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Potential for Use of Treated Waste Water for Industrial Reuse in India



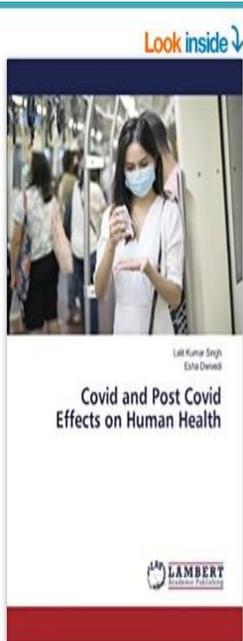
Rishi Rana and Rajiv Ganguly

Abstract The rate at which the population growth has increased has led to the steep increase in generation of wastewater in overall world. The major challenge faced by urban India remains in terms of the availability of fresh and clean water along with appropriate sanitation structure. Out of total water supplied for domestic use around 70–80% gets generated as wastewater. Many of the recent studies have also concluded that the supply is approximately equals the demand for India explaining the acute shortages in many parts. To meet the severity of water crises, industrial and agriculture water demand, wastewater resource, its collection, treatment and reuse is very important alternative for fresh water. The wastewater generated is generally discharged without treatment in open leading to insanitary environment finally causing the pollution to environment. Treatment of wastewater is a part of public health and sanitation. Wastewater treatment, whether on-site or off-site are the part of the full circle which helps in prevention to environmental pollution and safeguarding health issues. The wastewater after the treatment procedures plays a very crucial role for industrial as well as agricultural water demands. It has some economic advantages and act as a source of revenue for the urban local bodies. Treated wastewater although is economically viable, industrial reuse is limited by the availability of industrial clusters in the vicinity of the treatment plant. If this treated wastewater is reused by industries and agriculture then it frees up water which could be used to meet city's water demand. It is the need of the hour to properly treat the wastewater especially near the source of generation and reuse it so as to protect the environment and a reliable source of water supply can be provided. The major drawback remains the non-availability of the required data. With the drastic change in climatic conditions along with rising population, the main concern for a country like India must

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Covid and Post Covid Effects on Human Health

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All the researchers are trying to find solutions for the treatment of COVID-19 worldwide. Till now, no treatment for this disease has been found. The Corona virus was assumed to arise from the fecal and respiratory samples of the mammalian bat species namely *Miniopterus* species. It is still unclear that how the corona virus or which animal may have transmitted the disease to humans. The Latin word 'Corona' comes from the word 'crown', because the virus appears as a crown like appearance, when viewed under the microscope. MSCs have recently attracted attention in therapeutic trials because to their

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July 6, 2021

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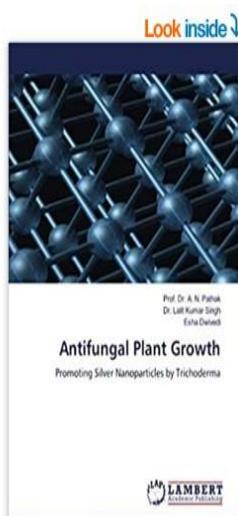


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Chapter 17

Monitoring and Processing of Data for Effective Wasteload Allocation Modeling in India



Dipteek Parmar and A. K. Keshari

Editor Proof

1 **Abstract** Many rivers, especially in developing countries are getting polluted
2 because of increased waste load emanating from industrial and urban sectors.
3 Although many pollution abatement efforts have been taken up but no comprehen-
4 sive effluent standards based on waste load allocation modeling (WLA) have been
5 developed and implemented to control the river pollution. This chapter presents the
6 overview of this method and the related impediments such as data collection, pro-
7 cessing and its use to facilitate WLA modeling in India. It begins with the concept and
8 components of waste load allocation modeling. The data required to carry out WLA
9 modeling using QUAL2E simulation tool is also discussed. Finally it concludes with
10 an emphasis on the need for a coordinated effort involving the policy makers, sci-
11 entists, engineers and the academia. It is opined that incorporating the requisite data
12 collection and processing in routine functioning by government agencies will pave
13 the way for developing robust WLA models and facilitate state of the art research in
14 this field. This eventually would lead us towards development of realistic pollution
15 control management plans for the ailing rivers.

