in amount of water melon seed flour (From Table 3). This may be the result of hygroscopic nature of watermelon seed flour [18]. The percentage of protein, fat, ash and fiber also increases with increase in proportion of watermelon seed flour. Thus from the Table 3, it was reported that, the addition of watermelon seed flour in cake significantly increases nutrient content of cake.

Table 3. Chemical Composition of cake

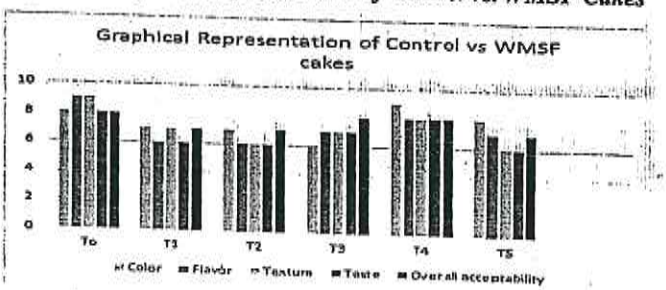
Parameters (%)	Cake Samples					
	T_0 (Control)	T_1 (20% WMSF)	T_2 (30% WMSF)	T_3 (40% WMSF)	T_4 (50% WMSF)	T_5 (60% WMSF)
Moisture	20.12	21.02	22.78	23.32	23.94	24.50
Protein	6.19	7.60	9.86	11.50	13.10	15.06
Fat	23.34	23.96	24.12	25.33	26.27	27.07
Ash	1.09	1.30	1.43	1.94	2.02	2.50
Fiber	1.83	2.80	3.40	4.28	4.72	4.78
Carbohydrates	47.53	43.22	38.50	33.75	30.02	26.19
Iron	1.47	1.52	1.88	2.37	2.52	2.60
Energy (Kcal)	424.94	418.92	410.52	408.97	436.91	408.63

*WMSF = Watermelon Seed Flour

Sensory Evaluation of Cake

The sensory characterization (color, flavor, texture, taste and overall acceptability) of the cakes supplemented with different proportions of watermelon seed flour are graphically depicted in figure 2. The measured average values of sensory evaluation were used to plot the responses. It is clear from the chart (Fig. 2) that the formulated product T4 was more accepted among all samples. Color, flavor, texture and taste of cake prepared by addition with watermelon seed flour were improved in the 9-point hedonic scale. However, overall acceptability was not affected and remains non-significant in all samples. Results of sensory evaluation are similar to that of [18, 19].

Figure 2. Graphical Representation of Control vs. WMSF Cakes



CONCLUSION

This research has demonstrated the possible fortification of cake with watermelon seed flour. The overall nutritional characteristics of the fortified cake showed significant enhancement in terms of protein, fat, fiber and essential

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ess Story of Sikkim State – 100% of organic ing:

rogress takes time and Sikkim has given its time to fully organic state by awaring the future hurdle to ronment and health issues. In 2003 it faced many ornmantal and health problems. As a measurement im's Chief Minister Pawan Chamling announced his n for India's first organic state and stable government he state achieved his vision after 12 years, when the e minister declared on 18th January 2016,at Sikkim's anic festival as 100% organic state. He said"If the eriment succeeds, farmers in other places will follow it heir own. Farmers may not be influenced by any amount ectures by scientists...For them seeing is believing".

w this has been achieved?

he Sikkim Organic Project:

T state has made organic policy and spread awareness g the importance of organic farming. This has ome popular when talk show as arranged in 2012.

dded in School Curriculum:

Use of organic farming and methods of cultivation is led as subject in syllabus that from primary level child become aware of the organic farming.

Training Facility:

Training facility from experts made available to the mers that they can take large production scientifically.

Use of Indigenous Technology:

Indigenous techniques like pheromone traps to control it flies, biopesticides and biofertilizers.

Establishment of organic retail stores:

T offers pulses,rice,ginger etc.set up the government in New Delhi. Due to the surge in demand for sikkim's organic produce farmers are now earning 20% more.

➢ Way to make organic food cheap:

One entrepreneur put like this "What happens ordinarily in organic is that a retailer deals with small quantities from wide range of farmers.The supply chain is broken and disorganized.This adds to the cost of produce. When the state is organic,then the costs tat go into segregating,packaging,labeling and differential pricing is saved.When everything is organic price automatically falls".

Conclusion:

Green revolution occurred in 1967 made drastic change in agricultural production. Modern methods of agriculture like tractor, high yielding variety seeds, use chemical fertilizers made large production in farm land. The states like Haryana, Punjab become rich countries by using modern methods of cultivation. But day by day soil fertility is decreasing and this decline in fertility made land available for cultivation very less. So it is needed to go for organic farming both in terms of availability of land and health consciousness.No doubt it will take the time but as soil fertility increases it will fulfill the growing need of the population. My only suggestion is that each and every state of India should follow the Sikkim State for sustainable agriculture by using organic farming.

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Restructure In Indian Banking Sector By Way Of Mergers And Acquisitions Towards Sustainable Development

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Abstract : Sustainable Development initiatives are pivotal in efforts to make life of all living beings on our planet Earth, sustainable for the future. These efforts are directed towards aspects such as environment, economic and social wellbeing. The first goal in the order of seventeen sustainable goals agreed upon by 193 countries is to end poverty. Decent work, economic growth, industry, innovation and Infrastructure, reduced inequalities also feature in this line of major goals. It is understood by world at large that regulation of financial markets and institutions, delivering development aids in places of need and safe migration for better life prospects is

"HUMAN RESEARCH MANAGEMENT IN CONSTRUCTION INDUSTRY WITH SPECIAL REFERENCE TO TRAINING AND MOTIVATION".

AR. BELA SHYAM JOSHI

Abstract: The construction industry is one of the very big global employment sectors. It provides work for large proportion of labour market. The market of construction business is both domestic as well as global. Construction is the most complex project based industries in which there is need to apply good human resource management practices. Labour is an important factor in construction industry. It operates equipments in which huge investments are made. Hence effective training for them is very much essential. This will enable them to perform well and increase the speed and productivity of construction work. The success of construction organization also depends upon morale of its people. Companies need to ensure all the learning achievements by their staff are recognized by appropriate promotion and reward. So it is necessary for successful construction organization to make use of principles of training and motivation in HRM practices.

Keyword: Construction Industry, Human Resource Management, Training, Motivation.

***

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ISBN 978-93-86435-55-2

CLIMATE SENSITIVE BUILDING FORMS

AR. RUTIKA TENDULKAR

Abstract: We shape our buildings; thereafter they shape us - (Winston Churchill). Infinite varieties of forms can mould a building. Suitability of specific forms with respect to their respective climates, and their response to environment shall be analyzed. The building itself is the third basic factor that influences the heating and cooling requirements. These depend on its shape, form and construction as it is directly exposed to outdoor environment & hence responsible for solar heat gain or loss through the building envelope. Dealing with various building forms with respect to climate (Thermal Environment) will help in analyzing the advantages and disadvantages of various forms in that specific climate.

Keywords: Building Orientation, Building Shapes and Forms, Thermal Environment, Solar Access, Surface Area to Volume Ratio.

***

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ISBN 978-93-86435-55-2

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NAAC has identified seven criteria / parameters as mentioned below, which serve as quality indicators on the basis of which HEI's are evaluated.[4]

Sr. No.	Criteria	University	Autonomous College	Affiliated / Constituent College
I	Curricular Aspects	150	150	100
II	Teaching-Learning and Evaluation	200	300	350
III	Research, Innovations and Extension	250	150	120
IV	Infrastructure and Learning Resources	100	100	100
V	Student Support and Progression	100	100	130
VI	Governance, Leadership and Management	100	100	130
VII	Institutional Values and Best Practices	100	100	130
	Total	1000	1000	1000

NAAC - seven criterions

Criteria I: Concerned with an institution in initiating a wide range of programme options and courses that are in tune with the emerging national and global trends and relevant to the local needs. Also focuses on career orientation, multi-skill development and feedback system.

1.1 Curriculum design and development
1.2 Curriculum Planning and Implementation
1.3 Academic Flexibility
1.4 Curriculum Enrichment
1.5 Feedback System

Criteria II: pertains to the efforts of an institution to serve students of different backgrounds and abilities, through effective teaching-learning experiences. Interactive instructional techniques that engage students in higher order '*thinking*' and investigation, through the use of interviews, focused group discussions, debates, projects, presentations, experiments, practicum, internship.Also,it is concerned about continuous professional development of the faculty who handle the programmes of study. The efficiency of the techniques used to continuously evaluate the performance of teachers and students is also a major concern of this Criterion.

2.1 Student Enrolment and Profile
2.2 Catering to Student Diversity
2.3 Teaching-Learning Process
2.4 Teacher Profile and Quality
2.5 Evaluation Process and Reforms
2.6 Student Performance and Learning Outcomes
2.7 Student Satisfaction Survey

Criteria III: Seeks information on policies, practices and outcomes of the institution, with reference to research, innovations and extension. It deals with the facilities provided and efforts made by the institution to promote a 'research culture'. The institution has the responsibility to enable faculty to undertake research projects useful to the society. Serving the community through extension, which is a social responsibility and a core value to be demonstrated by institutions, is also a major aspect of this Criterion.

3.1 Promotion of Research and Facilities
3.2 Resource Mobilization for Research
3.3 Innovation Ecosystem
3.4 Research Publications and Awards
3.5 Consultancy
3.6 Extension Activities
3.7 Collaboration

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In this perspective, it is essential to develop actions in the community, in order to build new and different knowledge based on the fusion of popular and scientific knowledge ensuring the exchange of experiences, involvement with social issues and the development of health promotion actions from an holistic perspective where the different world points of view can be respected.[5]

Learning activities have a visible element for developing sensitivities towards community issues, gender disparities, social inequity etc. and in inculcating values and commitment to society. Affiliation and interaction with groups or individuals who have an interest in the activities of the institution and the ability to influence the actions, decisions, policies, practices or goals of the organization leads to mutual benefit to both the parties. The processes and strategies inherent in such activities relevantly sensitize students to the social issues and contexts. Sustainable practices of the institution leading to superior performance results in successful outcomes in terms of generating knowledge useful for the learner as well as the community. Extension also is the aspect of education which emphasizes community services. These are often integrated with curricula as extended opportunities, intended to help, serve, reflect and learn. The curriculum-extension interface has an educational value, especially in rural India.[3]

An extension activity is an activity that extends the learning of the lesson. Extension activities can be done in small groups or by a single student. These extension activities are leveled to fit the student. For gifted students these are challenging. For struggling students these activities can be a reinforcing skill activities. Students don't choose their extension activity like the enrichment project.

The reason regular education teachers must have enrichment and extension activities in their classrooms and part of their instruction is because students need to take what they know or what they learned and apply it to the next level. Generally, extension activities are at the upper Blooms Taxonomy levels.

Examples of various Extension activities[6]:

1. Awareness Program
2. Field Visits
3. Participation in Seminar/ workshops/guest lectures etc
4. Blood Donation Camps
5. Health and Career guidance programs for rural areas
6. Science and Technology day: Providing information of re-usage of papers,threads and other materials
7. Observation of "No Tobacco Day" Pamphlet Distribution
8. Importance of Nutrition on occasion of "National Nutritional Week"
9. Awareness on home remedy medicines
10. Vanamahostav
11. Adult literacy,
12. women empowerment, human rights awareness,
13. legal rights awareness,
14. protection of environment,
15. rainwater harvesting,
16. hygiene and sanitation, prevention of diseases,
17. Prohibition of alcohol consumption,
18. Power and energy saving strategy

Impact on students and society[7]:

Extension activities,

- Challenges gifted students without giving extra work when they are finished with classroom work
- Allows students to apply new knowledge to the next level
- Allow gifted students to not do work that are repetitive.
- Allow students to have their own educational experiences.
- Associated with a wide range of positive outcomes - including better health and wellbeing, higher social trust, greater political interest, lower political cynicism, and less hostile attitudes towards immigrants (Siqueira).

