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One Decade of INNOVATIONS@NCIDE

Edited by
Dr. Oum Prakash Sharma

National Centre for
Innovation in Distance Education
Indira Gandhi National Open University

"Innovators are those who do
not know that it cannot be done.
Innovators are those who see
what everyone else see but
think of what no one else thinks.
Innovators refuse status quo,
they convert inspirations into
solutions and ideas who products."

- Bill Gates

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Dr. Oum Prakash Sharma

National Centre for Innovation in Distance Education
Indira Gandhi National Open University
Maidan Garhi, New Delhi-110068, INDIA

Compiled and Edited :

Dr. Oum Prakash Sharma, Director, NCIDE

Authors :

Dr. Oum Prakash Sharma, Director, NCIDE
(Chapters : 8, 9, 10, 11, 12, 14, 20, 21, 22, 23, 27 and 28)

Dr. Jyotsna Dikshit, Deputy Director, NCIDE
(Chapters : 1, 2, 3, 4, 6, 7, 13, 16, 17, 18, 19 and 25)

Dr. Moumita Das, Assistant Director, NCIDE
(Chapters : 5, 15, 16, 25, and 30)

Dr. Sujata Santosh, Assistant Director, NCIDE
(Chapters : 24, 26, and 31)

Cover Page Designing and Laser Typesetting :

Mr. Praveen Chauhan, NCIDE
Mr. Pawan Kumar, NCIDE

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FOREWORD

The Indira Gandhi National Open University (IGNOU) is providing higher education through open and distance mode. IGNOU serves nearly three million learners from all parts of the country and abroad. The University offers a diverse range of academic programmes, through a network of 67 Regional Centres and over 3000 Learner Support Centres. The University has activated Special Learner Support Centres for the disabled and for Jail inmates with an initiative to integrate the marginalized into the mainstream through education. With the emerging needs of the society and the use of new and emerging technologies in the ODL system, the IGNOU functionaries are encouraged to constantly make efforts to innovate, adapt, diversify and expand the academic and learner support services.

IGNOU has always given priority to innovations and new ways and means to provide quality education and support to its learners. Innovations to enhance quality and efficiency of the system are encouraged by IGNOU. For that purpose, IGNOU established a special centre, named as the National Centre for Innovations in Distance Education (NCIDE), in 2005 as a part of the 10th Five Year Plan of the Government of India, for promoting and nurturing innovations in the University and open and distance learning system in large. NCIDE is mandated to incubate and promote the innovations in the University. Since its inception, a number of innovative initiatives have been taken up by the NCIDE. Many of such innovations have been successfully implemented and in some cases prototypes have been developed. Besides, carrying out innovations, the centre collects and compiles various innovations by the functionaries of the ODL system in India and the students of the University for dissemination and adaption by the stakeholders.

I am happy that the NCIDE has compiled the details of such innovative initiatives carried out by its faculty during the last one decade. I am sure that the descriptions of the initiatives provided in the document will motivate the stakeholders, including the faculty members, towards innovation. I have seen that in each write up, besides highlighting the need and description of the innovations, their innovative features, their uses, achievements and future prospects have also been discussed, which will be a guiding factor for the future innovators.

I congratulate NCIDE for this effort. I hope that this would encourage more innovations in the future.

(Prof. Nageshwar Rao)
Vice Chancellor

Message from the Pro-Vice Chancellor

During the last one decade, innovation has emerged as a key driver in socio-economic growth all over the world. Technological innovations have revolutionized in almost all walks of life including the education sector. Recognizing its importance, IGNOU has also taken necessary steps well in time, to promote innovation in the Open and Distance Learning System. In fact, IGNOU has been encouraging innovation to enhance the quality and effectiveness of the system right from its inception. As a special measure to promote innovations in the ODL System in general and IGNOU is particular, IGNOU had set up a dedicated Centre named as the National Centre for Innovation in Distance Education (NCIDE) in 2005. Since then the NCIDE has taken up a number of initiatives for innovative teaching-learning and support solutions in the University. I understand that many of these innovative initiatives have been successfully implemented. Besides it, several prototypes have been developed which can be converted into full fledged innovations in future.

NCIDE has taken a very good initiative to compile the success stories of the innovations developed by its faculty during the last one decade. I hope this compendium of innovations having detailed description of each innovative initiative will be useful not only for the IGNOU faculty but it will encourage other ODL functionaries also for more innovations to improve the quality and effectiveness of the system.

I congratulate the NCIDE and its faculty for bringing out such an useful document on innovation.

(Prof. Ravindra Ramachandra Kanhere)
Pro-Vice Chancellor, IGNOU

PREFACE

Presently, the innovation in one of the most frequently talked terms all over the world. Most of the business houses, industries and educational institutes have special provisions for promoting innovation. In fact, innovation has emerged as a key driver in the socio-economic growth all over the world. Recognizing the importance and potential of the innovation, IGNOU has set up a special centre named as the National Centre for Innovation in Distance Education (NCIDE) in 2005 dedicated for carrying out the innovations and promoting the culture of innovation in the University as a part of 10th Five Year Plan. Soon after the appointment of faculty, a number of innovative initiatives were taken up by the NCIDE. By the beginning of year 2008, some of the innovations were tested and tried, and came in practice. Now, as this journey of innovation at NCIDE has completed one decade in 2018 and several of such innovations have been successfully implemented and in some cases prototypes have been developed, it becomes imperative to document the success stories of the innovations. Though, the project proposals and some write ups on these innovations and innovative practices were available at NCIDE, but their detailed description was not available. Therefore, it was felt that the details of the innovations and prototypes developed by the NCIDE should be documented in a properly structured format. The purpose behind bringing out this document included two aspects – firstly to document the story of innovations carried out by the NCIDE and secondly to disseminate the innovations and innovative practices among the stakeholders of ODL system aimed at inspiring them to carry out such innovations at their level.

With the above objectives in mind, this activity of bringing out a document on One Decade of Innovations@NCIDE was taken up with the approval of the Vice Chancellor. Accordingly, the NCIDE faculty developed detailed write ups on each of the innovations carried on by them in a structured format highlighting their need, innovative features, implementation strategy, achievements and way forward. The first draft of the document was discussed with Prof. Nageshwar Rao, Vice Chancellor, IGNOU and he gave several suggestions to improve the quality of presentation of the write ups and the book. We are highly thankful to him for his valuable guidance and encouragement towards this endeavor. We are also thankful to Prof. Ravindra Ramachandra Kanhere, Pro-Vice Chancellor, IGNOU for writing a message for the book. I am thankful to my colleagues Dr. Jyotsna Diskhit, Dr. Moumita Das and Dr. Sujata Santosh for preparing detailed write ups on the innovations carried out by them. They have also helped in proper designing and structuring the format of write ups. I am also thankful to Shri Praveen Chauhan and Shri Pawan Kumar also for typing and page designing of the document in such a beautiful format.

I hope this document will be useful for those who intend to do innovation in the field of open and distance learning. I will be happy to get your feedback and comments on the innovative products and practices included in the document.

(Dr. Oum Prakash Sharma)
Director, NCIDE

Contents

1

MECLE

Mobile Enabled Collaborative Learning Environment

Background

Back in the year 2006 we developed a prototype of website of NCIDE with a feature of interactive chat using Wireless Mark-up Language. Gradually, by 2007-08 Mobile learning had been considered as an innovation in online learning with mobility as a key feature. The proliferation of mobile devices and wireless technologies around the globe brought massive opportunities for delivering personalised, ubiquitous, pervasive, and flexible e-learning, to all anytime, anywhere. This attracted us to innovate and experiment a large variety of mobile applications, in different types of teaching and learning set up in the ODL system.