16 **Keywords** Waste load allocation · Simulation · Optimization · Cost function ·
17 Assimilative capacity · Effluent

18 17.1 Background

19 With the increase in population and consequent urbanization, the rivers along urban
20 centers, especially in the developing countries are getting polluted because of dis-
21 charge of untreated and partially treated wastewater. Several water quality manage-
22 ment plans have been developed and implemented in last three decades but they

[A0]

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Emulsion Paint based on Cowdung of Desi Cow

Durgesh Kumar Soni*, Dr. Arun Maithani**, Dr. P. K. Kamani***

[*Research Scholar **Professor & Head ***Professor]

Department of Paint Technology

School of Chemical Technology

Harcourt Butler Technical University, Kanpur-208 002

Abstract

Cowdung has been used from ancient times for a lot of purposes like in religious ceremonies, in festivals, cowdung cakes as a fuel in rural areas, biogas production, manure, etc. Alongwith these a very different use of it is to use as a paint. From ancient times to modern day in rural areas, cowdung has been used for coating the mud houses and floors. This after drying gives a very serene interior free from pollution. Its insulating properties keep the homes cool in summer and vice-versa. In this paper cowdung based emulsion paint is discussed which was prepared in the laboratory. The process includes grinding of cowdung in a high energy grinding machine followed by mixing it with acrylic emulsion in different ratios. No any other component of paints like pigment, additives, and solvents were added. The sample was applied on concrete and tin and glass panels and the film was tested for chemical, mechanical, and performance properties. The results show that incorporation of cowdung in the emulsion not only provides good hiding and finish but also reinforces the film. Various other advantages of this coating are radiation resistant, zero VOC, low cost etc.

Introduction

For Indian people cow is not any animal, she is considered goddess and called *gomata*. According to sanatan texts, all the gods have their abode in cow and hence not only the cow but all of the products obtained from cow have their own importance. Milk is used in daily life and for making several other products like ghee, curd butter etc. A big infrastructure is developed globally for these industries. Cow urine has been proven to contain some medicinal properties. For treatment of skin diseases and some non curable diseases like cancer, etc panchgavya made from urine, milk, ghee, curd and dung of Indian desi cow has been proven as a medicine. It is studied under panchgavya chikita under Ayurveda. (Ref-1)

Dung of Indian cow shows superior antimicrobial properties than any other cowdung against various genres of microorganisms e.g. klebsiella pneumonia. The use of cowdung as a purifier is justified by the researches carried out on cowdung. (Ref.2)

The cowdung has also many uses at each stage in rural India,

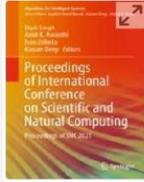
people use cowdung cakes as a fuel, mosquito repellent, and for lepan of clay walls and floors. In many religious ceremonies and festivals cowdung is used, like in govardhan pooja, naagpanchami, chauth, cremations etc. Cowdung is used in biogas production in rural areas. The waste of this plant is used manure and vermi-compost for organic farming. It is helpful as micro it improves the pH and conductivity of soil. The use of cowdung as a paint is inspired by the rural areas (Figure 1). Even today if we visit to rural areas far from the city, we can easily find homes, coated by cowdung.



Fig. 1. A home coated with cowdung slurry.

Also some companies have developed cowdung based plaster and in rural areas people owning their business of cowdung bricks, cakes, etc. A large section of economy depends upon cows and its products; hence steps must be taken to ensure the safety and security of cows not only for its beneficiaries but also for the emotional and religious attachment of people of India. In this paper the preparation of cowdung based paint has been discussed. The target is to create a finish which is available in market for interior and exterior applications which are primarily based on acrylic emulsion. The study of the effect of incorporating cowdung in an acrylic emulsion is studied. Hence the basic raw materials for this study are cowdung of desi cow (sahiwal) and acrylic emulsion.

