

International Journal of
Education and Research

NEW FRONTIERS IN EDUCATION

A Peer Reviewed & Refereed Journal

ISSN: 0972-1231

Vol 55 No. 4, Oct-Dec 2022 and Vol 56 No.1, Jan-March 2023

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**International Journal of
Education and Research**

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New Frontiers in Education

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Frequency:

Quarterly

Annual Subscription:

Rs 1000/- (India)

USD 100.00

Published by:

New Frontiers in Education Trust,

All India Association for Higher Education, New Delhi 110058

Note: Opinions expressed in the articles are those of the contributors and do not reflect the views and policies of the Association.

Printed at:

**Bosco Society for Printing & Graphic Training
Okhla Road, New Delhi - 110 025, Mob. : 98101 57 244
E-mail: boscopress@gmail.com**

This Issue Contains

| | |
|---|-----------|
| Urban Environment And Its Impact On Climate Change In Madurai Region Poornima Sethupathi, R, Sarah Evangeline, J | 09 |
| Environmental Influence Of Paper Consumption And Initiatives Of E-Learning Ashok Varghes, Sudaliamuthu, T. | 17 |
| The Blue Economy: PersepctivesAnd Relevance Rev. Dr. Gilson John | 23 |
| Climate Change And Sustainable Development Goals Maya V H, Vannela N | 30 |
| Renewable Energy For Sustainable Development Mary Cruz | 36 |
| Applicational Perspectives Of Science Process Skills In Enhancing Science Learning JebahSuganthi.S, Prabhu Shankar.S. | 40 |
| Education As Character Formation Francis P Xavier Sj, Loyola Campus, Chennai | 55 |
| Teaching/Learning In The Post-Pandemic Scenario. Kala S.J | 60 |

URBAN ENVIRONMENT AND ITS IMPACT ON CLIMATE CHANGE IN MADURAI REGION

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Abstract:

E-learning and teaching is fast recent trend in world wide. E-learning is one of the ways of Digitalization and even modernization. ICT generation and adaption procedure is proposed for effective teaching and learning process to handle different subjects. The different E-sources were changing the way of communication technology with making of videos various tools used for effective teaching learning method. ICT is a combination of digital with social media into a presentation to convey a message to students. To develop a knowledge society, it is essential to integrate. ICT at all levels of education system. A Good quality of teaching can students to involve learning and make more interesting. Teaching and learning are the two sides of a coin. Teaching is complex and demanding work that requires highly specialized skills and knowledge to impact significantly on student learning.

Keywords: E-learning, Content, Teaching, Sustainability, information communication and technology

Introduction

Urbanization is increasing in both the developed and developing countries. However rapid urbanization, particularly the growth of large cities and the associated problems of unemployment, poverty, inadequate health, poor sanitation, urban slum and environmental degradation pose formidable challenge in many developing countries. "Urbanization or urban drift is the physical growth of urban areas as a result of global change". "Urbanization is the outcome of social, economic, political developments that lead to urban concentrations and growth to large cities, change in land use and transformation of rural to metropolitan pattern of organizational governance".

In this paper the researchers pays more attention to the role of urban environmental issues changes weather pattern in Madurai region. The researchers present empirical findings in

the urbanization that led to larger human impact on climate change as well as environmental awareness and attitude towards the conservation. Main purpose of this study is to make everyone think severally and collectively to evolve a mechanism as urgently as possible to preserve the environment in this specific study region.

Aims and Objectives:

- To analyze the urban environmental problems in Madurai.
- To bringout the environmental impact of change in weather in Madurai City.
- To findout the schemes to reduce pollution and preserve environment.

Literature Review:

Laish.S.K,(2006) Environmental Act in India, approach and its management, this book gives a detailed account of environment definition and components and basic needs to protect environment. The author strongly stresses the way to control this pollution then only it will be sustainable. So, he highlighted some of movements which were organized by local people foreg; Chipko, Appiko, Narmada Bachao Andolan, Silent valley project etc. identifies pollution and control measures adopted by the Indian Government.

Sengupta and Smitha (New Delhi, 1988), Residential pattern of suburbs, he emphasizes on to this emergence of urbanization and in the name of modernization new residential pattern changed in world scenario. According to the suburbs they mainly settled for accessibility, water availability and other facilities. The author's clearly explained about the rural migrants settled for the needs it brought over crowdies and it lost its ecology and environment as well as even traditional values.

Keita Smit, 1975 : Principles of applied climatology, this book widely discusses about climate change due to urbanization and mainly industrialization due to vehicle omission, pollution, changing of weather pattern all this major problem led to climatically change world scenario. Certain planning and principles to control over the weather pattern especially level of temperature, reduce ozone layer depletion.

Indian Meteorological department in Madurai and Chennai- the collected climatological data and change of weather pattern report for Madurai district and the data for the specific period is available 1958-2000.

The other data from census of India reports pertaining to demographic characters for 1951 to 2011 all the base for the analysis of population. The details in functional services and

establishments, assessed land value and taxes for different functions are collected from Madurai Corporation. Apart from this details regarding to the infrastructural services and amenities are collected from the zonal offices of Madurai Corporation. Data related to water quality are collected from PWD and city transport services related information are gathered from the gazetteer and other published materials also from the basis secondary data.