In the year 2007 NCIDE in collaboration with SOHS was working on providing interactive multimedia rich material online through MOODLE for the IMNCI component of PGDMCH programme. As NCIDE promotes and develops innovative learning solutions for open and distance learning system on issues related to access, quality and equity and also focuses on development of ICT enabled solutions for effective and learner friendly instructional system including e-learning, multimedia learning, mobile learning and other web based learning. As an experimentation, it was decided to enable the learners to access learning materials through their hand held devices and a prototype of mobile enabled collaborative learning environment was developed using MLE-Moodle – the Mobile Learning module of Moodle. Development of mobile enabled collaborative learning environment as an idea was quiet interesting and innovative during the time 2008-2009.

Need of the Innovation

Learning wherever, whenever and whatever one wants to learn, through alternative channels supplement and augment learning in an ODL environment. As the PGDMCH programme is a medical science programme which included field trips and project work implementing, a mobile enabled learning environment was almost essential where learners could fill forms of case studies, upload images and videos related to the symptoms and signs of disease in children under five years of age, discuss live case studies through written reports in a forum, and create learning scenarios which are location based integrated with GPS, etc.

Description of the Innovation

The Mobile enabled collaborative learning environment is integrating with the online learning system developed by us for learners who need to access their course content through mobile internet or collaborate with their peers through asynchronous mode in the form of discussion boards and synchronously through chat forums any time anywhere. They can also access quiz and evaluate themselves on handheld devices. The mobile enabled collaborative learning environment basically includes User login, Course navigation, Multi Language support. Activities in a course can be mobile enabled by the course creator so that they are available to be used on students' mobile phones.

Some screenshots of MECLE, accessing our virtual platform using the web-browser on the phone are shown in Figure 1 :

Figure 1 : Some Screenshots of MECLE, Accessing our Virtual Platform using the Web-browser on the Phone

Innovative Features

Through the mobile enabled collaborative learning environment itself is an unique way of using mobile devices for collaborative learning, it has several innovative features as mentioned below :

- Content available on the server can be directly accessed through web browser by the user on a different set of interfaces (which have been built exclusively for mobiles).
- It has intuitive interface and easy navigation.
- Minimal learning curve in another innovative feature of this innovation.
- It gives direct access to verity of Moodle resources on the mobile phone like texts, HTML-texts, images, video, audio, and links, etc.

- Mobile Learning objects in the mobile enabled collaborative learning environment provide an opportunity to store content on the phone of the learners which enabled them learn even if they do not have network connection.
- Through the collaborative learning environment learners can send messages. The Moodle messaging to their mentors and peers without using SMS services on their phone. Learners can also send pictures and videos attached to a message.
- The collaborative learning environment also had multiple choice and true-false questions with automated marking system.
- The MECLE also enabled the learners to submit an assignment or view the correction via the mobile phone. The assignments can be uploaded in the form of audio/video/images files or plain text.
- The forums are accessible through the mobile client. You can read and create/edit discussions and replies. You are able to attach self made pictures, videos or audio recordings to your discussions and forum posts which you can instantly record with your phone or you can choose from the file system.

Achievements

The idea of developing a mobile application for education way back in 2008 in itself was a new idea. The idea was converted into a workable prototype in-house by the faculty using open source tools. The innovation was showcased in a national conference organized by Digital India, in 2008. This experiment performed by NCIDE in 2008 led to the development of a gamut of mobile applications which are discussed in this publication.

Applications and Uses of Innovation

This application was developed pre HTML 5 era and thus had a potential to access the MECLE both online and offline. This application could be applied to all eLearning programmes using MOODLE as a learning management system.

Way Forward

With the cost-effectiveness and accessibility features of mobile phones and availability of the 4G/5G networks, the pedagogy, methodology and technology of the prototype developed can be scaled up to provide such facilities for other eLearning packages.

Coordinator and Innovator

Dr. Jyotsana Dikshit
Period : 2008-2009

2

Mobilets
Mobile Enabled Learnlets

Background

Over the past decade mobile learning (m-learning) has grown from research interest of individuals to a gamut of applications, and products useful for the educational development of learners in all the sectors of education at workplaces, cities and even in the rural areas around the world where computer technology could not penetrate.

New and innovative information and communication tools have created a revolution in the delivery mechanism of the educational system in particular the distance education system globally. A survey was conducted by the innovator to understand the learners' preferences and choices for using mobile as a learning tool. On the basis of the survey conducted **'Mobilets – Mobile Enabled Learnlets'** were developed keeping in view the latest pedagogic and technologic developments in mobile learning.

Need of the Innovation

In order to understand the preferences and readiness of IGNOU learners for mobile learning to explore mobile learning as an innovative area for providing learner centric, anytime, anywhere on the move learner support and learning activities, including the possibility of collaborating through mobile and hand-held devices, a survey was conducted amongst the learners of distance education. The study conducted among 100 learners of IGNOU revealed that 68 % of the learners showed keen interest in using cell phones for learning, 80% of the learners preferred learning of difficult concepts (hard topics) through mobile phone with animations, graphics, activity and summary. This motivated the innovator to develop a prototype of the mobile app which could facilitate teaching learning anytime, and anywhere, even when the learners are travelling.

Description of the Innovation

Mobilet consists of tailor-made useful and important concepts and theories related to a topic explained in a simple way using rich media resources like animations, sounds, images, videos, etc. which makes learning on mobile devices interesting. It also includes scenario based Mobi-learning. This component of the mobilet, gives a situation to the learner outlined in the form of a scenario which the leaner go through on their mobile devices. Every mobilet also includes quizzes to evaluate the learners.

Figure 1 : Main Screen of MTP-IMNCI App that Hosts Mobilets

Innovative Features

Mobilets deliver knowledge or information about a topic in a nut-shell through mobile devices such as smart phones, tablet PCs, iPads, iPhones, etc. The time mobilets were in the process of development people in general believed that mobiles are not meant to be for learning purposes. Mobilets were developed keeping in view convenience of the learner to access a particular learning topic. Some of the features of mobilets are given below :

- Mobilets provide an enhanced learning environment in which learners can interact with the counsellors, programme coordinators, course material in an augmented environment.
- Mobilets as a tool are small, light, and portable.
- Mobilets provide a personal virtual world at their tips which make them feel comfortable while they study.
- Mobilets are interactive and engaging.
- Learners get engaged in learning activities in various locations. Since learners normally have their smart phones with them most of the time, they can easily access mobilets anytime anywhere even while they are in a meeting or travelling.
- Mobilets provide facilities to learners to access information related to their subject with a click of a button.
- Each mobilet is of a short duration, typically around five to seven minutes. Each mobilet focuses on just one topic or concept.
- Mobilets are developed for health professionals who are involved in management of neonatal and childhood illnesses hence through mobilets they get specific information according to their requirements which they apply the same immediately to the context.

Figure 2 : Screenshots of Text, Animation and Topic Components of a Mobilet

Figure 3 : Screenshots of Quiz and Video in a Mobilet

Applications and Uses of Innovation

Mobilets can be used as a blended learning tool. The concept, methodology and pedagogy, of the mobilets can be applied to various professional training and skill oriented programmes.