Keeping all the above discussions in view the cowdung based emulsion paint was prepared in the laboratory in order to meet the specifications of today's standards like Bureau of



Proceedings of International Conference on Scientific and Natural Computing pp 57–72

Modeling the Effect of Malicious Objects in Sensor Networks and Its Control by Anti-Malicious Software

[Shyam Sundar](#) , [Ram Naresh](#), [Amit K. Awasthi](#) & [Atul Chaturvedi](#)

Conference paper | [First Online: 01 June 2021](#)

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Abstract

The effect of malicious objects on computer network system has been a burning issue during the last several years. It is well known that malicious objects spread very fast through a susceptible network causing damage to nodes and corrupt the files. Thus, the control of malicious objects is crucial for the efficient working of computer network system. To extenuate the copiousness of malicious objects, anti-malicious softwares are installed in the network system.

Therefore, in this paper, an attempt has been made to study the effect of malicious objects on



Recent Trends in Mycological Research pp 269–291 | [Cite as](#)

Portraying Fungal Mechanisms in Stress Tolerance: Perspective for Sustainable Agriculture

Pragya Tiwari, Mangalam Bajpai, Lalit Kumar Singh, Ajar Nath Yadav & Hanhong Bae

Chapter | [First Online: 04 February 2021](#)

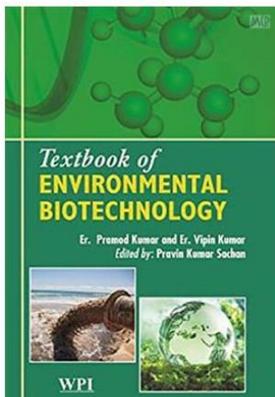
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Abstract

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Innovations in Food Technology pp 211–229 | [Cite as](#)

Microbial Production and Applications of L-lysine

Ashutosh Kumar Pandey, Kritika Pandey & Lalit Kumar Singh

Chapter | First Online: 13 October 2020

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Abstract

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Elements of Teaching Learning Process

This book aims to take essence of the traditional teaching learning model to gaze into the modern ways of teaching learning, its merits & demerits, procedures and practices. The book will also address the various issues arising out of the process and becoming distortion factors and try to provide their solution in best possible manner.

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The book focuses on the teaching Learning Process and its elements. The book includes the major areas / themes like:

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- Actors of teaching learning process
- Knowledge vs delivery: key element to effectiveness
- Evaluation system and validation system
- Class bunking and absenteeism
- Class discipline
- Teaching tools and technologies
- Virtual classroom
- Research and its role in teaching learning process
- Perceptual issues in teaching learning
- Learning theories in teaching learning process
- Effective communication in classroom teaching
- Students Feedback System

About The Editors



Dr. Vinod Kumar Yadav is an Assistant Professor in Human Resource Management (HRM) in the Department of Humanities & Social Sciences at Harcourt Butler Technological Institute, Kanpur, India. Dr. Yadav has been involved in teaching and research since last 13 years. He has many research contributions to his credit apart from his association with many professional bodies like National Institute of Personnel Management, India (NIPMI) and Performance Measurement Association, UK (PMA). He has also chaired technical sessions of national and international conferences. He has more than 15 articles of national and international level to his research profile. Dr. Yadav has also contributed to the resource material development for state level university. Apart from organizing training and faculty development programmes, he is guiding research scholars in order to widen research ground.



Dr. Praveen K. S. Yadav is an Assistant Professor in Oil Technology in the Department of Oil & Paint at Harcourt Butler Technological Institute, Kanpur, India. A researcher by nature, Dr. Praveen has been teaching students at undergraduate and post graduate level since last 13 years. After doctoral research, he started putting efforts in the direction of preparing more and more research persons by infusing the research interest and guidance to them. He has published more than 10 research articles at national and international level. Apart from curriculum, he has a vast experience of various administrative responsibilities at institute level. He has rendered his honorary services at national level as Hon. General Treasurer and Hon. General Secretary of Oil Technologist Association of India (OTA). Apart from organizing training and faculty development, community development programmes, he has also organized national and international events like conferences, seminar etc.