Conclusion:

From the numerous example of extension activities mentioned earlier, it can be convincingly concluded that, every act supports the seven criteria's which can be evaluated by using the key indicators. This in-turn

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VOL- 6, ISSUE- 2, PUNE RESEARCH TIMES (ISSN 2456-0960) JIF 3.18

6.2 TIMES

VOL- 6, ISSUE- 2, PUNE RESEARCH TIMES (ISSN 2456-0960) JIF 3.18

Area of Article :

ALL

Editor-in-Chief

ABSTRACT

PUNE RESEARCH TIMES
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(ISSN 2456-0960) (JIF 3.18)
VOLUME 6; ISSUE 2 {APR TO JUNE 2021}

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VOL- 6, ISSUE- 2, PUNE RESEARCH TIMES (ISSN 2456-0960) JIF 3.18

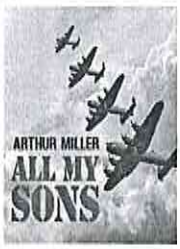
6.2.1 TIMES

PRAGMATISM IN ARTHUR MILLER'S ALL MY SONS

Area of Article :

LITERATURE

DR. GANGA NAND SINGH & SHREYA MANI



ABSTRACT

This study examines the evolution of Realism in the different parts of the world especially in the light of Realism in Arthur Miller's play All My Sons. Arthur Miller with this play has brought back into the theatre, the drama of social question. His plays belong to the school of social realism which has been enriched by the writers like Henrick Ibsen, John Galsworthy and George Bernard Shaw. Miller is a social dramatist. His plays pragmatically deal with the social themes like the one related to the relationship between the individual and the family or the society and American dream. He deals with the American dream and the social matters in a realistic manner, highlighting the issues of his age.

Keywords: *Realism, Individual, Society, Pragmatism, Theatre, Family, American dream.*

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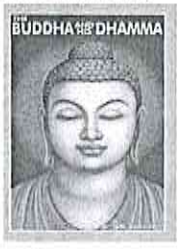
6.2.2 TIMES

THEMATIC STRUCTURE OF DR. B. R. AMBEDKAR'S BUDDHA AND HIS DHAMMA

Area of Article :

LITERATURE

DR. UMESH B. BANSOD



ABSTRACT

Buddha and His Dhamma is an objective and scientific historical text on Buddhism. While speaking about the books, Dr. Ambedkar himself pointed, "books to be examined and tested by the accepted rules of evidence without recognizing any distinction between the sacred and the profane and with the sole object of finding the truth" The format of his book reveals Dr. Ambedkar's aim – to create a 'Bible' for his people. While writing this book, the purpose of Dr. Ambedkar was not only to discuss the philosophy of Buddhist religion in a scholarly manner but also to bring out the social implications of the Buddha's teaching more fully and clearly than anybody else before him.

Keywords : *Buddha and His Dhamma, Thematic structure,*

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6.2.11 TIMES

Area of Article :

MANAGEMENT

FACE RECOGNITION BASED DOWN SYNDROME IDENTIFICATION USING MACHINE LEARNING TECHNIQUES

SHWETA MANKAR, DR. (MRS) R.A. INGOLIKAR, REENA URKANDE

ABSTRACT

Down syndrome is a condition in which a child is born with an extra copy of their 21st chromosome. This leads to physical as well as mental developmental delays and disabilities. Many of the disabilities are lifelong, and they can also shorten life expectancy. Recent medical advances, as well as cultural and institutional support for people with Down syndrome and their families, provides many opportunities to help overcome the challenges of this condition. In recent years, the development of new Machine Learning models has allowed for new technological advancements to be introduced for practical use across the world. Even today, there are still many research initiatives that are continuing to develop new models in the hopes to discover potential solutions for problems such as autonomous driving or determining the emotional value from a single sentence. One of the current popular research topics for Machine Learning is the development of Facial Expression Recognition systems. These Machine Learning models focus on classifying images of human faces that are expressing different emotions through facial expressions which helps us to identify whether the person is normal or having down syndrome. In this paper, the approach for facial expression analysis for identification of down syndrome identification using k-means clustering method which is the unsupervised machine techniques is presented.

Keywords: *Down syndrome, k-means clustering, Machine Learning, facial recognition.*

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6.2.12 TIMES

Area of Article :

INTERIOR DESIGN

COMMUNITY SPACES: UNDERSTANDING THE IMPORTANCE OF COMMUNITY SPACES IN URBAN AREAS

Ar. NIRALI K GILBILE

ABSTRACT

Community spaces play a very important role in the social life of communities. Community spaces in urban areas are present in variety of functions, spaces, activities, etc. Increasing migration of people from rural to urban areas has led to the scarcity of open spaces. Urban living also limits the access to open spaces and further restricts the community life of people. It is important for the architects and urban planners to first understand how the community interacts and behaviour of community to design these spaces. Also, the successful protection and development of community spaces in urban areas is required.

Keywords: *Migration, scarcity.*

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6.2.13 TIMES

Area of Article :

INTERIOR DESIGN

VERNACULAR ARCHITECTURE : A REVIEW

Ar. AMAR. N. MESTRY

ABSTRACT

Vernacular architecture is a form of architecture that considers all of the needs and requirements of the inhabitants, as well as nature, building materials, and cultural traditions and values. It evolves over time to reflect the community's culture, traditions, history, climate, residents' desires and needs, and economy. Structures designed by professional architects are not considered as vernacular architecture. The main concept of vernacular architecture is architecture that is not intentionally or knowingly planned. It is designed specifically for the local environment, using local environment. Architect Paul Oliver stated that vernacular architecture is "the architecture of the people, and by the people, but not for the people". The main purpose of this study is to investigate passive/ bioclimatic/ environmental ecological design principles/ measures/ features to achieve a comfortable living environment, eco-friendly and energy-efficient architecture.

Keywords: *Vernacular Architecture, Vernacular Planning, Local Resources, Tradition, Climate Responsiveness, Indian Vernacular Architecture, Sustainability, Building Scale, Vernacular Buildings.*

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6.2.14 TIMES

Area of Article :

INTERIOR DESIGN

"TERRACE GARDENS" UTILIZATION OF TERRACES FOR GREEN FUTURE: A REVIEW

Id. PRIYA KANDALKAR

ABSTRACT

In today's urban environment high rise buildings, parking areas, network of roads have acquired major urban land. In such congested environment rooftop and terrace of buildings provide a valuable potential source of outdoor space accessible to users of building. (A. Patel, R. Yadav, B. Singh,2019)The purpose of this study is to give an insight into what motivates middle-class citizens to engage in gardening. The Indian middle classes are described as well educated with busy, stressful lives and with a high resource use driven consumption, however, also with increasing awareness and practices of pro-environmental behaviour. (Mathur 2010) Balcony and terrace gardens give pleasure to city

dwellers and provide an opportunity for enhancing creativity as well psychological benefits. In addition, they change the visual appearance of the building, screening from neighbors, and conceal unwanted pipeline and unappealing scenery (Green,2004). The findings of this article are based on literature review. The study concludes that, regardless of the type of home, both Individual house and apartment respondents prefer a terrace Gardening for the purpose of relaxation and decreases recorded in global Warming is the greatest benefit.

Keywords: *Roof garden, Sustainability, Roof Top Gardening, eco-design, Urban Gardening, Benefits of Terrace Garden*

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6.2.15 TIMES

Area of Article :

INTERIOR DESIGN

INTERIOR FINISHING MATERIALS A REVIEW PAPER

Ar. GURUPRASAD J. YERNALKAR

ABSTRACT

Finishing can be defined as the final layer which protect and fix the surface of the building elements. This layer plays an important role in visual and psychological definition of interior space. At the period of traditional building techniques; buildings were usually produced by traditional materials such as stone, wood and adobe. They were used uncoated or sometimes plastered. After the transition to modern building techniques; the building section got thinner and new layers had to be added in order to provide comfort requirements. Consequently finishing layers were needed. The main purpose of finishing layer is to fix the surface. Also it is essential to coat wall, floor and ceiling in order to create a suitable appearance and to protect the construction from effects of water, heat, moisture, abrasion

Key Notes: *finishing, building, layer, material, techniques*

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6.2.16 TIMES

Area of Article :

INTERIOR DESIGN

TRANSITION OF COMMERCIAL INTERIORS THROUGH SYSTEM DESIGN FOR ENHANCEMENT OF WORKABILITY & COMFORT

Ar. SAMRUDDHI CHITNIS

ABSTRACT

There is a vast difference between residential & commercial interiors. Houses utilize comfortable stays inside, while commercial structures have very different needs to enhance workability & productivity of employees. There are so many other important factors like an interior environment, and the comfort level for the users which are always followed by the system design & ergonomics which can enhance functionality of furniture & workability of the workers. An interior designer can help a business to make money in various ways. The interior designer balances the functional needs of a commercial building in terms of physical space and its aesthetics using system design principles based on ergonomics and human anthropometry. All type of commercial spaces need some degree of flexibility in design for changing needs. This flexibility also can be achieved by proper system designs. Another aspect of system design is appropriate interior detailing. This paper focuses on the orientation of interior design process of commercial spaces based on the system designs of each & every interior element ; truly based on the anthropometry & ergonomics, purpose & keen use of particular furniture element, and the technologies and systems to work out the related task easily in less time span. With this design orientation one can have increased productivity than the conventional approaches.

Keywords: *Commercial interiors, interior environment, system design & ergonomics, functional needs, productivity*

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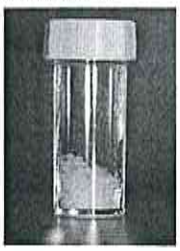
6.2.17 TIMES

Area of Article :

PHYSICS

A LITERATURE REVIEW ON THE IMIDAZOLE

ADAV SUMA BALASAHEB



ABSTRACT

This review gives some information about imidazole ring as a (ligand , complex , antimicrobial , antimalarial, anticancer , uses , applications , linked with active groups such as Schiff base , azo group .

Keywords: *Uses, Applications*

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PUNE RESEARCH TIMES ISSN 2456-0960
AN INTERNATIONAL JOURNAL OF CONTEMPORARY STUDIES VOL 6, ISSUE 2

VERNACULAR ARCHITECTURE : A REVIEW

Ar. AMAR. N. MESTRY
Assistant Professor
Department of Interior Design
College of Non-conventional Vocational Courses for Women,
Kolhapur **[MS] INDIA**

ABSTRACT

Vernacular architecture is a form of architecture that considers all of the needs and requirements of the inhabitants, as well as nature, building materials, and cultural traditions and values. It evolves over time to reflect the community's culture, traditions, history, climate, residents' desires and needs, and economy. Structures designed by professional architects are not considered as vernacular architecture. The main concept of vernacular architecture is architecture that is not intentionally or knowingly planned. It is designed specifically for the local environment, using local environment. Architect Paul Oliver stated that vernacular architecture is "the architecture of the people, and by the people, but not for the people". The main purpose of this study is to investigate passive/ bioclimatic/ environmental ecological design principles/ measures/ features to achieve a comfortable living environment, eco-friendly and energy-efficient architecture.

Keywords: *Vernacular Architecture, Vernacular Planning, Local Resources, Tradition, Climate Responsiveness, Indian Vernacular Architecture, Sustainability, Building Scale, Vernacular Buildings.*

1 Introduction

The term "Vernacular" is derived from the Latin word "vernaculus" which means domestic, native, indigenous. ***(O. Paul, 1997)*** Vernacular architecture is now considered a sustainable

architecture model, and the techniques that are now the foundation of sustainable building are derived from elements and features of this style of architecture. Nowadays in modern life, every technology and technique for comfortable life is available. ***(F. Mirahmadi, H. Altan,2017)*** With growing concerns regarding the future well being of our environment in terms of energy consumption, global warming and the provision of housing for the rapidly growing population, architects and developers are actively seeking ways to minimize the negative impact on the environment while providing for contemporary needs. As 'sustainability' is becoming a topic concerning professions within the built environment, there are many contemporary, renewable solutions being developed in order to tackle the issue. Relatively recently however, there has been research carried out regarding the use of vernacular architecture for a more sustainable future.***(H. Ghodsi,2012)***

In general, vernacular architecture refers to buildings that are designed using local technology, craftsmanship and building materials that are locally available to ensure climatic comfort for users. Vernacular architecture thus portrays the geographical, cultural and historical characteristics of a specific area as well as the period of time. There are various forms of vernacular buildings found across the world. For Example, Igloo, Desert mud houses, Cave temples of the Buddhist era, Hindu temples of Khajuraho, Mughal Forts and Palaces, Havelis in Rajasthan, Floating houseboats of Kashmir, Bamboo construction in Bengal and Assam, Chettinad houses from Tamil Nadu etc. So, it is prominent that a particular architectural style is derived in a specific region blending local resources, tradition and climate responsiveness into the buildings.