Achievements

Prototype of interactive multimedia enabled course material in the form of mobilets for mobile devices was successfully developed. The successful development of the prototype further motivated and enabled the faculty to develop the entire Integrated Management of Neonatal Childhood Illnesses which could be accessed on smart phones and tab.

Way Forward

With the advent of HTML5 and free open source software mobilets on difficult concepts can be created for various courses/programmes for the learners.

Coordinator and Innovator

Dr. Jyotsana Dikshit
Email : jdikshit@ignou.ac.in
Period : 2010-2011

3

Interactive Mobile Learning

Mobile Enabled Interactive Multimedia Rich Programmes

Background

The importance of teaching and learning of any foreign language has long been recognized and acknowledged in cultural diversity of India. The major components of learning any foreign language are reading, writing, speaking (communication), and listening skills for various levels (beginners to advanced). Unlike many academic disciplines, learning a language is challenging from the word go. From the beginning, language learners face unrecognizable letters and words, unfamiliar sounds, translations and explanations based on grammar, etc. On top of this it is expected from the learners to actually say something, and write. In this context the emerging ICT enabled technologies, especially mobile applications, offers a gamut of opportunities to support language learners to enrich the language teaching, and enhance the quality and effectiveness of learning. The technology part of a language learning course mainly consists of audio lessons, mobile and online learning and hands-on practice tools, and live speaking practice.

This concept is based on the discussions held with the Vice Chancellor and faculty of School of Foreign Languages, as regarding providing innovative technological solutions to the School of Foreign Language, taking Arabic language as a pilot case. Thus, NCIDE in collaboration with School of Foreign Languages developed a prototype for providing innovative technological solutions for teaching learning Arabic as a foreign language. The entire work from planning, identification of resources, instructional design, development and implementation of the above mentioned material was done by the coordinators of the project.

Need of the Innovation

Language is basically a medium of expression. In the 21st century in view of globalization it has become a necessity to learn a foreign or second language to communicate with the outside world. Learners need scaffolding to learn a foreign language. They are required to be engaged in active learning. The major components which were identified by us regarding learning Arabic as a foreign language included :

- reading,
- writing,
- speaking (communication), and

- listening skills for various levels (beginners to advance).

However, it was observed that there are certain challenges in learning Arabic as a foreign language. Some of them are given below :

- Unrecognizable letters and words,
- unfamiliar sounds,
- translations,
- grammar explanations.

Thus, in order to meet the above challenges of learning a foreign language and to ensure that all the components of learning Arabic as a foreign language are covered, NCIDE in collaboration with SOFL designed and developed an interactive multimedia rich game based multi-platform enabled content for Certificate Programme in Arabic Language.

Description of the Innovation

ICT enabled Language Learning (ICTeLL) has always been in the fore front since the inception of ICTs in education as far as foreign language learning is concerned. In today's world ICTeLL is an integrated system that combines interactive radio, interactive TV, computer, ubiquitous devices for delivering instruction and interactive multimedia content, by integrating audio-visual effects while presenting the material and storing the same, which adds more power to traditional Computer Assisted Language Learning (CALL) programs. Because of the features such as learner control, instant feedback, and use of authentic materials, ICTeLL provides learners with an environment that can satisfy the needs for exploration, manipulation, stimulation, knowledge to resolve problems, and self-enhancement.

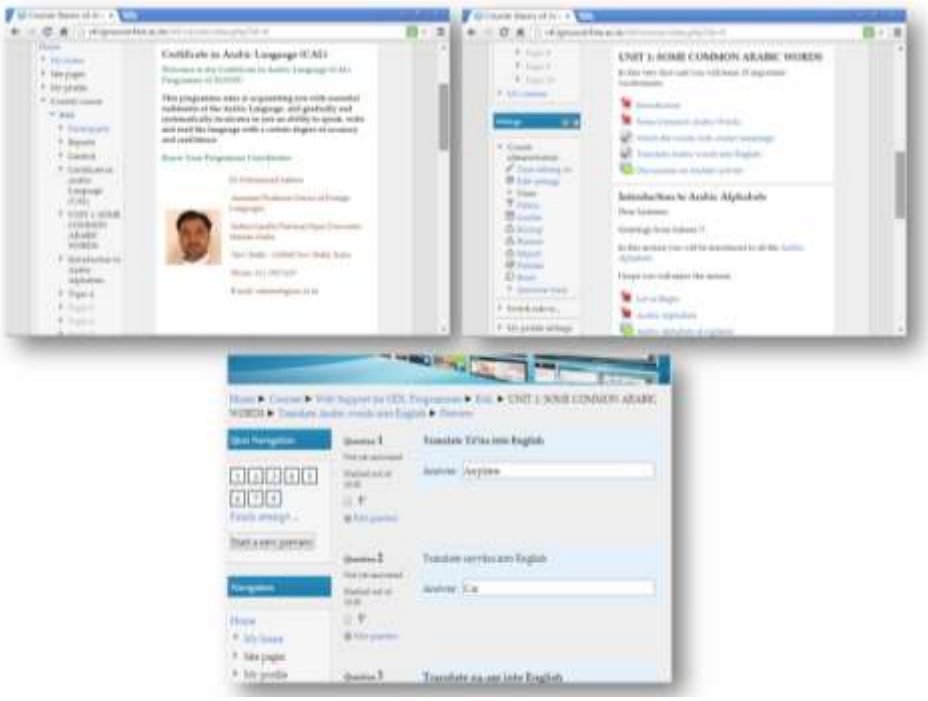


Figure 1 : Components of Web Support Accessible on Desktops, Smart TV/IP TV, Smartphone and Tabs

Innovative Features

The innovative features of the mobile enabled interactive multimedia rich programme are given below :

- It has learner-centred design.
- Each section will have a large number of structured components with built-in animations, practice exercises which will enable the learner to acquire Arabic reading, writing and communication skills effectively.
- There is a provision of E- Mentor.
- There is online access to Arabic Programme e-content with interactivity.
- It includes collaborative tools like Chat Sessions, Discussion forums, Blogs.
- It has provision of Learner Management.
- It has a provision of learner Authentication including free and paid learners
- Learning Analytics.
- Mobile Enabled Teaching Learning of Arabic language includes
    a. Mobilets
    b. Interactive Multimedia games
    c. Access from mobile to the Learning Management system
    d. Interactive package for tabs

Figure 2 : Mobile Application – Interactive Package for Smartphone/Tab

Achievements

A Prototype of ICT enabled highly interactive eLearning material including games was developed in-house by the faculty. The model (See Figure 4) and prototype was also presented in national and international workshop as an example of foreign language learning using ICTs. As the product is at the stage of prototype development it was tested among the students, professionals and teachers involved in teaching learning of Arabic. The prototype of the product was appreciated by everyone.