Vinod | Praveen

Elements of Teaching Learning Process



Elements of Teaching Learning Process

Vinod Kumar Yadav | Praveen K. S. Yadav



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Performance Measurement System

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A Supervising Grid Model for Identification of Groundwater Pollute



Sumit Gangwar, Manvendra Singh Chauhan, and Deepesh Singh

Abstract Groundwater asset is the most critical freshwater asset. A large portion of the number of inhabitants in our nation relies upon this asset for their essential needs of water. Groundwater has assumed a noteworthy part in expanding nourishment generation and accomplishing sustenance security. Groundwater, an inexhaustible wellspring of water, has an exceedingly reliable water supply for horticulture, household, business, and mechanical needs. Groundwater sullying is a significant issue in our reality. Optimal groundwater monitoring network design models are developed to determine the mass estimation error of contaminant concentration over different management time periods in groundwater aquifers. The objective of the paper is to determine the mass estimation error of contamination concentration at 2.5 years and 7.5 years. The mass estimation error of contamination concentration over time is determined by using the various computer software such as Method of Characteristics (MOC, USGS), Surfer 7.0, and Simulated Annealing (SA). The Method of Characteristics (MOC) is used in this model to solve the solute-transport equation. Simulated annealing is a worldwide improvement strategy that is utilized to locate optimal monitoring well locations. The error of the estimated concentration at potential well locations is extrapolated over the entire study area by geostatistical instrument, kriging. The outlined observing system is dynamic in nature, as it gives time-shifting system plans to various management periods. The optimal monitoring wells design incorporates budgetary constraints in the form of limits on the number of monitoring wells installed in any particular management period. The solution results are evaluated for an illustrative study area comprising of a hypothetical aquifer. The performance evaluation results establish the potential applicability of the

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BIODEGRADATION OF ANTHRACENE AND NAPHTHALENE

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ABSTRACT

Polycyclic Aromatic Hydrocarbons (PAHs) possess a constant threat health and environment due to their high toxicity and poor bioavailability. However with the help of advanced bioremediation techniques combined with suitable methods to improve bioavailability, it is possible to degrade PAH with high efficiency. The degradation of two most common and highly toxic PAHs viz Anthracene and Naphthalene with standard aerobic strains of *Pseudomonas putida* and *Bacillus subtilis* has been compared. Study also shows the potential of these strains in cleaning up waste lubricating oil from these poisonous pollutants. Some chemical/physical treatment may also help in enhanced degradation of these toxic PAHs.

1. INTRODUCTION

1.1 Background

Polycyclic Aromatic Hydrocarbons (PAHs) are a group of organic compounds consisting two or more fused benzene rings arranged in regular or cluster formations. PAHs distribution in environment serves as a subject of global health concern because of their deleterious effect on the living systems. PAHs are formed as a result of the incomplete combustion of fossil fuels and are therefore present in a variety of products such as tar, coal, soot, petroleum, cutting oils and tobacco smoke. Their persistence in the environment is due to their low water solubility (Vila et al., 2001; Li et al., 2001). They have propensity towards organic substances which contributes to the process of their sequestration (firm attachment to the soil) on land and limits the bioavailability to microbes. A number of approaches have been used for the breakdown of PAHs in smaller less toxic compounds, including chemical treatment, photo-oxidation, enzymatic treatment, phytoremediation and biodegradation. Among these, biodegradation has a distinct advantage over some others such as less expensive, natural process, complete and faster degradation, wider public acceptance etc.