Statement of problem:

The population in our country has grown at a phenomenal rate. That has placed great strain on the non renewable resources. The ecological footprint has increased tremendously. It is putting the built environment under great pressure. Since vernacular architecture uses natural, readily available materials, vernacular architecture is environmentally friendly. As a result, embracing the vernacular style of architecture is important for a long-term future.

Objectives:

1. To investigate passive/ bioclimatic/ environmental ecological design principles/ measures/ features to achieve a comfortable living environment, eco-friendly and energy-efficient architecture.
2. To learn about vernacular construction techniques.
3. To study social cultural values of vernacular architecture.

Scope:

PUNE RESEARCH TIMES ISSN 2456-3587
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The aim of this study is to show how vernacular architecture is one of the most important sources of knowledge for understanding and explaining a community's ideas, opinions, rituals, practices, and belief systems, as well as its family and interpersonal relationships and neighborhood ties. Official and monumental buildings are considered independent of local architecture.

Methods:

The findings of this article are based on literature review. The literature reviewed is a mix of articles and papers about the study of Vernacular Architecture, basic study of materials, structural implication and construction techniques. Intensive literature review has been carried out to identify as much information as possible from existing literature.

FACTORS INFLUENCING VERNACULAR CONSTRUCTION

Locally Available Materials:

The first factor influencing the development of vernacular construction practices is related to the availability of local building materials. In many areas, the locally available resources have governed the use of the following constituent materials for walls:

1. Adobe (mud blocks or whole walls)
2. Masonry (stone, clay, or concrete blocks)
3. Timber

Frequently, a combination of materials has been used in the construction.

Vernacular Planning Concept:

Indian vernacular planning involves planning and designing a built environment with the informal, functional design of structures. It is mostly found in rural areas of India, with structures built using local materials and designed and planned to meet up with all the needs and requirements of the local residents. The structures built are not just made by using vernacular materials but even the planning is done keeping in mind the necessities of native society and culture. The builders and planners of these structures are untrained in formal architectural design. This is reflected in their work which reflects the rich diversity of India's climate, the local building materials, and the elaborate variations in the social customs and craftsmanship. The rich vernacular tradition of India starts from the natural settings of the site, and responds to metaphysical concerns, climate, local skills, construction materials and

appropriate technology. The form of a building plan is correlated with the cultural, historical background and planning traditions of a particular region. The concept may be discussed in Macro and Micro level. ***(D. Kaninika, 2015)*** The layout of vernacular structures is an important factor that influences and drives their design. Many cultural, historical, and urban planning patterns have been connected to the archetypal form of a building plan. The size of the building is ruled by its particular use. The mixed-use buildings necessitate construction of an additional floor, which calls for increased wall load-bearing capacity, especially if these walls also need to withstand earthquake effects. It should be noted that the building size is also related to the population pattern and housing density in a given area.

Typology:

Depending on the rural and urban settings, vernacular architecture can be described as 'rural' and 'urban' respectively. Proposes a category of vernacular buildings based on their usage.

Architecture Reflects Culture:

Architecture is a product of the culture that it was designed for. And architects usually aim to construct spaces for the times and the people who will use them, becoming inherent problem solvers. They don't just construct solid and strong buildings. They build ecosystems where, now and in the future, individuals can gain in numerous ways. All is about the big picture. The relationship between architecture and culture is one that has been studied for many years. But what's happening now is much more revolutionary. No longer is a static creation that performs well for a while, the mindset now to build in a way that adapts to a culture's changing needs.

Climate and Architecture:

A fundamental purpose of architecture is to provide shelter from the elements; that is, to purposefully shape the immediate physical, as well as social and aesthetic climate in which we live. This energy – originating in the sun, and converted into a variety of forms – represents a recurring and persistent source of income, which builders have drawn upon for millennia. Most of the traditional and modern buildings built as vernacular buildings are well lit and well ventilated/climate responsive to reduce the use of artificial lighting and air condition systems. There was a strong use of microclimatic management of making use of water bodies in forms of canals, pools or fountains etc in open spaces like the courtyards. This helped to modify the unfavorable climatic impacts of hot and dry climate. The thick walls were used to introduce time lags in the fluctuating diurnal cycle. Light is one of the most important aspects of architecture both in terms of quantity as well as in terms of its qualitative aspects like glare. Most of our buildings had grills and fenestration/façade work

done to control and manipulate light by means of strategies like Jalis or double windows with wooden Louvers etc. Many religious buildings such as mosques or masjids and temples also used similar strategies to control light and air movement.

Building Material:

The availability of local building materials has a great contribution in the development of vernacular construction. Materials used in old and contemporary buildings are different in many properties, such as density, thermal conductivity and heat transfer. These differences affect the thermal performance of the buildings. Traditional building materials, such as timber, stone and clay, are undergoing a revival in that they offer sustainability where the more labour intensive and costly materials, such as (reinforced) concrete, fiberglass, glass and steel, are unrealistic in terms of budget. Result of a complex balance between material, shape and natural context, vernacular architecture is the most integrated architectural form in communion with the environment. As vernacular buildings are always realized with a direct participation of the first owner, they constitute the expression of practical and spiritual needs of each community, sharing same values systems. Synthesis of centuries of life experiences and building traditions, vernacular architecture is a synthetic and symbiotic harmony of individuals, community and the built environment. ***(I. Ciotoiu, N. Georg,2010)***

CONCLUSION:

Though this style of architecture is less common in modern times, it is still encouraged for long-term construction. Since the construction industry absorbs a substantial portion of the world's resources and contributes substantially to global greenhouse gas emissions, it poses a danger to human survival. Architects, architects, and town planners will collaborate to construct green buildings, which will help to promote sustainable growth. Architects are currently concentrating on vernacular buildings in order to make them more energy efficient and sustainable. Even in this age of rapid technological innovation and urbanization, there is still space for vernacular tradition to be adopted. It can be used as a blueprint for long-term growth by integrating historical lessons with modern technology. The study of local vernacular architecture will assist in developing a green building design strategy. Indian traditional architecture is well known for combining energy conservation and sustainability. As a result, vernacular architecture is one of the most beautiful architectural styles in the world. Since it uses natural, readily available materials, vernacular architecture is environmentally friendly. As a result, embracing the vernacular style of architecture is important for a long-term future. Since it uses natural, readily available materials, vernacular architecture is also environmentally friendly. Using local materials is also cost efficient since these materials are readily accessible and do not require transportation.

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PUNE RESEARCH TIMES ISSN 2456-0960
AN INTERNATIONAL JOURNAL OF CONTEMPORARY STUDIES VOL 6, ISSUE 2

TRANSITION OF COMMERCIAL INTERIORS THROUGH SYSTEM DESIGN FOR ENHANCEMENT OF WORKABILITY & COMFORT

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ABSTRACT

There is a vast difference between residential & commercial interiors. Houses utilize comfortable stays inside, while commercial structures have very different needs to enhance workability & productivity of employees. There are so many other important factors like an interior environment, and the comfort level for the users which are always followed by the system design & ergonomics which can enhance functionality of furniture & workability of the workers. An interior designer can help a business to make money in various ways. The interior designer balances the functional needs of a commercial building in terms of physical space and its aesthetics using system design principles based on ergonomics and human anthropometry. All type of commercial spaces need some degree of flexibility in design for changing needs. This flexibility also can be achieved by proper system designs. Another aspect of system design is appropriate interior detailing. This paper focuses on the orientation of interior design process of commercial spaces based on the system designs of each & every interior element ; truly based on the anthropometry & ergonomics, purpose & keen use of particular furniture element, and the technologies and systems to work out the related task easily in less time span. With this design orientation one can have increased productivity than the conventional approaches.

Keywords: *Commercial interiors, interior environment, system design & ergonomics, functional needs, productivity*

INTRODUCTION

We know there is a vast difference between household & commercial buildings; same way there is lot of differentiation in residential & commercial interiors also. A commercial building is one used for some sort of business purpose, such as a store, warehouse, restaurant

or an office. Houses utilize comfortable stays inside, while commercial structures have very different needs to enhance workability & productivity of employees.

It has often been said that the key to a successful business is location. The location is one of the important aspect as well but there are so many other important factors like an interior environment, and the comfort level for the users which are always followed by the system design & ergonomics.

Environment is the overall conditions that surround us at a given point of time and space. It is the sum total of conditions in which an organism has to survive or maintain its life process. It influences the growth and development of living forms. That's why it directly affects on workability followed by human mindset, energy level and activity level of the personnel

Function of Commercial Interiors

Interior designers need to design the interiors in such a way that it enhances the basic function or purpose of a structure. A house is a space for living, so residential designs need to enhance livability. Commercial structures have a different purpose: they help businesses to make money. An interior designer can help a business to make money in various ways. The interior designer balances the functional needs of a commercial building in terms of physical space and its aesthetics.

To develop good store layout, store designers must balance objectives that often conflict. i.e. the store layout should entice the customers to move around the whole store, to purchase more merchandise than they may have originally planned. If the layout or the store system is too complex, customers or salespersons may find it difficult- to locate the merchandise they are looking for and as a result they can decide not to patronize the store.

Office design is significant towards employee satisfaction, and the wide-ranging concept of office design also includes the workflow. The work is analyzed initially and then the work is identified based on by what means the task were completed and whole setup of the office were made up to ensure the smooth running of work in the office without hindrances. That's why the systems of any kind of furniture element into that , shall be made so as to make it fully functional, user friendly comfortable and surrounding friendly.

This paper focuses on the orientation of interior design process of commercial spaces based on the system designs of each & every interior element ; truly based on the anthropometry & ergonomics, purpose & keen use of particular furniture element, and the technologies and systems to work out the related task easily in less time span. With this design orientation one can have increased productivity than the conventional approaches.

What is 'system design'?

In our everyday lives, we live in spaces that are busily engaged, modifying, and spirited. When designers create interior spatial designs for dynamic uses and experiences, they consider both the aesthetic qualities of a space and how people experience interactions and sensations within the spaces. To make the space worth functional & lively is the first moto of any interior designer. While designing interiors, users experiences are subjective. These are experiences people have in the moment of living, both consciously and unconsciously, in interaction with the space and other elements along with the functional use of furniture items.

The another aspect of system design is appropriate interior detailing. Without good detailing; the best selection of materials , the most imaginative design will suffer by not adequately meeting the function for which it was intended, being unsafe, costing more money than it should, making construction difficult, wearing out over time and being a maintenance problem.

Properly designed details based on system and advanced techniques , can contribute to overall design intent of the project and provide functional use and long lasting serviceability while being beautiful at their own & finally make the client happy.

Degree of changes in operations (flexibility):

All type of commercial spaces need some degree of flexibility in design for changing needs. E.g. displays in retail stores need to be changed season wise; or seating arrangement in playschool like spaces has to be changed according to various activities of children. so always it is better to have design flexibility as per demand of change .this can be achieved through some systems like modular furnitures. or it can be achieved through multifunctional interior items.

Applicability of system design:

Systems design is the process of defining the architecture, modules, interfaces, and data for a system to satisfy specified requirements. Systems design could be seen as the application of systems theory to product development. Systems design is therefore the process of defining and developing system to satisfy specified requirements of the user. In the 1990s, standardization of hardware and software resulted in the ability to build modular systems.

classifications of system design – 1. Logical design

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2. Physical design

1. Logical design : The logical design of a system pertains to an abstract representation of the data flows(bubble diagram/flow charts etc. , inputs and outputs of the system. This is often conducted via graphical or modelling of the actual system. At priminary level sketch views can work well.