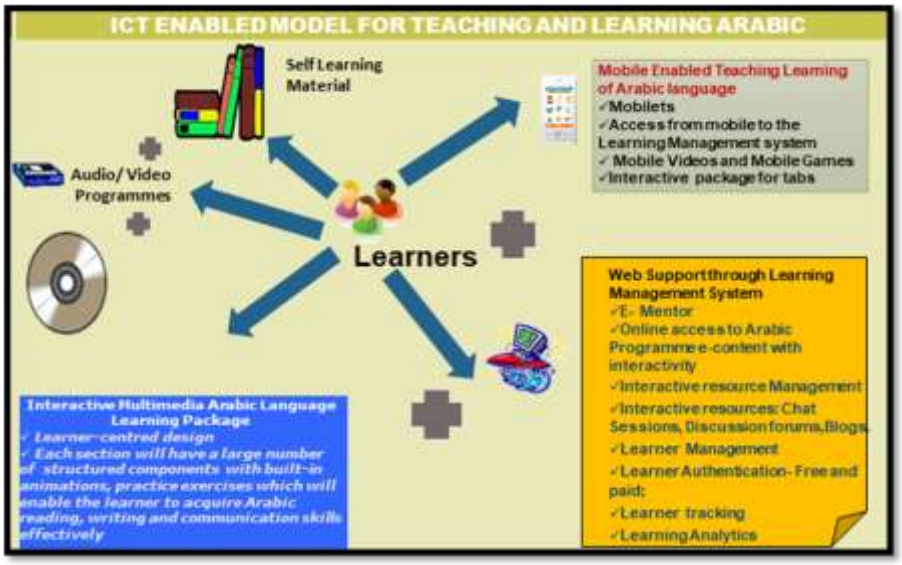


Figure 4 : ICT Enabled Model for Teaching and Learning Arabic as a Foreign Language

Applications and Uses of Innovation

In fact on the same pattern a dedicated portal was also created for teaching and learning of Russian language and Functional English. Some of the screens of the application are shared in Figure 3 below :

Figure 3 : Future Prospects

Way Forward

The pedagogy, methodology and technology of the prototype developed can be scaled up to provide a platform for other foreign languages.

Coordinators and Innovators

Dr. Jyotsana Dikshit
Dr. Mohd. Saleem, Assistent Professor, SOFL, IGNOU, New Delhi
Email : jdikshit@ignou.ac.in, saleem@ignou.ac.in
Period : 2014-2015

VlabMS
Virtual Lab Management System

Background

Effective and efficient learning especially for science, computer science and engineering courses requires a mixture of both theoretical knowledge and hands on experience or practical work. The revolution in Internet Technology and the boom of e-learning and virtual environments have enabled a number of web-based software systems to provide remote hands-on-experiences to the learners through computer simulations. In a virtual laboratory system the users gain knowledge through demonstrations and simulations which are guided by hyper-text documents.

The first step to be taken was to design a proposal for the development and implementation of virtual lab. After initial meetings with Prof. Sunita Malhotra, Prof. Vijayshri, Dr. Shubha Gokhle, Prof. Javed A. Farooqi, Dr. Lalitha S Kumar, (Physics and Chemistry faculty) of School of Sciences, a brief presentation was given by the NCIDE faculty on the concept, components, various phases and outcome of development and implementation of the virtual lab. It was decided by NCIDE and SOS that initially a prototype of the virtual lab known as virtual lab management system (VlabMS) will be developed with a few basic experiments in Chemistry viz. how to use an analytical balance, preparation of a standard solution and acid base titrations and for Physics it was decided to develop a virtual experiment on Cathode-Ray Oscilloscope (CRO). A detailed proposal was made with specifying clearly the objectives, activities and requirements for the design and development of the virtual lab. The proposal was approved in December 2006 and to begin with at the initial stage, a country wide educational broadcast was conducted to sensitize the IGNOU functionaries and learners about the concept of virtual laboratory. Eminent experts from IGNOU, and IIT, Delhi participated in the programme.

Thus, NCIDE developed a prototype of an interactive, multimedia-rich virtual laboratory system for science education at a distance. The VlabMS hosted open source experiments in Physics and Chemistry. The learner-friendly features of the VlabMS allow the learners to access it anytime anywhere : to view lab practical demonstrations; to perform selected lab experiments in a simulated environment; and to interact with their mentors and peer groups both synchronously and asynchronously in a digital environment.

Need of Innovation

In general for a practical based course offered through open and distance learning, it is essential for the learners to go through a lab work. In case of

IGNOU the practical based programmes have study centres in well-established reputed colleges in various cities of the country. The required resources like laboratory for conducting the practical, and classroom to conduct counselling for the programmes are provided by the concerned college. However, the laboratory in the colleges is used by IGNOU students during winter and summer vacations of the college. This results in less coordination between theory and practical work. As the time period to perform both guided and unguided practical experiments for the learners of practical based programmes of IGNOU is limited, students have no facility to repeat the experiments. They also required maintaining laboratory work book/manual.

As a response to the above problems, a need was felt to initially develop a prototype of VlabMS for elementary Physics and Chemistry experiments for B.Sc. learners as a cost-effective solution with omnipresent facility and a value addition to practical component.

It was proposed to design and develop a prototype of interactive multimedia rich virtual laboratory for distance science education that allows students to practice and perform laboratory experiments from remote locations through a web browser or offline through multimedia CDs.

Description of the Innovation

Open and distance learning systems worldwide are seeking innovative mechanisms of providing laboratory experiments through computer mediated simulations and demonstrations. In 2006, NCIDE in collaboration with School of Sciences envisioned developing a Virtual Laboratory (Vlab), for distance science learners in the beginning which would provide an innovative and timely solution to the learning problems of distance science learners in India. It was expected that the virtual laboratory would allow the students to practice and perform laboratory experiments from remote locations through a web browser or offline through multimedia CDs. However, due to resource constraints a prototype of the virtual laboratory known as VlabMS, which was first of its kind in India, was designed and developed with the available resources in 2006-2007. This was further extended to hosting OER based lab resources which was accessible to any interested learner. Later in 2010 the web-enabled module of the computer Literacy programmes consisting of about 800 simulations, demonstrations and evaluation for the learners, to experience hands on training of the lab component of the Computer Literacy Programme, were integrated in the VlabMS. Thus, this platform became useful to the learners to gain information and knowledge just when it is required. It is more interactive and can send information and receive feedback.

The entire prototype development process was divided into the following phases as mentioned in Figure 1.