Indigenous soil microorganisms are capable of PAH degradation to carbon dioxide and water if adequate amounts of oxygen, nitrogen and moisture are present to support microbial growth (Lindstrom et al., 1991). However, it is important to ensure that controlled and optimal conditions for microbial activity are being met during this process of biodegradation (Ward et al., 2003). Moreover the bioavailability of these compounds is a concern during this process. Therefore a controlled approach is needed for the degradation of these compounds by microbial route.

1.2 Physio-chemical characteristics of polycyclic aromatic hydrocarbons

All PAHs are solids ranging from colourless to pale yellow to golden yellow. PAHs vary in molecular weights but and range from 128 (naphthalene, C₁₀H₈) to 278.4 (Dibenz [a, h]



PROSPECTS *FUSARIUM* SP. AS MICROBIAL PIGMENT

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*Corresponding Author: amrendra.pathak@paruluniversity.ac.in

Introduction

Pigments are compounds with characteristics of importance to many industries. In the food industry they are used as additives, color intensifiers, antioxidants, etc. Pigments come in a wide variety of colors, some of which are water soluble. Color of a food substance is important to indicate its freshness and safety that are also indices of good aesthetic and sensorial values. In the recent years, coloring of food with pigments produced from natural sources is of worldwide interest and is gaining importance. These pigments are looked upon for their safe use as a natural food dye in replacement of synthetic ones because of undesirable market. A well textured food, rich in nutrients and flavor, cannot be eaten unless it has the right color. The demand for natural source of such compounds is increasing day by day because of the awareness of positive health benefits out of natural compound (Malik et al., 2012). Most of the bacteria and fungi are widely studied for their potential as a source of food colorants. Natural pigments possess anticancer activity, contain pro-vitamin A and have some desirable properties like stability to light, heat and pH (Joshi et al., 2003). Pigments are the chemical substances that absorb the light of visible region. The produced color is because of the chromophore, a molecule specific



Water Quality Management pp 257–267

Efficient and Economical Application of a Spent Waste Adsorbent Cu²⁺-Loaded Poly (AAc-AM-SH) Superabsorbent Hydrogels by Reusing It for Adsorption of Phosphate Ion

[Tripti Singh](#) & [Reena Singhal](#) 

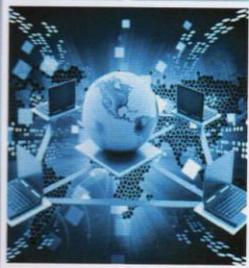
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Abstract

In the present study, a more potential and economical method is described to reutilize a waste adsorbent as the waste Cu²⁺-loaded poly(AAc/AM/SH) SAHs were not undergone any regeneration process and directly applied to adsorb phosphate ion from another waste solution. The SAHs poly(AAc-AM-SH) was anionic in nature, thus show higher affinity toward Cu²⁺ ions, but it hardly adsorb anions due to its characteristics of negative charge existing on the polymeric surface. The adsorption of Cu²⁺ makes it positively charged



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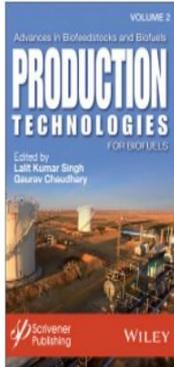
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Advances in Biofeedstocks and Biofuels, Volume 2, Production Technologies for Biofuels

Lalit Kumar Singh (Editor), Gaurav Chaudhary (Editor)

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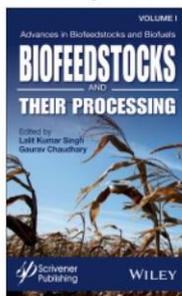
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DESCRIPTION

Biofuels production is one of the most extensively studied fields in the energy sector that can provide an alternative energy source and bring the energy industry closer to sustainability. Biomass-based fuel production, or renewable fuels, are becoming increasingly important as a potential solution for man-made climate change, depleted oil reserves, and the dangers involved with hydraulic fracturing (or "fracking"). The price of oil will always be volatile and changeable, and, as long as industry and private citizens around the world need energy, there will be a need for alternative energy sources. The area known as "biofuels and biofeedstocks" is one of the most important and quickly growing pieces of the "energy pie."