2. Physical design: The physical design relates to the actual input and output processes of the system. In physical design, the following requirements about the system are decided.

1. Input requirements,(client needs & the constraints of space & situations)
2. Output requirements,(the activities worked out using that particular product or furniture element)
3. Storage requirements, for the particular product(depending upon the type of activity)e.g. a reception table will be definitely differ from that of for any architectural design student.)
4. Processing requirements, (design flexibilities like movement , rotation , tilting or rearrangement of furniture items as per activity requirements)
5. System control (ability of remodeling to original state)

The another way for system design is Rapid application development (RAD) in which a system designer produces prototypes for an end-user. The end-user reviews the prototype, and offers feedback on its suitability. This process is repeated until the end-user is satisfied with the final system. Means an interior design can show some suggestive prototype models to client to find out his exact needs and can make changes up to his satisfaction level.

System design is applicable in each & every aspect right from –

- **furniture layout**
- **partition anatomies,**
- **actual furniture design**
- **use of anthropometry & ergonomics for better workability**
- **modular approach**
- **advanced mechanism using new technologies & latest hardware systems**
- **multifunctional aspect**
- **material selection & composition**
- **flexibility**

……..taking in mind the user experiences & the constraints.

System of layouts:

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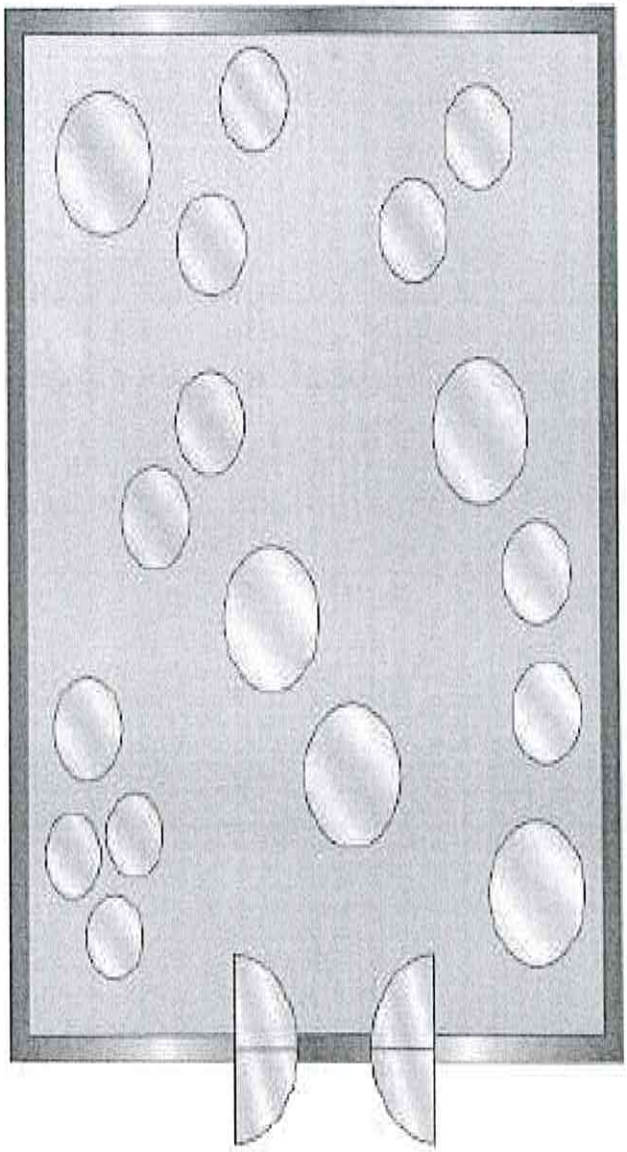
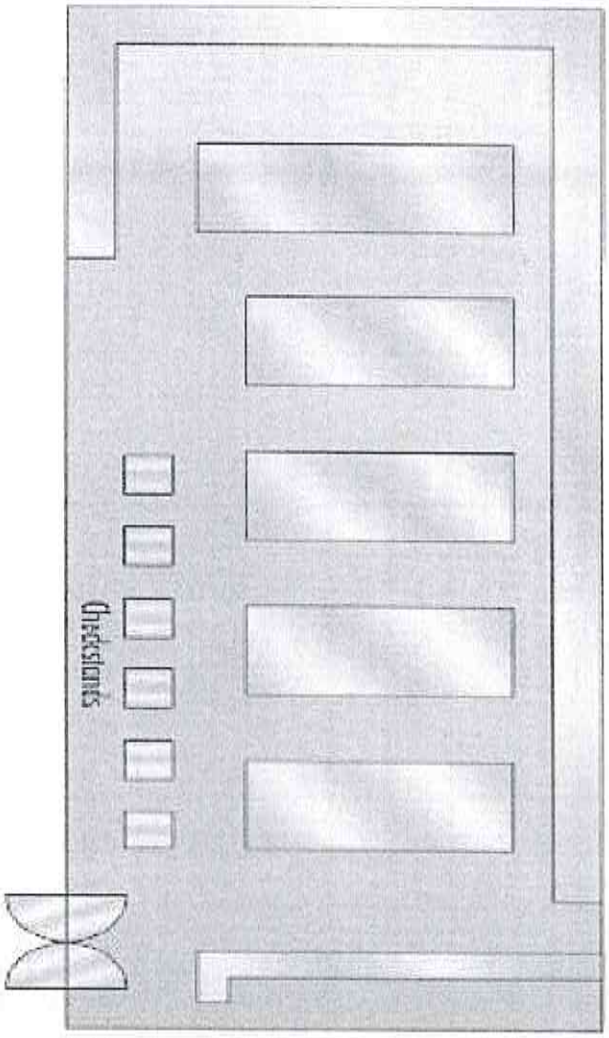
Free flow- useful in small stores….sometimes create ambiguity because of undisciplined nature.… Confusing for large spaces…wastage of space….scope of creativity.





Free flowing layout **grid layout**

Grid layout –

useful in large stores like supermarket or drug store….easy to locate products…cost effective & easily accessible for customers…no requirement of sales persons…but Recirculation can happen while shopping activity because of maze like pattern and shopping time can be prolonged…..limitations to creativity & aesthetics….can not expose shopper to greater extent.

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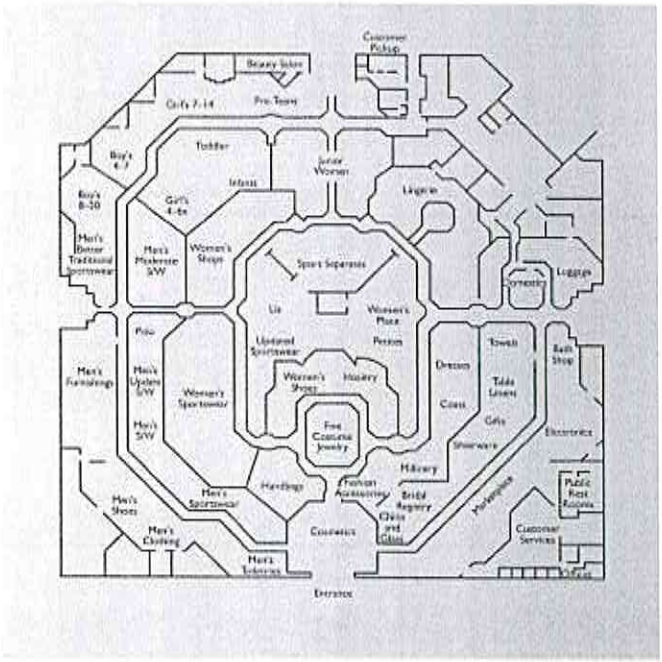

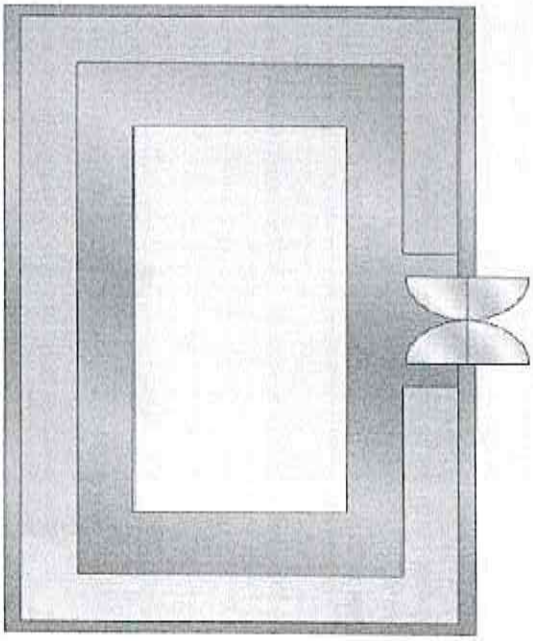

Loop layout **race track**

Loop layout-exposes shoppers to greater possible amount of products…. encourages browsing and cross shopping…. can increase the sell…. …the loop starts at the front and returns the customer again at the same place….safe and productive from the view of seller to increase the sale. ….but sometimes boring & time consuming for buyers.

Race track- simplest layout …..less possibility of cross shopping

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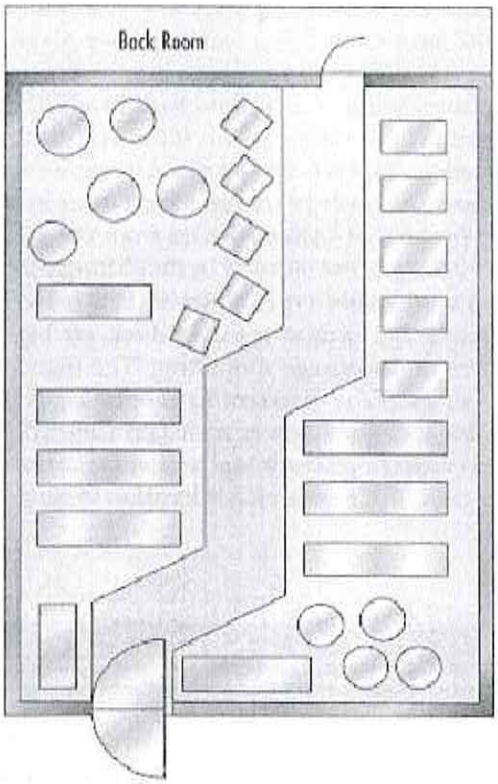
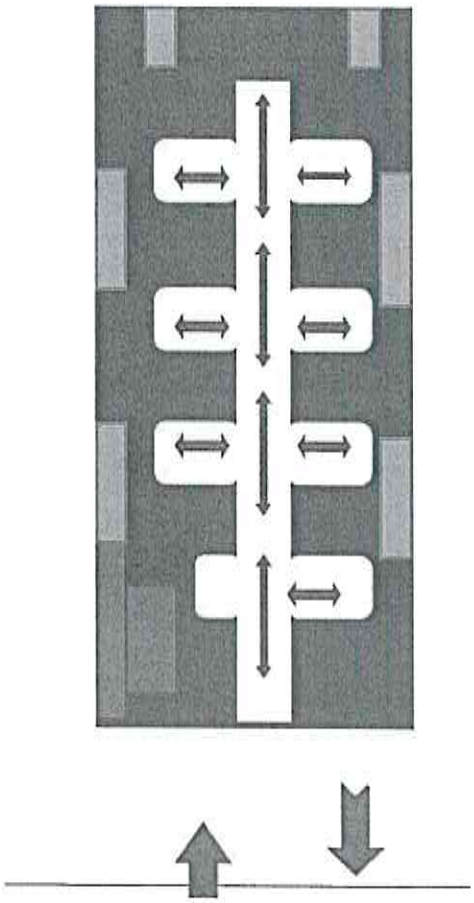
Spine layout- variation of grid, based on single main aisle running from front to back either in office or store. Heavily used by medium sized stores or offices.



spine layout



Herringbone layouts

Herringbone layouts: these are used for narrow office or store spaces, where two way highway is bisecting the store or office at its length with side roads leading to walls.

Partition anatomies:

We can have various anatomies of partitions depending upon use of their inside and outside surrounding spaces. We can treat the circulation passages or the inside & outside surroundings w.r.t.to their functionality keeping its aesthetical value.