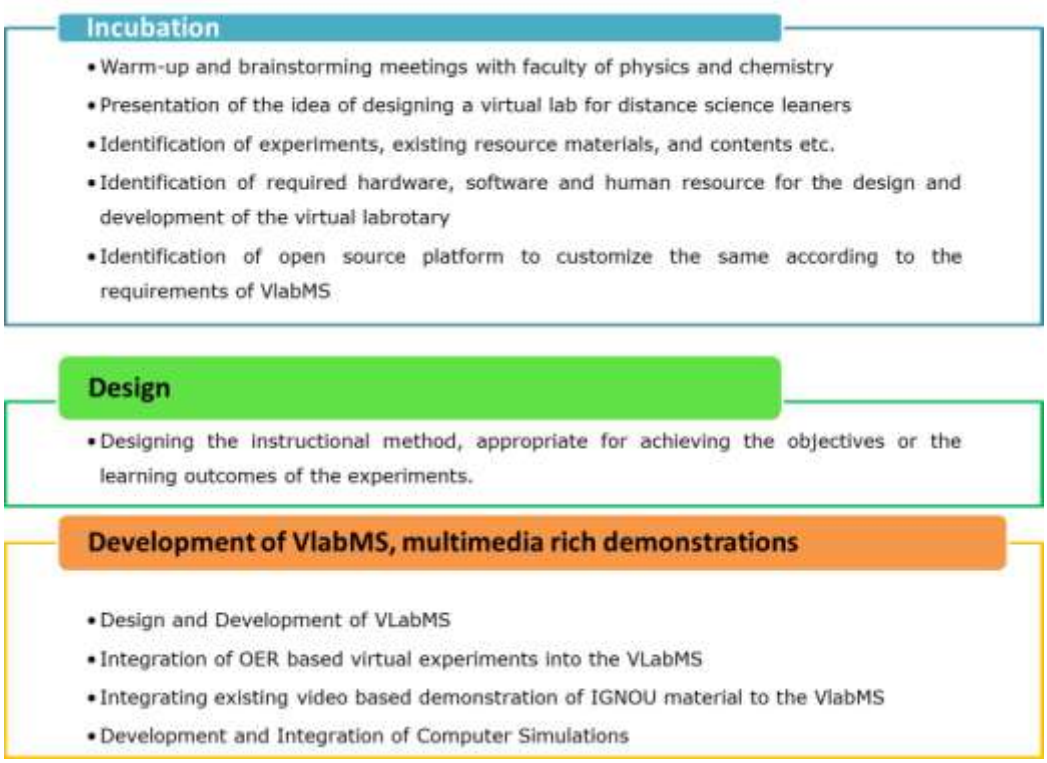


Figure 1 : Phases of Prototype Development of VlabMS

Everything was moving at the right pace, however there were certain constraints like availability of appropriate hardware and software. Human, the following creative ideas were implemented by the innovator to overcome the hurdle :

a. Open source Learner Management System like Moodle was customized into a virtual laboratory management system named as VlabMS.

b. In view of the philosophy that something is better than nothing, it was decided to make one of the oldest servers available in the NCIDE lab to host the portal.

The faculty of NCIDE took interest in even designing and developing at least one experiment in chemistry as a prototype.The Chemistry faculty facilitated NCIDE in providing lab manual and video lectures for the experiment on titration.

Innovative Features

The VlabMS was based on an innovative methodology viz. look, practice, access, collaborate and communicate. Each of them is explained below with pictorial view.

Look and Practice : The VlabMS has interactive multimedia rich lab practical demonstrations both in-house built and OER based which enable the learner to gain knowledge on the contents of the experiment. This component consists of all tailor-made useful and important basic concepts and theories in interactive multimedia format that a learner will require to perform the laboratory experiments both through the virtual environment or study centre lab. It also has a ready reference material of Lab manuals in digital format (for a few

experiments). All this enables the student to gain knowledge on all necessary and relevant topics before actually performing the laboratory experiments. Through the practice mode the learners can learn more effectively, if they have the opportunity to conduct experiments on their own in a virtual environment. This component of the VlabMS deals with interactive computer simulation that makes the virtual laboratory experiments more interactive, attractive, easily accessible and easier to perform. (See Figures 2, 3, 4 and 5).

Figure 2

Figure 3

Figure 4

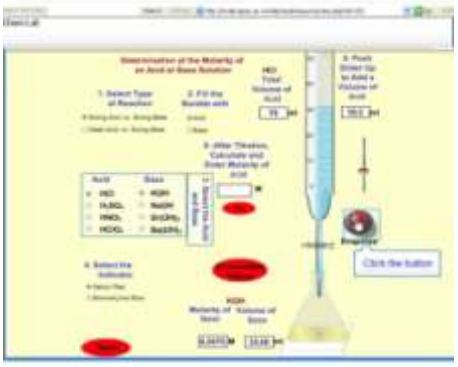


Figure 5

Assess : Once the learners have gone through the lab demonstration and practiced through simulations they can assess their skills in a simulated environment.

Collaborate and Communicate : The learners, through the VlabMS platform can collaborate and communicate through e-mail, chat, discussion board, blogs with their mentors and peer group. (See Figure 6).

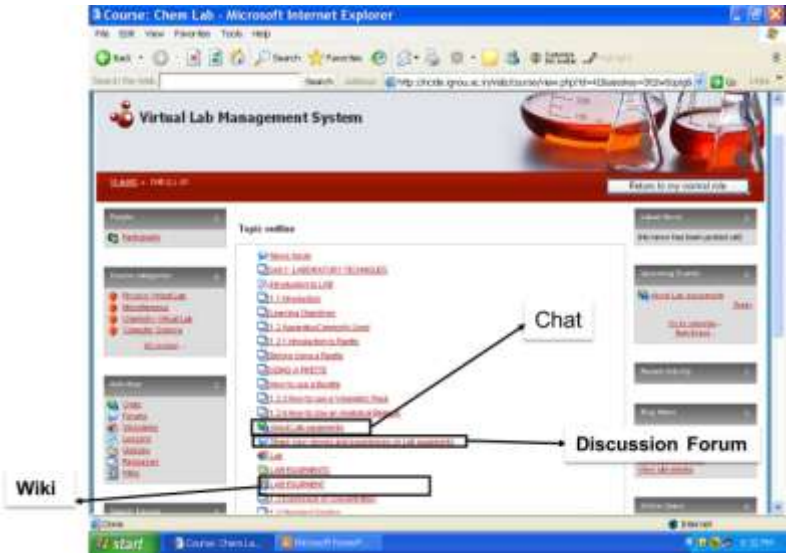


Figure 6 : Collaboration and Communication Feature of VlabMS

It has inbuilt Online Evaluation System.

Achievements

The concept of virtual lab with content and learner management facilities was a new idea. VlabMS was probably the first portal of its kind. An open source management system was identified to make virtual lab with all the content management and learner management facility. The portal hosted OER based virtual experiments. Simulations and demonstration related to basics of word, power point and how to operate a computer were also hosted. Since anyone could register into the platform. Several students from India and abroad accessed the platform.

Applications and Uses of the Innovation

The VlabMS was available on the NCIDE server for a few years, where users through simple registration could access OER based virtual experiments in the field of chemistry, physics and basics of computer science (learning word, PowerPoint, excel etc.) through the VlabMS.

Way Forward

As the VlabMS portal is a multi-admin, multi-user, platform independent technology which has the scope of complying with the latest WC3 standards, can be used to integrate the virtual experiment components of any practical based programme in various subjects. The VlabMS portal can be used for learning in the classroom, as well as to cover the absence of weakness or lack of facilities in the laboratory instrumentation or real laboratory. A thorough

review of literature was conducted and presented [1] keeping in view of the pedagogical, technological, managerial, and innovational dimensions for developing a virtual laboratory. (See Figure 7.)

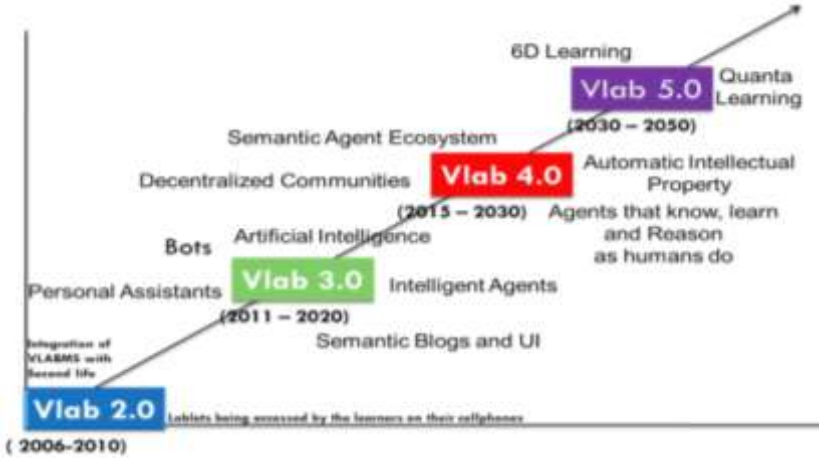


Figure 7 : Landscape of Virtual Laboratory for Distance Science Education[1]

Coordinator and Innovator

Dr. Jyotsana Dikshit
Facilitators :
Prof. Sunita Malhotra, Prof. Vijayshri, Prof. Shubha Gokhle, Prof. Javed A. Farooqi, Dr. Lalitha S Kumar SOS, IGNOU, New Delhi-110068
Period : 2006-2011

Reference

1. Presented a conference paper on **Virtual Laboratory for Distance Science Education,** Dated : 25th February 2010, International Conference on Digital Libraries, 2010.