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Advances in Biofeedstocks and Biofuels, Volume 1, Biofeedstocks and Their Processing

Lalit Kumar Singh (Editor), Gaurav Chaudhary (Editor)

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DESCRIPTION

Biofuels production is one of the most extensively studied fields in the energy sector that can provide an alternative energy source and bring the energy industry closer to sustainability. Biomass-based fuel production, or renewable fuels, are becoming increasingly important as a potential solution for man-made climate change, depleted oil reserves, and the dangers involved with hydraulic fracturing (or "fracking"). The price of oil will always be volatile and changeable, and, as long as industry and private citizens around the world need energy, there will be a need for alternative energy sources. The area known as "biofuels and biofeedstocks" is one of the most important and quickly growing pieces of the

Developing Alternate Language Learning Solution using ICT

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Abstract. The language has always been a strong medium to express our thoughts and expressions, which is essential to open the learning curve for human beings. This process of learning becomes crucial, in case of multilingual environment especially where English language is the second language. In these cases the professional language differs from our mother tongue, which essentially becomes important to be handled carefully. In this situation, Language Learning Module, which can be commonly used without any cost impact, is the need of the hour.

Our Focus, as academicians, is to propose a cost effective language learning resource module. This paper proposes a model to accelerate the teaching learning process with the use of ICT i.e. through mobile phones, tablets and laptops as tools, in the educational institutions. The model also focuses upon the cost effectiveness, which is the need for the places where technology is already accessible.

The objective of this paper is to explore the possibilities of Information and communication technologies in the field of education especially for pruning the communication skills be it for students of higher education or for corporate employees. As we know that ICT has spread its wings in sectors like healthcare, banking, media as well as education. Our aim is to explore the possibilities of Information and Communication technologies and its implementation in the field of education in its accessible, convenient and cost-effective form.

Keywords: ICT: Information and Communication Technology, ESL: English as a Second Language, EFL: English as a Foreign Language

1. Introduction

In this global environment ICT has become an inseparable part of our lives, as not a single field is untouched with ICT like healthcare, banking, media as well as education. Before we explore the indefinite possibilities of this field, it is important to know what exactly ICT development mean and how it works. ICT includes a long range of services and technologies such as data, media services, telecommunication and voice data which are being implemented in above mentioned fields.

Our primary interest is in analyzing the importance of ICT in the field of education and to explore the unlimited possibilities of implementing it through the easiest accessible technology in teaching English language to the students, as English as a foreign language (EFL) for Indian people or we can call English a second Language (ESL). The advent of computers brought a new horizon for every field and the use of technology was accelerated when internet came into being in our country in August 15, 1995 by VSNL(Ramani, 2015). In recent years these technologies have gone drastic change as every field is well equipped with computers, internet and other technologies. Although the use of ICT is deep rooted in the field of science and technology, but we would like to fathom its importance and uses, particularly in imparting language education like English language and other foreign languages as well. It is not only helpful for the teachers in making the teaching methodology creative but also it makes students participative, they become actively interested in what has been taught to them through the technologies. Among these technologies one of the easily accessible and positive trends is telecommunication. In the recent times we have seen a rapid increase in the uses of mobile phones in the developing countries also. Mobile phones are information as well as communication technology which has an access to almost each and every home. Therefore, our approach towards this technology for imparting English language teaching is quite positive. So, we are proposing a language learning module with the help of mobile phones as a medium.

Firstly, here it becomes important to focus upon the present technologies which are used to impart education and it is also important to discuss as to what hinders the process of teaching when technologies are involved. Ours is a conventional educational system, which has been accelerated with the emergence of ICT. Although the basic problems still exists, as it is evident that although the institutions, schools and colleges have introduced computers and also providing internet facilities for the students but still the system fail to make the optimum use of these technologies. Computers need skilled manpower, all time electricity facilities as well as proper