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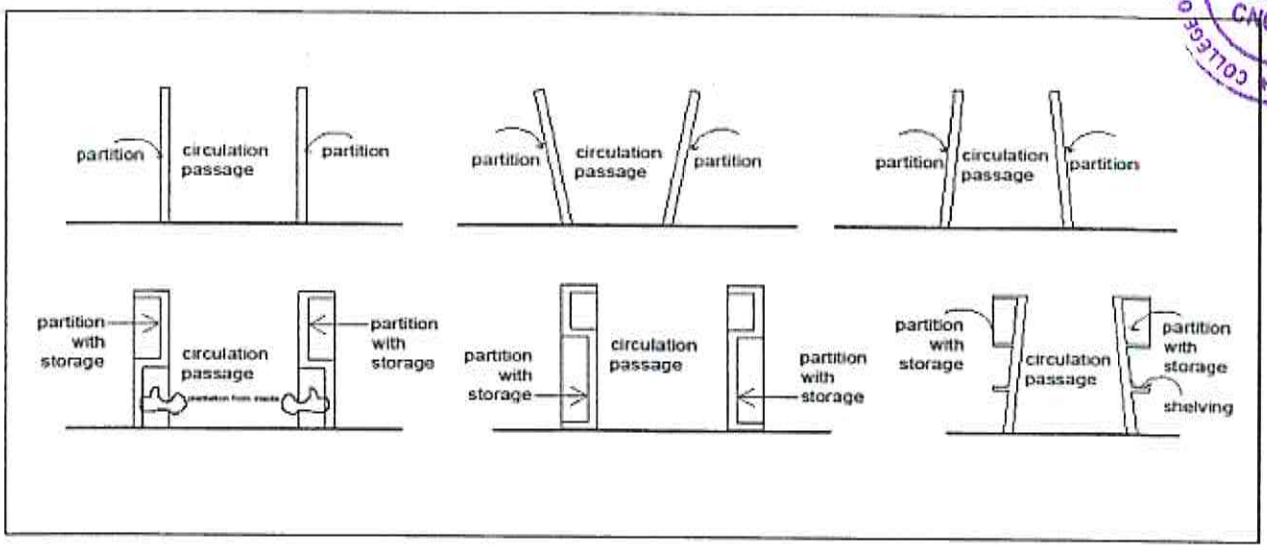
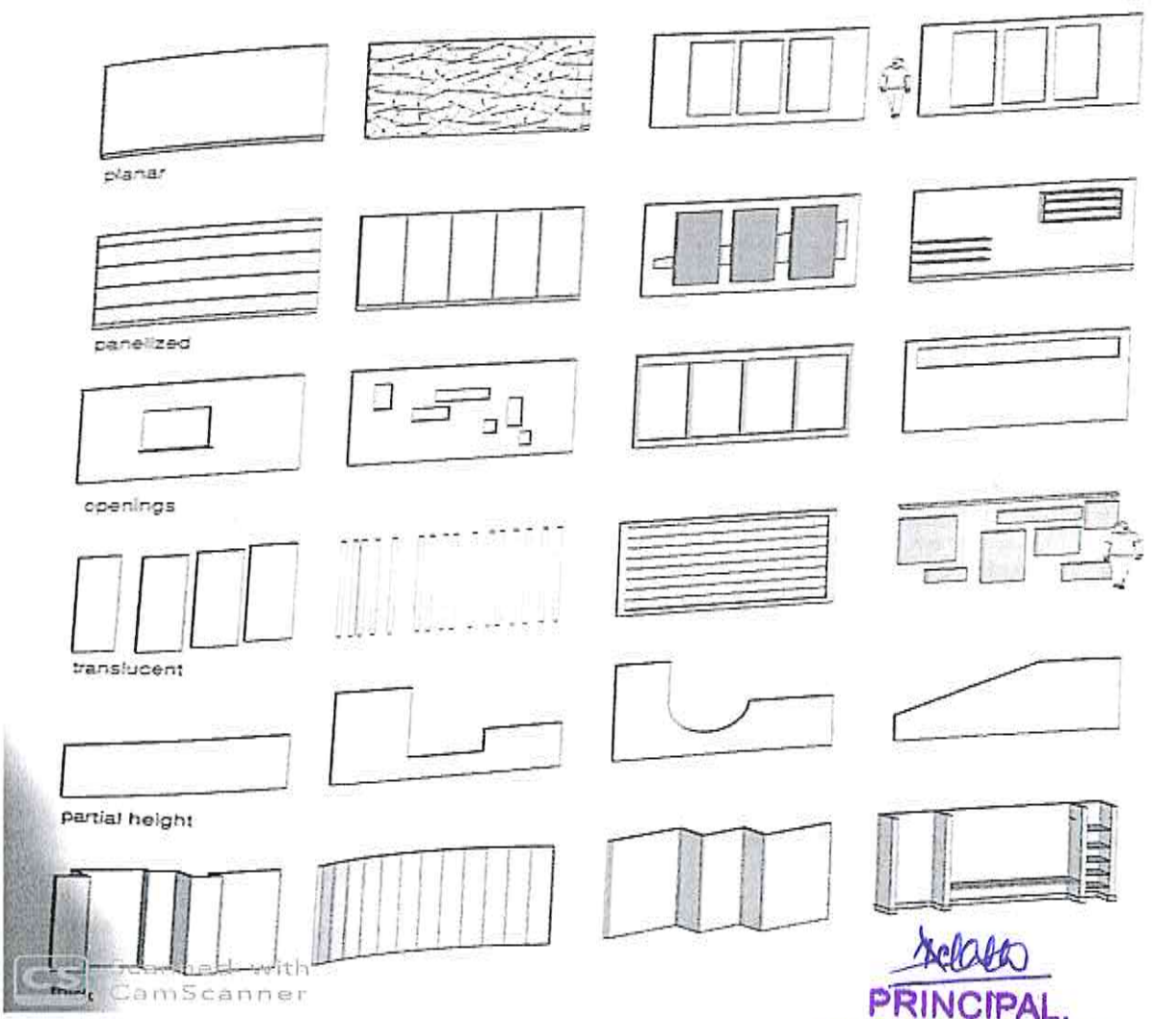


Figure 5-1 Vertical barrier concepts



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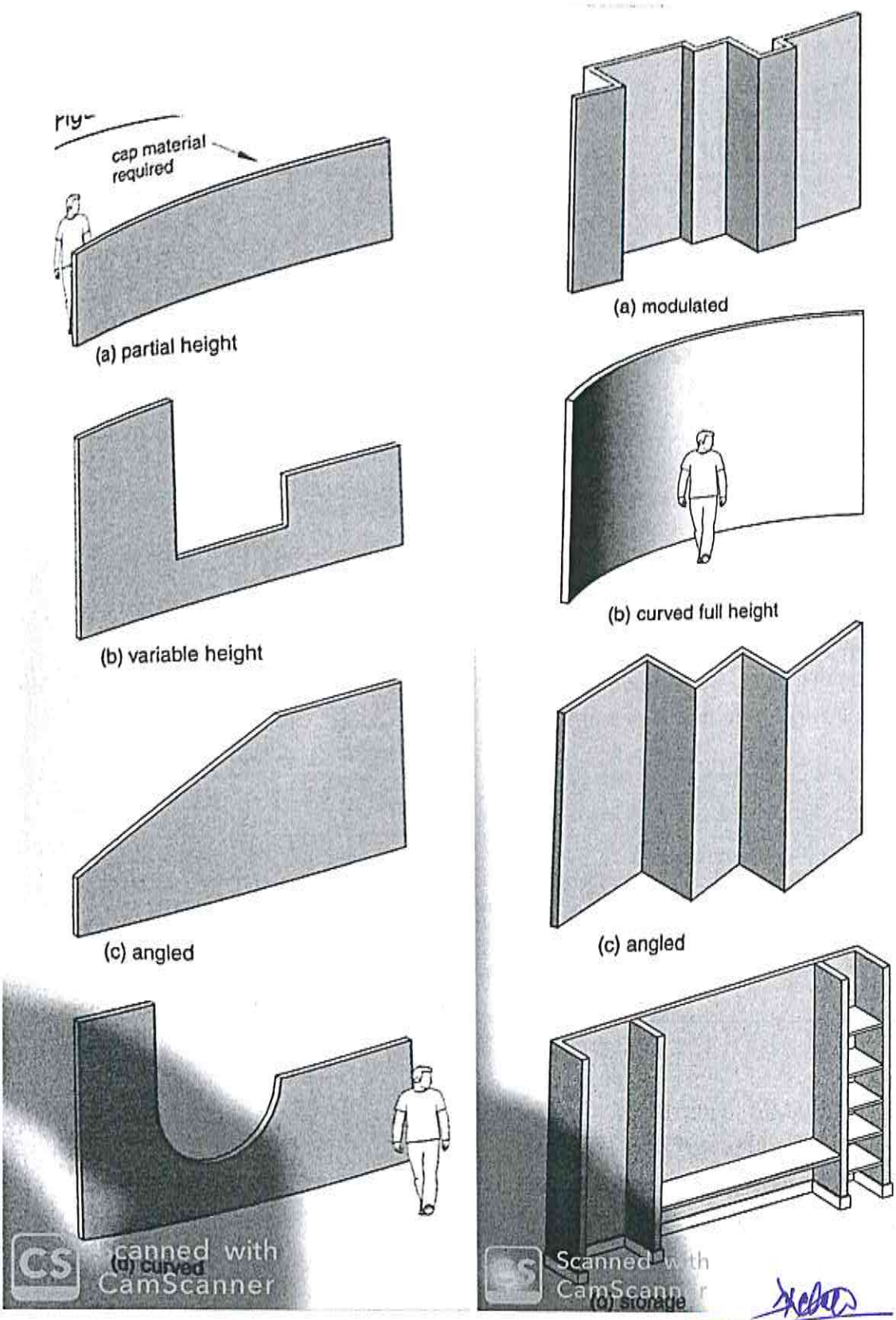

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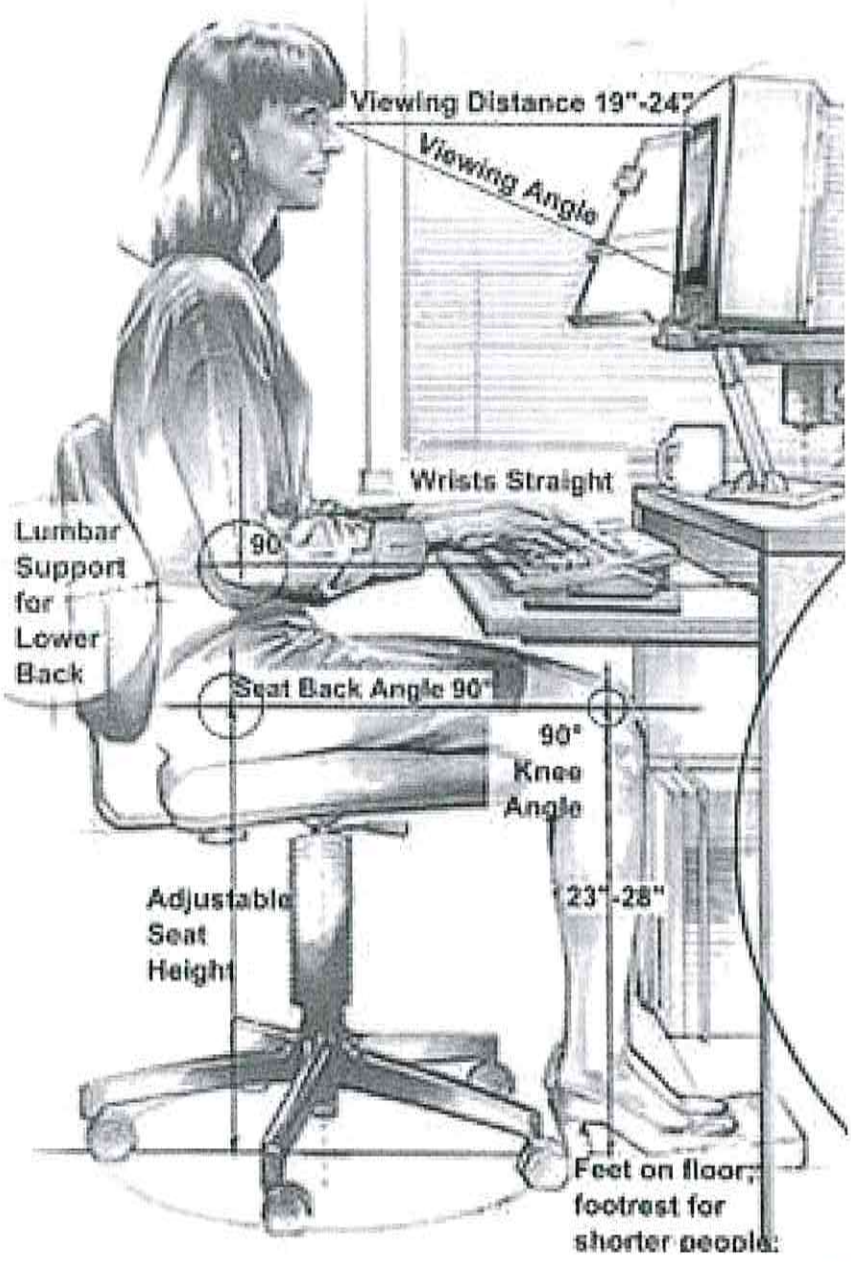
Actual furniture design: actual furniture design is to be worked out primarily on the basis of its functionality & work output. Also it should be comfortable enough to enhance patience & workability of employees .so that it should be based on anthropometric data and ergonomically worked out dimensions and standards. These days we are getting eronomically safe designed products in the market , which can be used to achieve better comfort levels.