5

Audiobooks

An Innovative Mechanism for Delivery of Content

Background

One of the roles of the National Centre for Innovations in Distance Education (NCIDE) at IGNOU is to promote innovations in distance education. As such the NCIDE is also to act as a facilitator for identifying and developing innovative mechanisms for delivery of content by the faculty of IGNOU through training programmes. To acquaint the faculty with the latest developments in Information and Communication Technology (ICT) tools and techniques to create audiobooks, NCIDE organised a workshop of the IGNOU faculty members in October 2013. The training aimed to develop competencies in the faculty members to design and develop pedagogically sound audiobooks. The faculty members were expected to create 10- 15 short 5-7 minutes audio content. Each audio was expected to deal with one concept and would be complete in itself. This would facilitate their reuse. The workshop also focused on how to use these audio content to create visually effective multimedia and e-learning content.

A total of 15 prototype audio books were developed. The audiobooks and interactive multimedia were bilingual, both in English and Hindi. In addition to the voice recording by the faculty members themselves to create the audiobook prototypes, an open source software was also used by the NCIDE team to create an audiobook prototype. The content of the audiobook prototypes could be used as Reusable Learning Objects for e-learning as and when required.

Need of the Innovation

The profile of ODL learners is diverse. Some are in defence services, some working people who travel to work, some are housewives. The distance learner faces the constraints of time and pace for learning. Many such learners would be benefited by an audiobook while they are on the move. A housewife, while she is working at home, could conveniently listen to an audiobook and learn. Similarly, a working person who is travelling to and from work could use the travelling time beneficially by listening to an audiobook. Audiobooks are an effective mechanism that could allow these learners to complete the understanding of their study material through audio mode at their own time and pace. The audiobook is a flexible mechanism that could allow the learner to replay and listen to what has been said in the book, thereby strengthening her learning. The audiobook is also a very useful tool for the visually challenged learner. The idea was proposed by Dr. Moumita Das and the NCIDE designed and developed prototypes of audiobooks in collaboration with the IGNOU faculty members in a workshop mode.

Description of the Innovation

The auidobooks were designed and developed in such a way that the structure of the audiobook was the same as the structure of the IGNOU Self Instructional Material (SLM). The outline is as follows :

1. Title of the Course, Block and Unit (1-2 min)
2. Structure of the Unit (1 min)
3. Introduction (2 min)
4. Objectives (1 min)
5. Section 1.1 (3-5 min)
6. Sub section 1.1.1 (3-5 min)
7. Check your progress (1-2 questions) (2 min)
8. Section 1.2 (3-5 min)
9. Sub section 1.2.1 (3-5 min)
10. Check your progress (1-2 questions) (2 min)
11. Conclusion (2 min)
12. Questions (2nos) (2 min)
13. Glossary (3 min)
14. Answers to Check Your Progress (2 min)
15. Suggested reading (2 references) (1 min)

- The total duration of each audiobook was approximately 40 minutes which could be customized depending on the need and nature of the topics.

The participants were given the scope for creativity and innovation in the choice of topics, to be flexible with the structure, e.g. except the title of the audiobook, all other components mentioned above could be customized suitably. Further, the audio formats, such as narration (autobiography of a famous personality, story, news, case study, etc.), interview, role play, discussion, quiz, question and answer, music, surrounding sounds of an environment, locations such as a park or a market place etc., could be used creatively in the audiobooks.

The audio content has to be appropriately created and designed for developing an audiobook. The faculty members were trained in development of audio content.

The recording was done using the audio recording and editing tool Audacity.

The NCIDE had used an open source software “Yakitome” to develop an audiobook. This software converts text to speech. A 40 minute audiobook on the topic “Foundations of Open Learning and Distance Education” was prepared as a prototype by the NCIDE.

Innovative Features

The innovation lay in the concept that audiobooks could be developed for the ODL learners. There is, at present, no audiobook for the learners. It is therefore a *new* product in the ODL system. It is indeed *useful* to a wide range of learners. The auditory learners would stand to benefit the most. However, the students with other learning styles could also use the audiobooks at their own convenience to learn. The visually impaired learners of the ODL system would find audiobooks most useful. With the pedagogy for audiobooks in place and the easy availability of audio-recording tools on the computer, a teacher can effectively create audiobooks for his or her learners. Developing audiobooks is therefore *feasible*. Creating audiobooks by this method costs very less, and therefore such audiobooks are *cost-effective*. The *scalability* and *sustainability* of audiobooks are high.

Achievements

Under this project, total 13 products were developed. These products developed by the faculty members may be considered as prototypes of audiobooks. The topics of the thirteen audiobooks were varied and the duration ranged from 2 minutes to 20 minutes approximately. Additionally, one audio prototype was prepared by the resource person Dr. Sutapa Bose, and another by the NCIDE team comprising Madhav, Neelam and Pawan, using the open source text to speech converting software called Yakitome.com. The details of two selected audio modules are presented below :

I Types of Heart Failure

i. Course Name : Common Cardiovascular

ii. Unit Name : Heart Failure

iii. Prepared by : Dr. Biplab Jamatia

iv. Summary : There are various types of heart failure (HF) observed in clinical practice. They include left sided HF, RF sided HF, systolic HF, Diastolic HF, Acute HF, Cronic HF, etc. This audio programme is far PGDCC students for understanding the various types of HF. It can be sent to students via e-mail. It can be used for multimedia. It can be a part of an audio book.

II Concepts and Process of Community Health Nursing

i. Course Name : Community Health Nursing

ii. Unit Name : Introduction to Community Health Nursing

iii. Prepared by : Dr. Neerja Sood

iv. Summary : Audiobook emphasized on reviewing the basic concepts related to community health nursing; meaning of terms like community, community health, community health nursing; explained community identification and community diagnosis and steps of CH nursing process including C-IP. Students can listen to audiobook and understand the basic concepts which will be beneficial for them to

apply during practical sessions and field work. Audiobook can be a reference for them to review.

Besides the above, the participants were trained and empowered to develop such audiobooks. These audiobooks could be used as reusable learning objects for multiple uses for the purpose of more effective teaching-learning at IGNOU.

Applications and Uses of the Innovation

The audiobooks could be created and provided to the ODL learners for study. The stand-alone modules of the audiobooks could be re-used to create other audiobooks. The reusable modules of the audiobooks could be used in creating multimedia. These audiobooks could be used in e-learning. Audiobooks could be delivered to the learners in their mobiles. The University could broadcast the audiobooks through its radio services *Gyan Vani*. The audiobooks could also be uploaded on the University website for the learners to read.