Perception of the respondent in Madurai

The researcher has selected residents from in around Madurai city.

To understand the respondent attitude towards the infrastructural development like accessibility, water availability and to identify the factors influencing the environmental degradation in Madurai city like population explosion, pollution, weather pattern, encroachment and agricultural field converted into residential area as well as industrial and other development.

To obtain the desired information from the respondents, a list of questions related to the facilities available in the Madurai were provided to the respondents. The respondents were selected through random sampling technique on the basis of its location and extension area, upgrade to Municipality and town Panchayat status, Corporation limit and town panchayat status, corporation limit wards and total number of respondent is 100 selected randomly.

Twenty attributes related to environment level, ten attributes related to location of the resident and basis amenities facilities and five questions are related with development and advantages of urbanization were analyzed using table some result is presented in the study.

Statement of the problem:

The human settlements of Madurai has been develop due to urbanization for the past fifty years, but it's have more negative than positive.

Major urban- Environmental issues of Madurai city

- Main problem of Madurai city is facing water scarcity and another major problems is congested roads and central area of the city.
- Air and water and noise pollution because high density of residential area within the four walls streets around the Meenakshi Amman Temple.
- Absence of organized commercial areas and shopping centers with sufficient parking and storage facilities. Inadequate core services of water supply, drainage, traffic and transportation.

- Ill designed traffic junctions, banks, railway lines and highways.

The unchecked large scale migration or rural people to urban areas has rapidly increased the population and has resulted in various environmental and health problems. Urban areas comprise three major components; Man, culture and environment.

An understanding of the dynamic interactions among these components facilities to form an urban eco-system. The social, economic and environmental problems ranging from housing problem, congestion, water and power shortage, development of slums, urban poverty and problems of person and social disorganization has deter located the urban environment and paved the way for many health hazards. The disruptions in urban environment lead to resource deterioration, biological, chemical and social disruption apart from physical and visual impairment. The effects of environmental degradation have brought about changes in micro climate, material damage and health hazards. The unchecked growth of industries in urban areas has also paved the way of air, noise and water pollution. Disposal of industrial effluent has become a great health hazard in and around the industrial pocket in urban areas. The sewage and solid waste and water disposal has also generated new urban problems. The major problems of urban areas are in balanced development, acute shortage of housing, highly congested central areas, high density of residential areas in old town/cities and absence of organized commercial areas and shopping centers, inadequate core services of water supply, drainage, traffic and transportation and growth of industries, narrow roads, development of slum, increase in rental values, high land values, power shortage, increase in urban crime and increase in urban hazards Corporation and Tamilnadu Tourism Development Corporation were built along the Alagar koil Road. A number of new housing colonies were developed in K.K. Nagar, D.R.O Colony, Anna Nagar, Karpagam Nagar, Thendral Nagar, Ellis Nagar along the periphery of the city has its development along the Alagar koil road, Natham road, Ramanathapuram road and Avainyapuram road in a linear pattern of development. Further already the existing open industrial estate and industrial training centre was started in between Melur Road (Trichy Road) and Alagar koil road. The housing board, Residential colony was developed in the Race course area along the Natham road.

A large number of Administrative office such as life insurance corporation of India (L.I.C) Income Tax Office, Commercial Tax Office Tallakulam, Head post office and telegraph office, Corporation, district court, University office (Alagar koil road) etc. Were built along the Northern part of river Vaigai due to availability of large open space. The Meenakshi Government College was started in the panagal building on the Northern bank of river.

Pollutions in Madurai city

The major roads are affected by air and noise pollution due to discharge of exhaust and honking from light and heavy vehicles, two wheelers and three wheelers on West veli, North veli, Panagal, East veli, South veli, Ramnad, Kamaraj and Alagar koil road. In these roads the air and noise pollution ranges from to very high. The noise pollution levels range from 85-95 decibels during peak hours. Noise and dust Tamilnadu pollution control board, eminent air quality standard for on industrial areas is 75 decibels, for a residential area it is 55 and for silent zones like hospital localities, it is 50 decibels. The average sound level in industrial areas in Madurai is 82.9 decibels. In residential localities like Anna Nagar, KK Nagar, the noise levels were found to be 75 decibels and 74 decibels respectively. In Goripalayam, where the Government Rajaji hospital is situated 84 decibels was recorded. The urban crowding and traffic congestion are very high in about 17 major roads during peak hour flow due to movement of light and heavy vehicles, two wheelers and bicycles. Among them the four velis around the temple, Panagal, Munichalai, Kamaraj Salai, New Ramnad Road, Dindigul road, TPK and Alagar koil road and bypass road, Simmakal are found more congested and are prone accidents. The major accident prone roads are Alagar koil road, TPK, Periyar Bus stand, Madura college bridge even national highways the number of accidents reported varied from 333 to 551 from 1982 to 1992 and from 551 to 1242 from 2002 to 2011 the accidents level as increased in Madurai city because traffic rules are not followed by the people. The air pollution resulting from dust and sand particles is more alarming.