Ergonomic Mantra : Ergonomics is the study of workplace, making it suitable for people working it . it helps to understand the appropriateness , reach, clearance, adjustability , personal space, appropriate & easy use, taking in mind other constraints and surroundings.



Ergonomically safe keyboard

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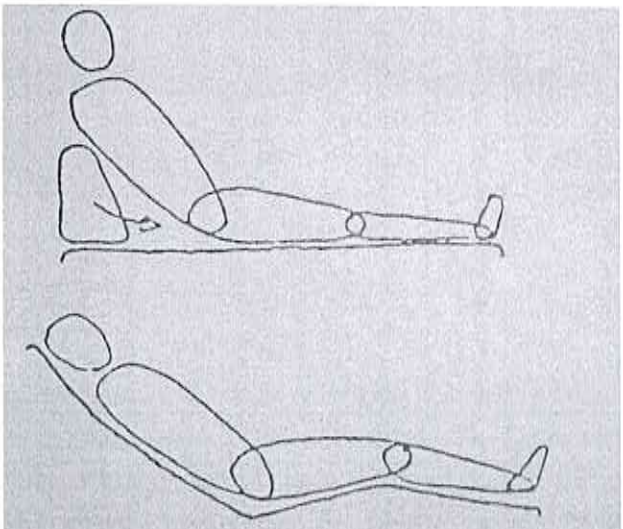
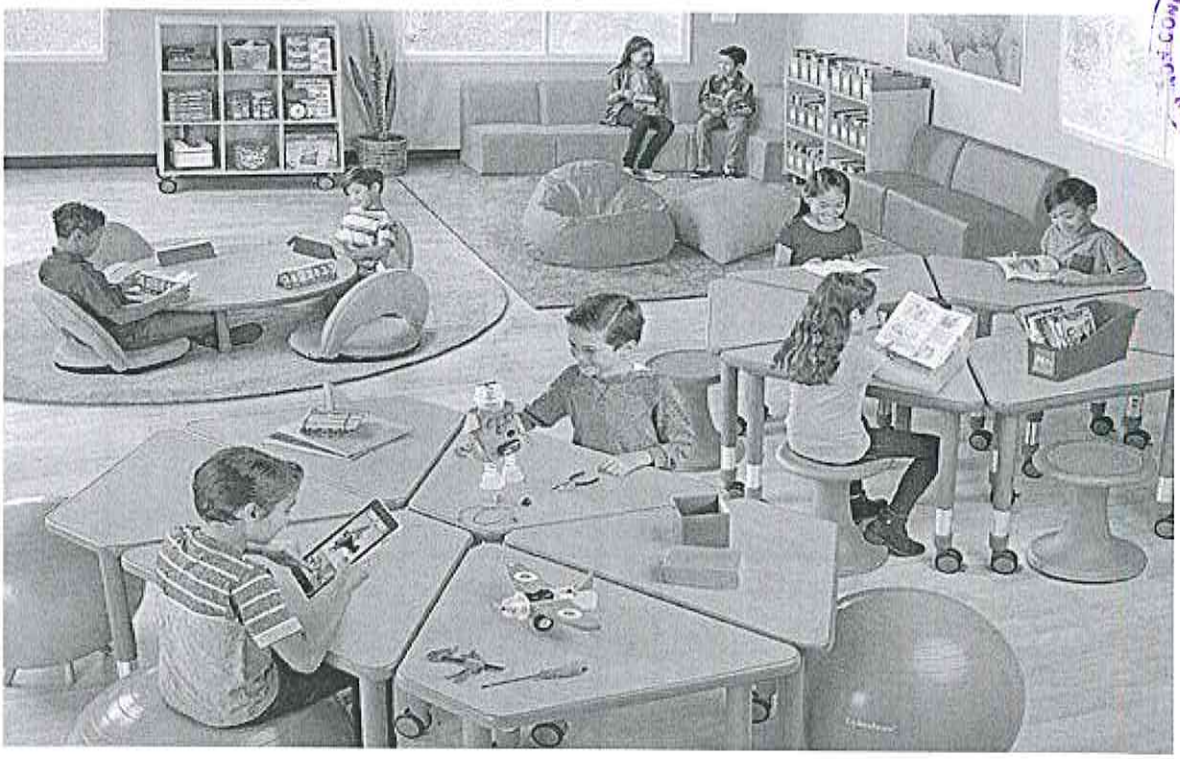


Sitting on a flat surface such as a bed (above) is certain to cause uncomfortable "slump." Contoured surface (below) avoids the problem, but dictates a particular posture.

Modular & multifunctional approach :

Modular design, or modularity design, is a n approach that subdivides a system into smaller parts called modules , which can be independently created, modified, replaced or exchanged between different systems.



The tables in this playschool can be rearranged in various ways for various types of activities.

Through such things functional interiors can be worked out which can definitely enhance workability of employees.

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AN INTERNATIONAL JOURNAL OF CONTEMPORARY STUDIES VOL 6, ISSUE 2

INTERIOR FINISHING MATERIALS A REVIEW PAPER

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ABSTRACT

Finishing can be defined as the final layer which protect and fix the surface of the building elements. This layer plays an important role in visual and psychological definition of interior space. At the period of traditional building techniques; buildings were usually produced by traditional materials such as stone, wood and adobe. They were used uncoated or sometimes plastered. After the transition to modern building techniques; the building section got thinner and new layers had to be added in order to provide comfort requirements. Consequently finishing layers were needed. The main purpose of finishing layer is to fix the surface. Also it is essential to coat wall, floor and ceiling in order to create a suitable appearance and to protect the construction from effects of water, heat, moisture, abrasion
Key Notes: *finishing, building, layer, material, techniques*

1 INTRODUCTION

After the improvement of new building techniques, interior space gained importance. In order to create an esthetic and durable interior space, some factors had to be taken into consideration. At the prehistoric age, human beings built huts in order to defend themselves from environmental factors and other living creatures. They were the first architectural samples. In order to build these huts simple materials, which can be gathered easily from the environment, were used. Afterwards different construction techniques developed and the building materials also improved and evolved. At the beginning, construction and strength of

the building were of prime importance and space phenomenon did not developed. The layer which was created to provide these features is called "finishing layer". Finishing layer has to be esthetic, durable and strong. Also in recent years, ecology of the building and finishing materials have gained importance in order to protect the user health and ecological balance of the world.

The purpose of this study is the classification of finishing materials according to their place of use and identifying important performance criterion needed under different conditions. Different applications of frequently used finishing materials were examined by emphasizing their visual and ecological properties.

2.1. Wall finishing

The prior function of wall is to separate spaces from each other vertically, but depending on the structural system of the building it may also carry loads. Wall has to protect the space against the effects of water, moisture, heat, noise, light, fire, etc. Wall section can be analyzed in three layers; interior coating, core and exterior coating (Figure 1). Some walls can be formed by one layer while some of them are formed by three layers. For instance, exposed concrete is formed by one layer, but brick walls are formed by three layers

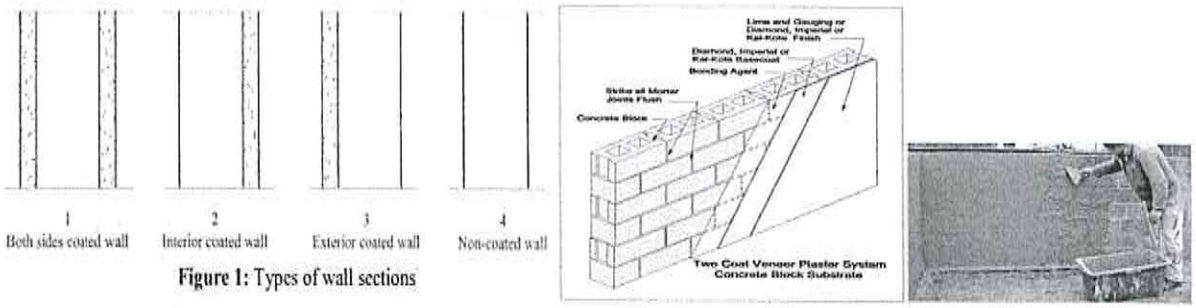


Figure 1: Types of wall sections

Different building materials can be used as interior finishing. Plaster, paint, wood, gypsum panel, sandwich panel, ceramic, natural stone, artificial stone, glass and metal can be used as wall finishing materials.

2.2. Floor finishing

It also has to be resistant to some effects such as; heat, water, moisture and noise, according to its location in building. Floor's section can be analyzed in four layers; floor coating, base, structural system and ceiling coating (Figure 2). The most important layer is structural system and the others support it. Floor and ceiling coatings are finishing layers and have to create a visually and functionally favorable impact. Floor is the horizontal structural element of the building. The prior function of floor is load-bearing. It increases the strength by connecting

the walls in solid masonry systems. At skeleton systems it has to carry its own load and transfer it to the system.

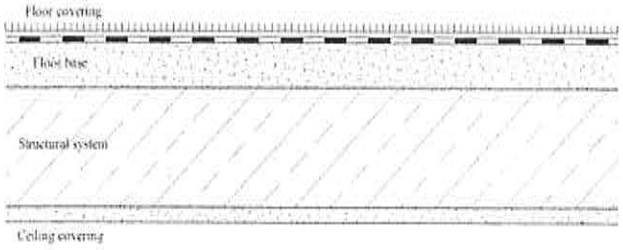
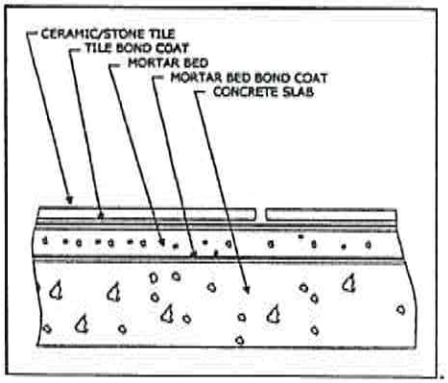


Figure 2: Floor section



Floor coating is the upper layer of the floor. It has to protect the layers below and has to be appropriate with the function of the space. Therefore, while choosing floor coating; primarily the function of the space and user requirements has to be determined and the selection has to be made by taking these factors into consideration.

2.3. Ceiling finishing

Suspended ceilings are usually composed by a hanging system and a finishing material. Hanging system is installed primarily and then the finishing material is installed to the system (Figure 3, 4). Hanging system is usually composed from metal. Finishing material can be gypsum, metal, wood, ceramic, glass, etc.