Way Forward

The audiobooks are capable of filling the huge gap area of the ODL system, namely the lack of time with the learners for study the print mateial. The audiobooks have a bright future in not only the ODL system, but in the conventional system as well. The design and development of audiobooks needs to be taken up in the right earnest by the University.

Coordinators and Innovators

Dr. Moumita Das
Dr. Sutapa Bose, Associate Professor, SOE, IGNOU, New Delhi
Dr. Neerja Sood, Assistant Professor, SOHS, IGNOU, New Delhi
Dr. Biplab Jamatia, Assistant Professor, SOHS, IGNOU, New Delhi
Dr. Mukesh Kumar, Assistant Professor, SOA, IGNOU, New Delhi
Period : 2013-2014

6

Interactive Multimedia

Multiple Media Enabled Computer Literacy Programme

Background

As a part of the North East Educational Development activity, the Computer Literacy Programme (CLP) was launched from November 1, 2002 in most of the states of North East. This was launched through select Study Centres of IGNOU and Community Information Centres (CICs) of Ministry of Communications and Information Technology spread across the region on pilot basis. As a collaborative initiative, IGNOU had signed an MOU with Ministry of Communications and Information Technology on March 31, 2003 for the utilization of the Community Information Centres of North East established by the Ministry. Through its pilot launch of CLP training, IGNOU could train considerable number of candidates in different states of North East. The print material of the Computer Literacy Programme in English was specially designed and prepared.

The programme was of one-month duration covering the basics of computer operations and applications (WINDOWS and; MS-OFFICE). The course was spread over five blocks along with one lab manual. A certificate of participation was awarded by IGNOU to the successful participants.

This innovation is related to the development of multiple media enabled CLP. Apart from the printed training material the other media components that were expected to be integrated in the CLP were interactive multimedia CDs and web support through virtual lab platform developed by NCIDE (See Figure 1). This activity was a joint collaboration of National Centre for Innovation in Distance Education (NCIDE) and erstwhile Education Development of North Eastern Region Unit (EDNERU).

Figure 1 : Homepage of Multimedia Rich Lessons

Need of the Innovation

Need was felt to upgrade the CLP to Multiple Media Enabled CLP so as to do value addition to practical component of distance Science learners and to make it cost-effective, and to provide an omnipresent facility.

This was possible, if we could develop an interactive multimedia rich content for various components of CLP. In this context, it was also decided that apart from the face-to-face session and hands-on-practical, the CLP should be offered through interactive multimedia CDs with multimedia animation and simulation and provide web based support through our virtual lab platform.

Description of the Innovation

New ICTs have become major resources for teaching and learning in education. In particular, interactive multimedia platforms help the learners to develop insight of the subject and to collect information, which may not be immediately available otherwise. The interactive multimedia instructional tools provide an interactive, individualized, self-placed, flexible and motivating learning environment. Web technology simultaneously enriches learning opportunities like simulation technique with multimedia using latest computer software. This enabled National Centre for Innovation in Distance Education (NCIDE) to facilitate Education Development of North Eastern Region Unit (EDNERU) in the value addition of the computer literacy programme (CLP) to upgrade it into a 21st century programme to be presented in a blended mode. The existing Computer Literacy Programme was upgraded into multiple media enabled format, which include both interactive CD and online delivery of the CLP through a virtual lab platform. The multimedia instructional tools provided an interactive, individualized, self-placed, flexible and motivating learning environment. Similarly, Web technology simultaneously enriches learning opportunities like simulation technique with multimedia using latest computer software. It envisions helping the students to develop insight of the subject and to collect information, which may not be immediately available otherwise. The revolution in internet technology and the boom of e-learning and virtual environments have enabled a number of web-based software systems to provide hands on virtual training to the trainees.

To begin with NCIDE and erstwhile EDNERU conducted a quick survey of demographic trends, gender wise state population, literacy rate, IT infrastructure, commonly used hardware and software in the states of NER through EDUSAT based audio-video conferencing for the programme in the year 2007. This enabled NCIDE and erstwhile EDNERU to identify employable computer skills for the North East region, which facilitated in the design and development of the multiple media enabled CLP. According to the quick survey, it was felt that the level of CLP was good enough for the prospective learners hailing in the North East Region. Thus, it was decided to provide the following components to the innovative multiple media enabled CLP :

a. **IMMR Lessons :** This component consisted of interactive multimedia rich course content with animations and demonstration, which significantly value add the learning process and make learning enjoyable. The

multimedia rich course material enabled the learners to understand difficult concepts easily in a self-paced, flexible learning environment.

b. **IMMR Ms-Office Simulation :** This component enabled the learners to actually practice the various Ms-Office packages like Word, PowerPoint, etc. through simulations.

c. **Glossary :** The glossary is an alphabetized collection of computer related terms with their meanings. This helped the learner to understand other computer terms while going through the course material. (See Figure 2)

d. **Resources :** This component consisted of various resources like Free Open Source Software (FOSS),useful OERs, articles etc. which would be distributed to the learners on CD-ROM. (See Figure 2)

e. **Quiz-bank :** This component consisted of multiple choice, true false, drag-drop and simulation based questions to help the learner evaluate himself/herself. (See Figure 2)

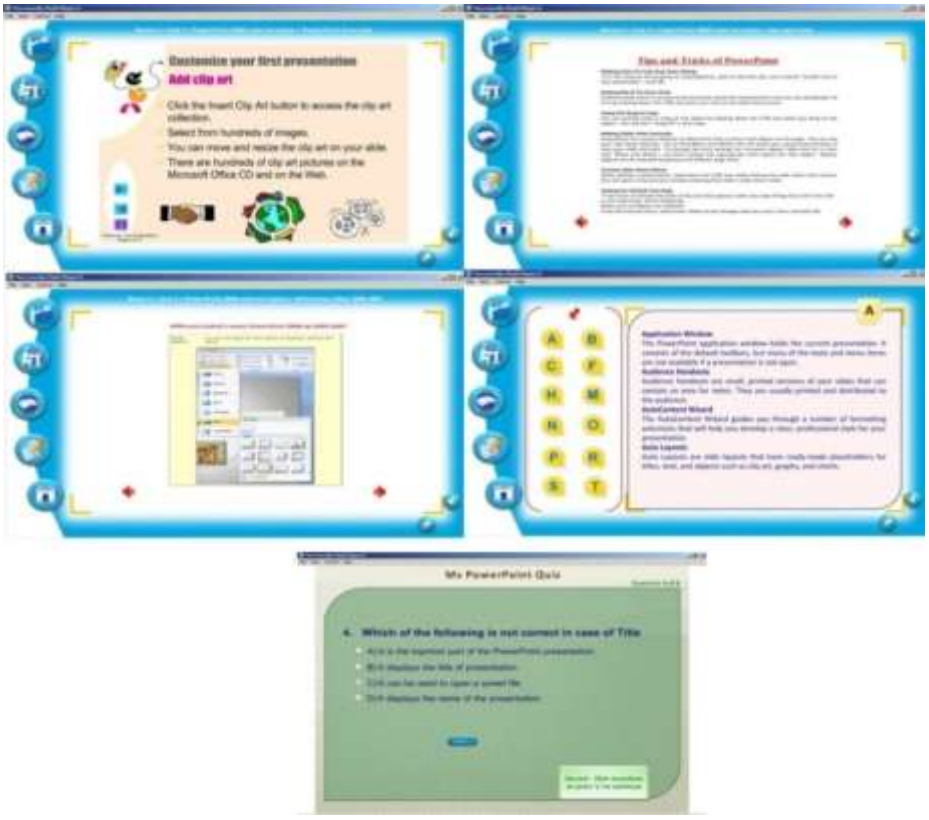


Figure 2 : Screenshot of Resources, Glossary and Quizbank

It was also decided that web based training will use any combination of existing course material in print format (soft copy), IMMR content, audio, video, or external data banks (website references) to present a course of instruction. This is very useful as information and knowledge is available just when it is required. The multiple media enabled CLP was delivered in two ways offline interaction where the content and simulations could be delivered to the learners through interactive multimedia CDs, and web support through the virtual lab platform of NCIDE.

