

**SPECIAL
POINTS OF
INTEREST:**

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- Mobile Guru - Mobile App

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"Innovation is the specific instrument of entrepreneurship. The act that endows resources with a new capacity to create wealth."

-Peter Drucker

'Zero-Waste Colony'

An Innovative Approach of Waste Management

It is estimated that in India approximately 133760 tonnes of municipal solid waste (MSW) is generated per day, of which approximately 91152 tonnes is collected around 25884 tonnes is treated. In fact, MSW generation per capita in India varies from about 0.17 kg per person per day in small towns to about 0.62 kg in cities. This clearly shows the gravity of the problem of waste management. Proper and timely disposal of the household waste has been a big environmental problem throughout the world. The challenges associated with the waste management in India include an inadequate facility for waste collection, its transportation, treatment and safe disposal. It is not only hazardous to our health, but it is a big contributor to environmental problems. It is true that the current systems in India cannot cope up with the ever-increasing volume of waste generated in our houses and societies. So the one of the major concerns is to reduce the amount of household waste to be transported to the landfill areas and to dispose it off safely.

In order to solve the increasing problem of disposal of the household waste, a number of innovative efforts have been made, from time to time, to find out viable, speedy and cost-effective solutions for this problem. In India, New Delhi Municipal Council (NDMC), Delhi has initiated a scheme of 'Zero Waste Colony'. To begin with, this scheme has been started in five colonies of NDMC including Golf Link, Jor Bagh, Kaka Nagar, Bharti Nagar and Ravinder Nagar, with the aim of minimizing the amount of waste collected from these colonies by way of segregating waste at the source i.e. at the home itself. The core idea of the scheme is to change the mindset and habits of the residents and to segregate the waste at home. Recently reported news shows that the scheme has been very successful in all the experimental colonies. In fact, NDMC has claimed that almost 100% of residents in these colonies have started waste segregation at home.

Concept of 'Zero Waste Colony' – An Innovative Idea

Now the question is actually what is meant by 'Zero-Waste Colony'? Does it mean that no waste is generated in the colony? No, it is not possible because the waste will, in any case, be generated in all houses. Here, in this scheme, zero waste means that no or almost nil waste comes out of the colony to be transported for disposal purpose in the dump-yards.

Now, the question is, how can this be possible? In fact, here is the main idea of zero waste colony. As per the scheme, the entire waste generated in different houses should be utilized within the colony itself. For that purpose the household waste should be first segregated into dry waste, organic waste, rejected waste and e-waste. The dry waste including plastic items, metallic item, glass bottles, and other such solid waste should be recycled within the colony or sold out to a vender for recycling after being collected centrally from all houses. That way no dry waste is required to be transported to the dump-yard.

Similarly, the organic waste should be converted into compost. For this purpose composting facilities should be set up in each of the colonies.

In the selected colonies also almost similar model is adopted. Dry waste is collected by the sanitation workers and sold for recycling. However, at present, because of limited resources and facilities, the organic waste goes to Okhla waste plant where it is converted into compost. Ideally, there should be a separate composting facility in each of the colonies, so that practically no waste needs to be taken out of the colony. That will ensure that every inch of waste generated in the colony is utilized and then the concept of 'Zero Waste Colony' will actually be materialized.

Innovative Features of the 'Zero Waste Colony' Scheme

Some of the innovative features of the 'Zero Waste Colony' are as follows:

- The entire waste generated in the colony is utilized in the colony itself.
- The household waste is segregated at the source into dry waste, green waste, e-waste and rejected waste.
- Awareness programmes are organized for the residents to sensitize them towards health and environmental hazards of the waste.
- The scheme has involvement of individuals, Resident Welfare Associations, and the Government i.e. the NDMC both in term of implementation and financing.

Though the scheme is very good and also found success in these colonies, it is practically difficult to replicate it in all other colonies without the involvement of the RWAs and related government agencies. Therefore, it is required to take up such initiatives in a mission mode.