Ceiling is the lower part of the floor. If it does not have any equipment, such as HVAC or installation, it is usually straight and can be solved easily. But if the ceiling has an acoustic, HVAC, lighting or sprinkler system equipment on it, a suspended ceiling has to be created in order to hide the system.

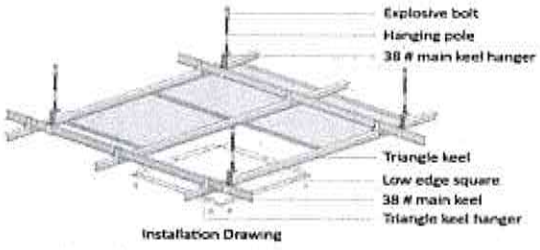
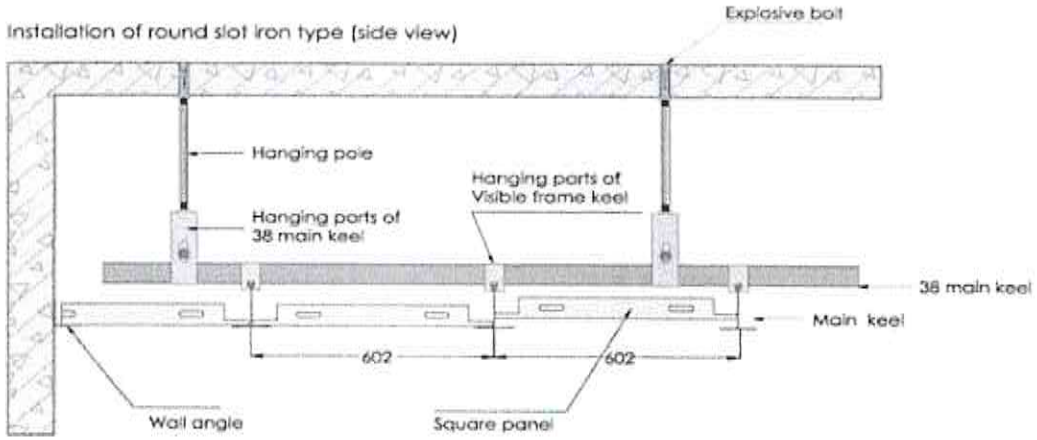


Figure 3: Suspended ceiling detail

Figure 4: Installation of suspended ceiling

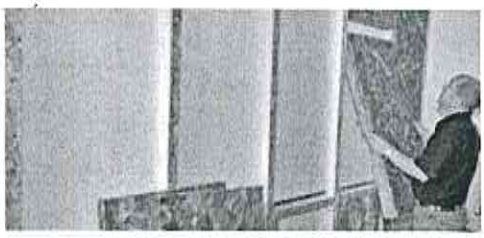


3. Performance Criterion Required For Interior Finishing Materials

Therefore finishing materials have to be resistant to mechanical effects and the selection has to be done according to the material's strength properties. In order to protect surface properties and user's safety, finishing materials must have a sufficient compressive strength, impact resistance and walking safety.

Generally the most important criterion for a finishing material is to have appropriate visual appearance with the function of the space and proper texture and color with the users requirements. Besides there are some other criteria they should have. Finishing materials are usually affected by the mechanical factors because of the 608direct contact with the user. Floors and walls can be damaged by the furniture or objects.

In order to provide the comfort conditions, finishing materials have to be resistant to some physical effects. It has to ensure thermal comfort if the core doesn't have enough insulation properties. An internal insulation layer has to be added in such cases (Fig. 5).



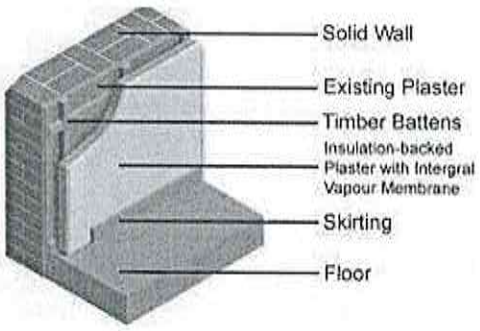


fig. 5. Internal insulation application

Interior finishing materials have to allow vapor movement to prevent condensation and mold problems, and if necessary a vapor barrier has to be added. Also additional precautions have to be taken to prevent water intrusion from the interface of the materials (Fig. 6)

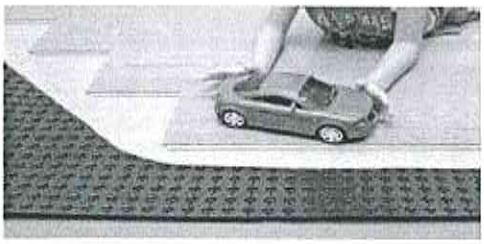


fig.6. Vapor barrier on floor interior finishing materials should absorb the noise and provide the acoustic balance of interior space. Appropriate detail solutions have to be suggested at crowded spaces such as theaters, schools and offices. Usually porous and soft materials are used for acoustic solutions to increase absorbance.

Finishing materials also have to be dimensionally stable, resistant to chemicals and sunlight, easy cleanable and durable. Recently due to the environmental concerns it is recommended to use sustainable, local and recyclable materials in order to reduce energy and consumption of natural resources.

4. Interior Finishing Materials And Installation Techniques

Today there are hundreds of products which can be used for this purpose. In this part of the study, the types, general properties, application techniques and environmental properties of interior finishing materials are discussed. Interior finishing materials visually identify and reflect the character of the space. 609A lot of materials had been used for this purpose for centuries. Although these materials were limited before the Industrial Revolution, they have increased with the development of modern technologies.

4.1. Cement-based materials

Specific proportions of lime and clay are mixed and baked at high temperatures in the production of portland cement. During the baking process clay and lime components forms cement clinker. 2 to 3% of gypsum is added into clinker in order to adjust the setting time and then the mixture is grinded to obtain portland cement. Cement is the most common binding material nowadays. According to various sources; natural cement was produced BC 7000 and artificial cement was produced BC 5600. But the cement used today is based on 1824.Cement-based finishing materials are composed of mortar by mixing cement, aggregates, and water. They can be continuous or in tiles. Terrazzo is cement-based continuous material; while cement, terrazzo and concrete tiles are products in tiles. The upper

layer's abrasion resistance is higher than the other. Crack detailing is necessary to prevent the transmission of fractures in the concrete. After it sets the surface of terrazzo is polished (Fig. 7)Terrazzo floor is formed from a mixture of small stone pieces and cement mortar created from marble flour and color pigments. When the mixture is ready it is installed to a well leveled screed powder. Installation has to be done quickly in two layers.

fig.7. Terrazzo floor

Cement tile is installed on a well leveled clean surface with adhesive mortar. While positioning the tiles a thin gap is left for the joint. After the installation, joints are filled with grouting (Figure 8). The terrazzo tiles are formed by white and colored stones/glass, cement, paint, marble powder and water. It has an abrasion layer of approximately 1 cm and below that it has a regular mortar layer. It is installed just like cement tile and should be periodically polished


fig.8. cement floor tile

A high heat input is required in the production of cement; therefore the process causes a large amount of carbon emission and consumption of some non-renewable 610mineral and water resources. Different environment friendly combinations of alternative materials are recommended in recent years. For this purpose; blast furnace slag and industrial waste are recommended as aggregate.

4.2. Earth-based materials

Ceramics are divided into three groups according to their porosity; porous, semi porous and non-porous ceramics. The approximate cooking degree is 900°C for porous ceramics, 1150°C for semi-porous ceramics and 1400°C for non-porous ceramics. Compression strength of porous ceramic is low when compared to non-porous ceramic. Therefore its heat insulation ability is higher. Nonetheless, the compression strength of non-porous ceramics is quite high. While non-porous ceramics cannot be used for floor coating, porous kinds can be used both on walls and floorings

Baked earth-based materials are frequently used as wall and floor coatings. Ceramics are preferred to create easy cleanable surfaces and prevent condensation by controlling the vapor movement. Installation is done with cement-based adhesive mortar. Joints are left between the tiles to allow the ceramics expanse. Grouting is applied after the mortar is dried (Fig. 9).

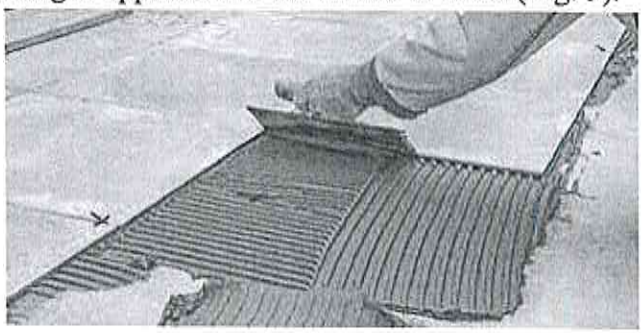
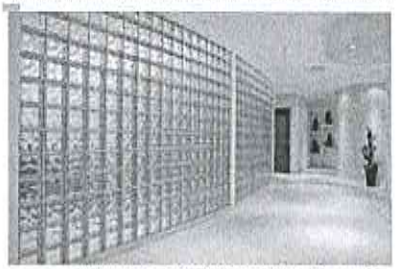



Figure 9. Ceramic tile application

4.3. Glass

Glass is formed by melting the ingredients together at high temperatures, shaping and annealing of the material. Usually floating method is used for shaping the structural glass. Glass is used in interior spaces as glass brick walls, floor tiles and mosaics. Also, glass foam can be used on walls for acoustic purposes. Glass brick is created by pressing the molten glass into a mold. Then the glass machine slowly reheats two blocks until the edges melts to join the two pieces. The molten edges of two blocks fuse forming a single block with a remaining gap between them. Glass bricks have a high thermal insulation property, it is light permeable and esthetic. Cement-based mortar is used in installation of glass bricks and grout is applied to joints after drying (Fig. 10).



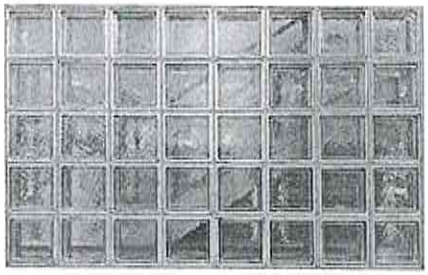
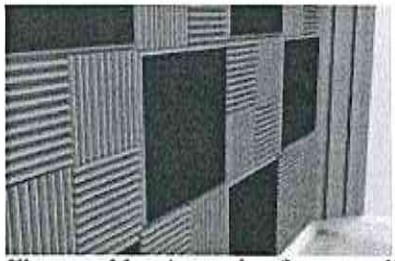


Figure 10. Glass block wall

Tempered and laminated large glass panels can also be used at floor voids. Tempering is a process applied to increase the heat and impact resistance of glass. This process is based on heating the glass to a high temperature and then cooling it quickly. Lamination is combining the two sides of the glass with an adhesive foil. When laminated glass is cracked, it does not break into pieces and also retains its surface integrity because of the adhesive in between. Glass panels are placed into floor voids with adhesives and sealing profiles. Glass foam is obtained by treatment of glass components with carbon dioxide. Glass foam is nonflammable, light, thermally resistant and dimensionally stable. It is used on interior surfaces for acoustic purposes. It is used in sound studios, shooting ranges and movie theaters (Fig. 11).



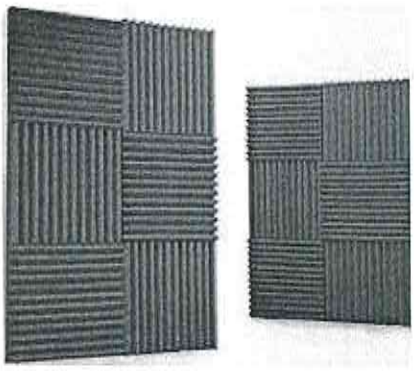


Figure 11. Acoustic foam wall covering

Sand which is the raw material of glass is economic and easily be found. It is also a highly recyclable material. The biggest concern is the large amounts of energy spend during the

manufacturing process. In addition to this, the treatment of glass with acid and sand is harmful to the environment.