Temperature and Rainfall report for Madurai city

The average maximum and minimum temperature are 46°C and 20.9°C respectively for Madurai. The annual mean temperature has been generally above normal period (1960-1990) 20.90°C respectively for Madurai city. The temperature increased because of high building activities low green coverage in the city habitat especially population density increases and high urban crowding and traffic congestion. The micro climate is very much altered in the central cores of the city. The urbanization and industrial pollution in Madurai city and Environment totally disturbed by habitation in Madurai.

Temperature as on increasing trend in Madurai during summer

There is an increasing trend in average Madurai temperature in summer, based on the data a variable with the Indian metrological centre at Madurai over a period of 10 years (2000-2010) for the month of April, the daily maximum temperature recorded stood between

38.2 degree Celsius and 423 degree Celsius was recorded in 2004 as well as the temperature is on an increasing trend by 0.55 degree Celsius per year since 2004. satellite as well from IMD data it is infuse that the atmospheric temperature over the city in the last 62 years is rising. Hence the prevailing trend in summer is likely to continue in the coming years.

Table 4.0: monthly mean maximum and minimum temperature and total rainfall based upon 1950-2010 data for Madurai city.

| Month | Period | No of years | Mean temp (c) | Mean (mm) |
|-----------|-----------|-------------|---------------|-----------|
| January | 1950-2010 | 43 | 30.5 | 20.1 |
| February | 1950-2010 | 43 | 32.9 | 21.0 |
| March | 1950-2010 | 43 | 35.6 | 22.9 |
| April | 1950-2010 | 43 | 37.0 | 25.2 |
| May | 1950-2010 | 43 | 37.6 | 26.0 |
| June | 1950-2010 | 43 | 36.7 | 25.9 |
| July | 1950-2010 | 43 | 35.8 | 25.9 |
| August | 1950-2010 | 43 | 35.6 | 25.6 |
| September | 1950-2010 | 43 | 34.8 | 24.4 |
| October | 1950-2010 | 43 | 32.6 | 23.2 |
| November | 1950-2010 | 43 | 30.4 | 22.5 |
| December | 1950-2010 | 43 | 29.6 | 21.1 |

Source: Climatology report for Madurai city, Indian Meteorological centre Madurai.

Table indicate the monthly max and min temperature feature based upon 1958-2000. It has been increased due to air pollution and low green coverage in the district.

Table :Madurai city showed a different temperature pattern with the maximum atmospheric temperature standing at 38.5 degree Celsius.

| Peak area in Madurai city | Temperature Celsius |
|---------------------------|---------------------|
| Goripalayam | 41.98°C |
| Simmakal | 41.6°C |
| Arapalayam | 41.6°C |
| Palanganatham | 41.5°C |
| Arasardi | 41.5°C |
| Mattuthavani | 41.1°C |

Source: Average temperature report for Madurai city.

Table: Pollution level increased in Madurai.

| 1. | Air pollution increased smoke level | Percentage |
|----|---|------------|
| | Yes | 91.5% |
| 2. | No | 8.5% |
| | Type of smoke increased Air pollution | |
| | Vehicle emission | 64% |
| | Industrial Smog | 37.5% |
| 2. | To protect and preserve the environmental resources in Madurai District | |
| | Strongly agree | 83% |
| | Agree | 17% |
| | Strongly disagree | - |
| | Disagree | - |

Findings

Due to large influx of people for food and employment they encroached upon the vacant land and low per capita income, the dwellings of urban poor are thatched houses, small titled houses etc., without proper ventilation and sanitary facilities. The high building activities low green coverage and population density and urban crowding and traffic congestion the micro climate is very much affected in the central core of the district. There is an lay temperature and carbon dioxide and carbon monoxide is high and there is a slight decrease in annual rainfall over a period of fifty years. The rapid urbanization during the last decades on its has aggravated the problem of open space defection.

Immediate action plans

- Creation of public awareness about Environmental conservation
- Encourage use of by cycle's and non – polluting vehicles within the core city.
- Carrying capacity of the people must be assessed for environmental plan.
- There is a definite need or environmental impact assessment plan (EIAP) and society should strive to leave a resources base roles than the one we have inherited. Sustainable environmental conservation action that is irreversible.
- People should use eco- friendly products and minimize usage of synthetic materials. Plastics should be recycled instead of using polythene courses.

- Optimum utilization of land resources, sustainable agricultural production, restoration and greening for better quality of life, conservation of rich biodiversity, water resources, abatement of land, water and air pollution are some of the major issues which need immediate attention.

Summary

Madurai is growing extremely rapidly, and this is creating significant challenges in the provision of adequate infrastructure, housing, basic services to meet this demand. The population of city has grown in the past decade and is expected to continue growing. The economic growth facilitated by the growth in tourism and the wider service sector has attracted. Significant number of migrants to the district as well as the level of change has significant implications in terms of the infrastructure, housing and services required to support an expanded population. As a result strong and flexible resources development strategies are needed for urban environmental life in Madurai.

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