A Step Towards 'Zero Waste House'

A similar approach for household waste management is being practiced by a few families. For example, Ms. Priyanka Dane, a housewife at Pushpanjali, Delhi has been using the household waste to make 'black gold'. For last few years, she has been segregating the waste into organic waste and dry waste using two different bins. According to Ms. Dave, out of the total waste of the house, 70-80% is kitchen and organic waste and around 20-30% is dry waste consisting of plastic, wrappings, and boxes, etc., while 2-3 % is hazardous waste like sanitary napkins, diapers, bandages, condoms, razor blades, syringes and broken glasses, etc.

In order to minimize the household waste, she turns the organic waste into useful compost, while the dry waste is taken away by the waste collectors from an NGO. That way almost nothing is left to be disposed of. If there is any e-waste like batteries, tube lights, mobiles, bulbs, etc., it is collected

at the community level in a cardboard kept at the community centre. The other hazardous waste is wrapped in newspaper and marked red circle so that people dealing with such waste do not touch it. This is an example of innovative effort towards a 'zero waste house' by an individual.

In view of the successful experiment both at individual and colony level, there remains no doubt to the success of replicating the model in other families and colonies. The only need is to take a lesson from such innovative and new experiments, and then to implement the same in other families, colonies, and societies. Different Resident Welfare Associations (RWAs) may come forward and implement this model of 'Zero Waste House' and 'Zero Waste Colony' after due customization, if required.

Towards 'Zero Waste Campus' at IGNOU

Our university may also think to try out this model as 'Zero Waste Campus' by composting the organic waste and recycling the other solid waste like paper, plastic, etc. in the campus itself. It will not only reduce the amount of waste to be sent to landfill sites, but it will help in generating some revenue also. Besides, the university may plan to develop an awareness programme also highlighting its own model and others experiences.

It is sure, that if we are sensitive towards the problem around us, we may come out with new and innovative solutions for such problems.

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Bar Coding System for Proper Disposal of Bio-Medical Waste

Innovations Used in the Management of Health-Care Waste

Healthcare waste is the waste that is generated due to the healthcare associated activities like diagnosis, treatment, immunization, research, etc. The waste generated by these activities is infectious and contains many harmful substances which can affect the human health as well as the environment. The management of this waste also can pose problems like the release of dioxins and furans. Hence proper and effective management of healthcare waste is essential.

Another problem posed by the waste generated in the health-care facilities is the pilferage of the waste for recycling. This waste is required to be rendered non-infectious before it can be recycled. To deal with the problems of pilferage, an innovative system of bar coding has been developed and is an essential part of the newly Notified Bio-Medical Waste Management Rules 2016, Govt. of India.

Bar Coding System for Proper Disposal of Bio-Medical Waste

A need for introducing the bar code system in bio-medical waste management was felt. Introducing this system would help in¹

- i) tracking of waste from the source of generation to the final destination for final treatment and disposal;
- ii) identification of waste in the event of a source of generation in case waste is disposed of improperly; and
- iii) quantification of bio-medical waste generated, colour coding wise waste handed over to the CBWTF operator

Biomedical waste can be infectious and it also contains harmful chemicals which could pose a threat to the environment and human health. It was proposed to introduce a system of bar code for giving an accurate and auditable direct system from the collection of the waste to its disposal and also to minimize the manual capturing of data ⁽²⁾.

Adoption of the bar code by the occupier or the operating of the CBWTF has been made mandatory in the BMWM Rules, 2016 and the stakeholders (prescribed authority, occupier, and operator) will be responsible for implementation of the bar code system under their jurisdiction. The prescribed authority means the respective State Pollution Control Boards/ Committees, and the Directorate General of Armed Forces Medical Services (DGAFMS). The “occupier” means a person having administrative control over the institutions and the premises generating bio-medical waste. The “operator” means a person who owns or control a Common Biomedical Waste Treatment Facility (CBWTF).

As prescribed under BMWM Rules, 2016, Biomedical Waste may be of two types. These are:

1. Designated colour code bags/containers containing pre-printed bar codes/ bar coded labels.
2. Prescribed bar coded labels supplied by the vendors. ¹

The specification of the bar code should be as prescribed under the guidelines for the same to ensure compliance with BMWM Rules 2016.