4.4. Metals

The most important problem about metal is corrosion reasoned from water vapor and oxygen. This can be solved by periodic painting or using alloys. Alloys are obtained by melting and mixing two or more metals in order to increase the strength and resistance of metal. Metals are resistant and shiny materials obtained from the mines. Metal has a high heat and electric conductivity due to its regular atomic structure. This also leads to a high compression and tension strength value. Metal wall cladding panels are usually produced from aluminum in different dimensions. They are installed on metal profiles. Ceramic-like metal tile and mosaics are produced from stainless steel, copper, aluminum, and zinc. They are installed like ceramics (Fig. 12)

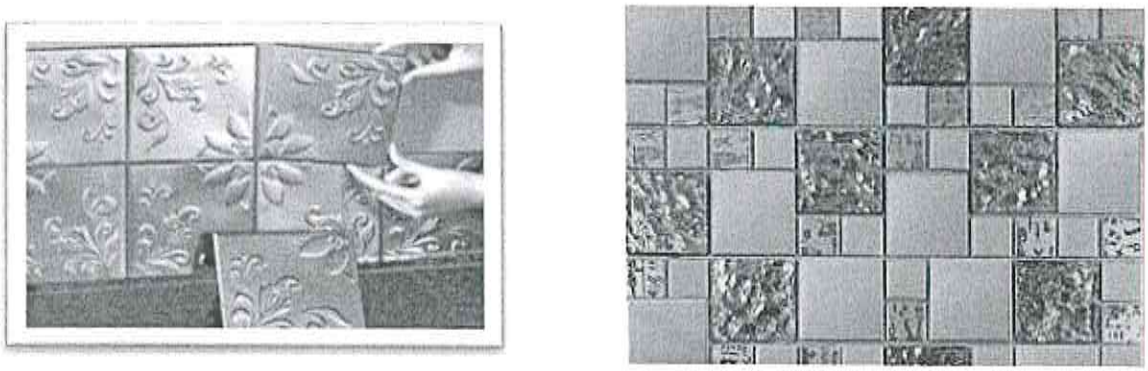


fig. 12. Metal tile

Metal can also be used on the ceiling as a suspended ceiling material. It is used at both hanging system and finishing material. Metal profiles, screws, straps and strips are used for the hanging system. Different sized and formed metal panels are used as finishing materials.

4.5. Polymers (Plastics)

Polymers are divided into two groups according to their thermal behavior; thermo sets and thermoplastics. Thermo sets doesn't soften and melt when they are heated, after a certain temperature they begin to break down. They can only be formed during polymerization. Thermoplastics are solid at room temperature. They soften and melt when they are heated without breaking down.

Plastic is produced by processing carbon (C) with hydrogen (H), oxygen (O), nitrogen (N) and other organic or inorganic elements. Plastic is not found in nature, but obtained by the

treatment of natural elements. 613Plastics were firstly produced and used in the late 19th century. The high resistance against environmental factors, low cost and the unlimited production forms has increased its usage area and production amounts. Polymer floor coatings are manufactured as tiles or rolls. They are installed to a fine leveled surface with glue (Fig. 13). Epoxy is a mixture of synthetic resin, aggregate and pigment. They are applied onto smooth surfaces in two separate layers. Stretch ceilings are usually created with PVC fabric and installed to an aluminum ceiling mounted frame. The lightness, easy installation and light transmission features increase its frequency of use. Although plastics can easily be produced, have a high product range and prevalence of use; still it cannot dissolve in nature and is a non-ecologic material. Also it causes a high carbon emission during production and use. The best method for producing environment friendly plastic is biodegradable plastic. This material easily decomposes in nature. Recently biological materials such as corn and starch are used in order to produce biodegradable plastics

figure 13. PVC tile application

4.6. Natural stone

Natural stones are used as wall and floor coating material in interior space. Two different methods are used in wall installation. At the first method the material is directly installed to the wall with cement mortar, the second is applied to a metal supporting system. In interior coatings direct installation is preferred. Porous stone types such as travertine and sandstone has to be used in order to increase adherence. Precautions should be taken to prevent the stones from falling before the mortar has hardened. Natural stones are obtained by cutting the solid layer under the soil. It has been used as a structural and coating material in building for centuries. It is preferred because it is resistant to environmental factors, has a high abrasion resistance, impact strength and has a low absorption rate.

On the other hand in spaces where there is low human traffic, softer stones can be preferred such as marble and limestone. Installation is made with cement based mortar. After the coating is dried, grouting is applied to joints and then polished (Fig. 14)

figure 14.Marble tile application

4.7 Wood and wood composites

Wood is the material obtained by sawing tree trunk. The properties of the wood are directly affected by many things such as the geographic area where the tree is grown, climate, orientation, amount of the water in the soil. Therefore each material produced from wood has its own characteristics.

From the prehistoric times wood is preferred due to its strong, lightweight, easily processed structure. It is mentioned at various sources that wood has been used for different purposes in ancient Egyptian, Greek, Roman and Chinese civilizations. It had been used as construction, coating and furniture material in forestry regions; and in less frequent regions it has been used as door, wall panel and furniture.

The organisms settle into wood and decrease its strength. Wood should be dried properly, strong species should be selected and chemically treated wood should be used in order to prevent biological deterioration. Chemical treatment can be defined as saturation of wood with chemicals. The life of wood can be increased from 8 years to 20 years by chemical treatment (Fig. 15)

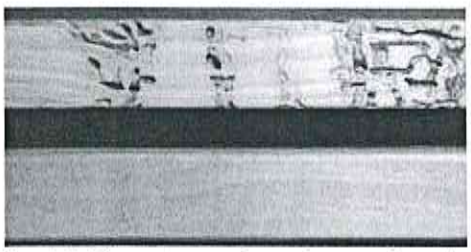


fig 15 Non- treated and acetylated wood under biological attack

Wood is one of the most common coating materials in interior space. It can be used in different dimensions of panels on the wall. Solid wood panels are often produced in 8-12 cm dimensions (Fig. 17). They are used in small dimensions because of the movement of wood.

However, it is possible to manufacture large sized composite wood panels. They can be produced from fiberboard and particleboard. Both panels are installed on metal or wood strips. Wood floorings are divided into two groups; tongue grooved wood floors and parquet floors

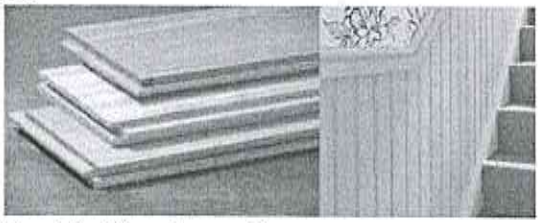


fig. 17. Wood paneling

5 CONCLUSION

This research shows that there are general criteria that Should be considered when selecting the material. These are classified as artistic, technical, functional, aesthetic, economic, and environmental, which are usually considered according to the reality and requirements of every project. This in addition to the need for considering other criteria that were classified by researchers as special criteria related to the design in interior spaces. These criteria exceed the characteristics of the material as an independent design element, to be related to the fact of interaction of multiplicity of materials in the designed space and the quality of the resulting sensual effects at the sight, touch, and hearing level. While focusing on defining the method of distributing the materials for the project, with respect to quantity and quality, and define the extent they relate. Together in building a functional and aesthetic system in the space.

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3.3.3 Number of books and chapters in edited volumes/books published and papers published in national conference proceedings per teacher during last five years (10) (2020-21)

Name of the teacher	Title of the book	Title of the proceedings of the conference	Name of the publisher	Year of publication	National/ International	ISBN/ISSN number of the proceeding
Ar. Amarr N Mestry	International Journal in Contemporary Studies ISSN 2456-0960, Volume 6, Issue 2 Journal Impact Factor 3.18	International Journal in Contemporary Studies ISSN 2456-0960, Volume 6, Issue 2 Journal Impact Factor 3.18	International Journal in Contemporary Studies ISSN 2456-0960, Volume 6, Issue 2 Journal Impact Factor 3.18	(April – June 2021)	National	ISSN 2456-0960, Volume 6, Issue 2, Journal Impact Factor 3.18
Ar. Samruddhi Chitnis	International Journal in Contemporary Studies ISSN 2456-0960, Volume 6, Issue 2 Journal Impact Factor 3.18	International Journal in Contemporary Studies ISSN 2456-0960, Volume 6, Issue 2 Journal Impact Factor 3.18	International Journal in Contemporary Studies ISSN 2456-0960, Volume 6, Issue 2 Journal Impact Factor 3.18	(April – June 2021)	National	ISSN 2456-0960, Volume 6, Issue 2, Journal Impact Factor 3.18
Ar. Guruprasad Yernalkar Ar. Guruprasad Yernalkar	International Journal in Contemporary Studies ISSN 2456-0960, Volume 6, Issue 2 Journal Impact Factor 3.18	International Journal in Contemporary Studies ISSN 2456-0960, Volume 6, Issue 2 Journal Impact Factor 3.18	International Journal in Contemporary Studies ISSN 2456-0960, Volume 6, Issue 2 Journal Impact Factor 3.18	(April – June 2021)	National	ISSN 2456-0960, Volume 6, Issue 2 (April – June 2021), Journal Impact Factor 3.18
Ar. Nirali K Gilbile	International Journal in Contemporary Studies ISSN 2456-0960, Volume 6, Issue Journal Impact Factor 3.18	International Journal in Contemporary Studies ISSN 2456-0960, Volume 6, Issue Journal Impact Factor 3.18	International Journal in Contemporary Studies ISSN 2456-0960, Volume 6, Issue Journal Impact Factor 3.18	(April – June 2021)	National	ISSN 2456-0960, Volume 6, Issue Journal Impact Factor 3.18

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Dr. A.R. Kulkarni	Discovering Healthy Foods through Food Processing & Nutrition	Discovering Healthy Foods through Food Processing & Nutrition	Discovering Healthy Foods through Food Processing & Nutrition	2019-20	National	978-93-5406-329-9
Mrs. Jyoti Hiremath	National Seminar on Significance of Co-curricular and Extracurricular and Extension Activities in Higher Education	National Seminar on Significance of Co-curricular and Extracurricular and Extension Activities in Higher Education	National Seminar on Significance of Co-curricular and Extracurricular and Extension Activities in Higher Education	2019-20	National	2349-638x
Dr.Giraje Nilam	Indian Journal of Public Health Research and Development	Indian Journal of Public Health Research and Development	Indian Journal of Public Health Research and Development	2019-20	National	0976-0245
Priyanka Magdum	Indian Journal of Public Health Research and Development	Indian Journal of Public Health Research and Development	Indian Journal of Public Health Research and Development	2019-20	National	978-93-86578-49-5
Mrs. Jyoti Hiremath	Multi-disiplinaryApprochTowordsSustanableDevlopment	Multi-disiplinaryApprochTowordsSustanableDevlopment	Multi-disiplinaryApprochTowordsSustanableDevlopment	2019-20	National	978-93-5406-329-9
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S.P. khandekar	Discovering Healthy Foods through Food Processing & Nutrition	Discovering Healthy Foods through Food Processing & Nutrition	Discovering Healthy Foods through Food Processing & Nutrition	2019-20	National	978-93-81249-29-1

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Ar. Bela Shyam Joshi	Built Environment & Urban Planning 2018	Built Environment & Urban Planning 2018	Built Environment & Urban Planning 2018	2018-19	National	978-93-86435-55-2(ISBN)
Ar. Rutika Tendulkar	Built Environment & Urban Planning 2019	Built Environment & Urban Planning 2019	Built Environment & Urban Planning 2019	2018-19	National	978-93-86435-55-2(ISBN)
Ar. Rutika Tendulkar	Quality Enhancement & Skill Development in Higher Education	Quality Enhancement & Skill Development in Higher Education	Quality Enhancement & Skill Development in Higher Education	2018-19	National	978-93-5351-464-8
Ar. Santosh Alwekar	Quality Enhancement & Skill Development in Higher Education	Quality Enhancement & Skill Development in Higher Education	Quality Enhancement & Skill Development in Higher Education	2018-19	National	978-93-5351-464-8
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