Procedure of using Bar Code BMWM

1. The healthcare facility and CBTF should have a bar code scanner for data storage and lateral retrieval.
2. Each bag scanned by the bar code scanner should transfer the information like date, time and weight of the bag to centrally located bar code waste management system software.
3. Wire Wireless needs to be established between the scanner and weighing machine. This will ensure that the weight of each bag is also scanned by the scanner. The scanner generates the print of the waste receipt.
4. GPS system then directs the bar coded bag from the generation of waste to final disposal.

Benefits of the Bar Coded System

- i. Accurate delivery and collection of products with individually serialized barcodes.
- ii. Accurate billing for the customers at month end.
- iii. Customers don't have to write and compile their own breakdown of waste collected.
- iv. Individual item weighed per product.
- v. Compass Waste Services will interact with the customer in terms of their needs for ordering.
- vi. Online secure encrypted documents for customer viewing of invoices, statements and Safe Disposal Certificates.
- vii. Reporting and analysing of tonnages on a daily, weekly, and monthly basis.

Use of Placental Pits for Disposal and Treatment of Placenta

The placenta is a pathological waste. It is essential to follow the norms for treatment and disposal of placental waste as any other pathological waste, and it is generally incinerated. However, in many regions of the world where incineration is not a viable possibility, the placenta is disposed of in placental pits.

Placenta pits allow pathological waste to degrade naturally. Around 90% of the waste is liquid, which will soak away into the ground. The rest will degrade through a complex and variable mixture of biological and chemical processes. These are primarily anaerobic processes, though some aerobic decomposition will take place in the upper layers. The waste should not be treated with chemical disinfectants like chlorine before being disposed of because these chemicals destroy the microorganisms that are important for biological decomposition.³

At times the placenta is allowed to be mixed with the other waste like the kitchen waste and the entire waste is allowed to decompose. Methane gas produced during the decomposition can be used as a source of energy. Thus, this is a good example of the waste to energy concept.

As the waste decomposes, pathogens (disease-causing organisms) will be destroyed as well, though some, including eggs, are more resilient than others. At present, there are little data on how long it will take for all pathogens and eggs to die, so it is recommended that "years be allowed to pass before reopening". More research should be carried out on this subject.⁴

Although the use of placenta pits is not recommended by the Biomedical Waste Management Rules 2016, Govt. of India, it is being used in many other countries of the world.

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Innovation Guru: A Mobile App on Innovation



Innovation is now a buzz word in almost all walks of life throughout the world. Innovation is getting highest priority in the field of education, industry, technology, agriculture, business, governance, etc. Government is also making special efforts to create a culture of innovation in different sectors including schools, colleges, and other educational institutes. In fact, the general public also needs to be made aware of the concept of innovation and related aspects. They need to be more sensitive towards the problems around them and should be motivated to think differently to find innovative solutions to such day to day problems. For this purpose, the technology, particularly the mobile technology can play a very important role. The data reveals that in India itself the number of mobile users is increasing day by day and people are now using smartphones which have several innovative features. Various types of need-based mobile apps are being developed. There are a number of mobile-enabled applications which provide important information in different areas and they are able to engage people also in the process of development. Recently, a

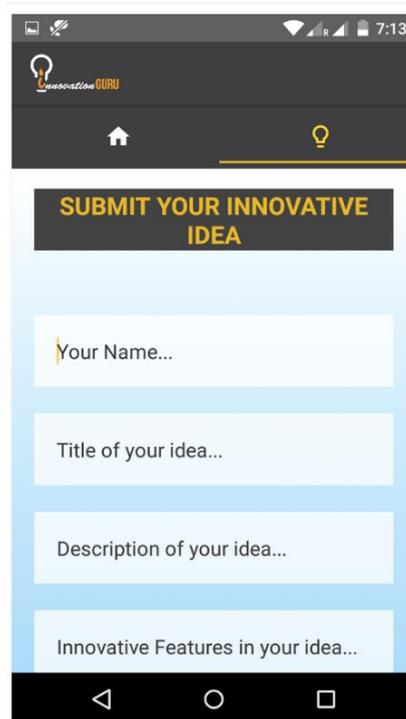
mobile app named as 'Innovation Guru' has been developed which aims at providing basic knowledge about innovation related aspects and promoting the culture of innovation among the people. Innovation Guru is basically a platform for innovators and creative thinkers to share their innovative ideas and knowledge about the innovations done by others.

The Innovation Guru has mainly two components. One component of this app gives the basic knowledge about innovation highlighting the difference between the similar terms like innovation, invention, discovery, and creativity. It also gives information about the types of innovation, the life cycle of innovation and some important quotes on innovation. Some simple ways of promoting innovation and creating a culture of innovation in the schools and colleges have also been suggested in this app. Most of the information given in this part of the app is static, but it is very useful and important to create an awareness about innovation and related aspects.

The second component of the Innovation Guru is the 'Idea Bank' which is a dynamic database of the ideas and innovations of the people. The idea of creating an Idea Bank is based on the saying that no idea is absurd. Here anybody can submit any kind of idea or innovation in a well-structured format which includes the name of the person, the title of idea or innovation, its brief description, and its innovative features. In order to access the 'Idea Bank' on Innovation Guru, you have to log in first and then submit the idea or innovation. Once you submit the idea or innovation, it is published in the app which can be seen by other registered users of the mobile app. The 'Idea Bank' will not only be an online repository of innovative ideas, but it may be a very good platform to share the ideas and innovations leading towards finding innovative solutions to the problems around us.

The 'Innovation Guru' mobile app is freely available on the Google's Play store and it can be downloaded either by searching Innovation Guru on Play store or by using the following link <http://play.google.com/store/apps/details?id=com.second.shubhanshu.innovationindia>

The development of this mobile app Innovation Guru is certainly an appreciable initiative towards promoting the innovation.



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Innovation Club @ IGNOU organizes a Seminar on “Innovative Ways of Offering Lab-based, Skill development and Technical Programmes in the context of the UGC Regulations on ODL 2017”

The InnovationClub@IGNOU at the National Centre for Innovation in Distance Education (NCIDE), IGNOU organized a one-day Seminar on “Innovative Ways of Offering Lab-based, Skill development and Technical Programmes in the context of the UGC Regulations on ODL 2017” at Dr. S. Radhakrishnan Block, IGNOU on 12th December, 2017. There were two main themes for discussion. The first theme was on “the UGC Regulations for Open and Distance Learning, 2017”. The second theme was on “innovative practices in offering practical for lab-based, skill development and technical programmes”. The event brought together more than 50 teachers and academics of IGNOU who deliberated on the different issues of the seminar themes. There were five experts

drawn from the IGNOU teachers and academics who were invited in the seminar to give their presentation.

Welcoming the participants, Dr. Moumita Das, Assistant Director, NCIDE and the coordinator of the Seminar, said that after the new UGC Regulations for the ODL system came into effect on June 23, 2017, there had been a lot of speculation among the IGNOU fraternity regarding the position of the practical-based Programmes being offered by IGNOU. This Seminar was aimed providing a platform for deliberations on the various aspects of the issue, including innovative solutions, for obtaining a clear understanding to pave the way ahead.

Theme I: The UGC Regulations for Open and Distance Learning, 2017

At the outset, Prof. Manoj Kulshrestha, Director, NCIDE presented the genesis, objectives, present and future activities of the innovation club. He highlighted that the objective of Innovation-Club@IGNOU is to contribute creatively and actively in the innovation related activities of NCIDE.



Speaking on the topic of the UGC Regulations, 2017, he mentioned that the All India Council for Technical Education (AICTE) made a policy in 2010 not to recognize the engineering programmes because of which the ODL students are suffering. He urged that the Ministry of Human Resource Development (MHRD) had constituted several committees that had supported the engineering programmes offered by IGNOU and the MHRD must resolve this issue.

Speaking on the occasion, Prof. Manjulika Srivastava, Head, Internal Quality Assurance Cell, presented an overview of the ODL Regulations, 2017. She highlighted the important components of the Regulations that were relevant to IGNOU. She emphasized upon the urgency of IGNOU to apply for the recognition of its programmes to the UGC. Several questions were raised by the participants on the guidelines of the UGC Regulations that were answered by Prof. Srivastava.

The queries of the participants were also addressed by Dr. Bijayalaxmi Mishra, Deputy Director, Research Unit. She emphasized on the need for IGNOU to apply to the UGC for recognition of IGNOU programmes and said that the Regulations should be taken in a positive spirit for improving the quality of the Programmes of the university. She pointed out that the nomenclature

of the IGNOU programmes should match that of the UGC. She suggested the development of Standard Operating Procedures involving the operational divisions and Schools of the university.

Expressing her views through email, Prof. Neeti Agrawal, Professor in the School of Management, said "The need of the hour is to get the approval of the existing programmes as all the programmes by and large follow the guidelines. The quality assurance cell should [be a] monitor than be the decision making body to give the schools of the university more autonomy." Dr. Sindhu P. Nair, Regional Director, Kochi also responded through email and suggested that the university should present its stand offering lab-based programmes to the UCC through well-researched reports based on alumni feedback, and also through the judgements that are in favour of the ODL learners. Responding through email, Ms. Mansi Sharma, Assistant Professor, School of Law detailed out the issues that needed to be addressed by the university on a priority basis. She mentioned that there are certain clauses that need to be amended.

Theme II: Innovative Practices in Offering Practical for Lab-Based, Skill Development and Technical Programmes

Several innovative methods to offer practical based courses were presented in the Seminar.

Prof. Kulshrestha presented the innovative initiatives taken by the School of Engineering and Technology in offering the skill based programme, Certificate in Motor Cycle Service and Repair, with Hero Motor Corp Ltd., which is a joint venture with the industry, and is a competence based vocational three-month programme. He explained the innovative delivery mechanism and evaluation strategy of the programme, which had also received the Gold Medal for Innovation awarded by IGNOU in the year 2008.

The Director, School of Agriculture, Professor M. K. Salooja, demonstrated the innovative design and delivery of the agriculture courses through the use of Information Communication Technology (ICT) tools and the open resources available on the Internet for the learners. He offered several suggestions, such as creation of labs in the headquarters and Regional Centers, collaboration with external agencies, such as the Skill Councils, and the use of e-learning and virtual labs.

An innovative design and delivery of an engineering programme was presented by Prof. Ajit Kumar, Professor in the School of Engineering and Technology. The students were empowered to work on real-life projects, and were provided with self-learning materials, face-to-face sessions, lab or practical sessions, teleconference, interactive radio counselling, audio/video materials, e-gyankosh, etc. A residential term was compulsory with 75 per cent attendance for practical sessions and monitoring was done.

Dr. V. V. Subramaniam, Assistant Professor, School of Computer and Information Sciences presented innovative ways of offering labs to the ODL students through the use of ICT tools. He emphasized that with the advancement of technology and with a change of students' background it has become essential to use various new ways to offer lab or practical and manage the practical.

The deliberations in the seminar resulted in the emergence of certain recommendations, which have been forwarded to the competent authority for necessary action.

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The National Centre for Innovations in Distance Education (NCIDE) was established in December 2005. It is a facility for promoting, supporting, re-engineering and disseminating innovations in Open and Distance Learning (ODL) system. The NCIDE is a ground for nurturing bright and inquisitive minds whose ideas and explorations are expected to revolutionise the ODL system to suit the needs of Gennext. The Centre's goal is to develop a culture of continued search for new and innovative solutions to offer seamless education for all, achieve cost efficiency in its operations and provide borderless access to quality education and training.

We look forward to receiving your suggestions for this e-newsletter. We also welcome your contributions for the future issues. Please send us your emails addressed to the Director, NCIDE at: ncide@ignou.ac.in.