Innovative Features

Some of the innovative features of the multiple media enabled CLP are given below :

- Content was designed keeping learning outcome in view.
- Focused more on live demonstrations of the software packages and hands on simulations to make the topic interesting and attractive to the learners.
- Bridging the gap between Office 2000 package and latest office version (at that time) by presenting the content of later versions in brief overviews to make the learner up to date.
- Based upon the strong pedagogy behind designing the content, the office packages were completely animated and simulated. (See Figure 3)
- The Package developed was platform independent and could be viewed on Windows/Mac/Linux platforms.
- Users could practice office 2000 simulations even if they did not have the required software installed on their PCs/Laptops.
- The learners could interact both online through the Virtual Lab Portal and offline through CDs.
- The Virtual Lab Portal was capable of managing remote learners.
- The learners could also use the platform for uploading and downloading of assignments.
- In order to make learning engaging we had developed hands on practice sessions followed by assessments.

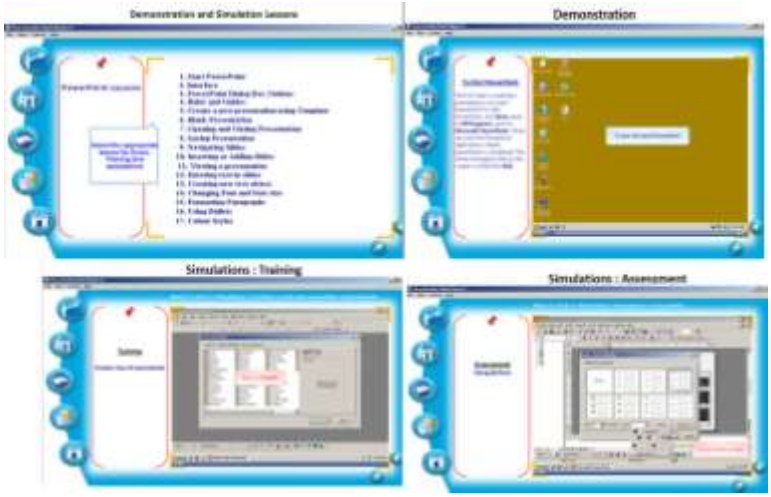


Figure 3 : Screenshots of Animations and Simulations of the Office Package

Achievements

The concept of developing interactive multimedia with simulations was new and innovative product itself. Linking the interactive demonstrations, simulations and content with the virtual lab management system was first of its kind in the ODL system in India during that time.

Applications and Uses of the Innovation

The interactive multiple media enabled CLP was used by the learners of IGNOU who had taken admission in CLP. In spite of the challenges and barriers as mentioned above the team was able to develop and deploy the same in virtual lab platform. The product was tested by experts who highly appreciated the effort made.

Way Forward

The package, though, is of beginner level but it can also be used as a training tool in basics of computers, and MS-Office in the rural and backward areas. Though initially developed for the learners from the states of the North East Region of India, the programme has utility of a national dimension. The availability of rich information sources in digital formats has impacted the world of learning. To fully utilize the rich information resources our citizens must be computer literate to be successful in the continuous process of learning and relearning.

Coordinators and Innovators

Dr. Jyotsana Dikshit
Dr. Jayashree Kurup, Former Deputy Director, EDNERU, IGNOU, New Delhi
Email : jdikshit@ignou.ac.in, jkurup@ignou.ac.in
Period : 2008-2010

7

Web Supported Learning

An Innovative Intervention to Revolutionize Learning

Background

The proliferation of Information Communication Technology (ICT) in the 21st century has created a global impact in the development of higher education in general and transformation particularly of distance education, from providing learning through print based technology to interactive, flexible, intelligent learning environments. Invention is the mother of necessity, hence, obstacles and problems lead to innovations.

The web support portal of Certificate in Health Care Waste Management Programme of School of Health Science, IGNOU is another innovative intervention of NCIDE to revolutionize the learning experience of the distance learner by captivating and empowering the so called isolated learners to successes. This programme is targeted at the professionals and paraprofessionals working in the health care, like doctors, nurses, laboratory technicians and sanitary inspectors. It also targets the programme managers and the hospital or health care facility administrators. Since the programme has an eligibility of undergraduate level, anyone in the community who is interested can also enroll and benefit from the programme. The portal enables the learners to access interactive ready reference material anytime, anywhere by using any digital supported device. It gives them an opportunity to go through the interactive material along with the identified resources made available to them before attending the counseling sessions. The web support portal provides individualized guidance and counselling to the learners. It provides an effective information system with a range of activities and interactions that impacts teaching and learning. Since the target group is so vast and diverse, the flexibility and the type and range of material that can be accessed can be decided by the individual learners as per their need thus making learning more individualistic.

Need of the Innovation

Proper Health care waste management is crucial not only for the patient's safety and the occupational health of the health care personnel, but also for the health of the community at large since the hazards of improperly managed waste as well as the risks posed by it are appalling. Initiating a change in the attitude of all people involved with the generation and management of health care waste, through sensitization, education and training, is therefore essential. There is no formal training or course available in the conventional system to address these issues. The guidelines for the management of health care waste by the health functionaries of all the health care facilities and the treatment and disposal by all

the Central Bio-Medical Waste Management and Treatment Facilities has been notified in the gazettee notification by Government of India as the Bio-Medical Waste Management Rules 2016, and it's amendments thereof. Training of all the health care functionaries at the time of induction and on yearly basis has been mandatory in these Rules. It thus became imperative to initiate a training programme in this regards. Since the main target groups are the people already working with and handling the health care waste, a training programme through the distance mode seemed the best possible solution. To address the diverse needs of the vast and different target groupd with respect to age, qualification, experience, regional locations and individual learning needs, a web enabled teaching and learning was visualized and developed on an experimental basis for providing individualized training. Keeping in mind that all learners may not have access to the net connectivity and/the multiple media devices, print material was kept as one of the essential components of the programme package. The audio videos, radio counselling, web conferencing, synchronous and asynchronous chat sessions were all kept as add-ons and supplementary to the print material.

Description of the Innovation

The idea of developing the web support portal was discussed in a meeting held between Prof. Ruchika Kuba and Dr. Jyotsana Dikshit way back in 2015. Initially it was decided to provide a Moodle based Learning Management System as a web support platform for the CHCWM programme. A prototype of the same was developed however in view of resource crunch it was decided to use the freely available G-Suit (Google) technologies with IGNOU to provide web support to the learners. At this time no one in the University had even thought of applying such freely available technologies to the learners. Components of the web support portal are mentioned in Figure 1.

Figure 1 : Components of Web Support Portal

Innovative Features

NCIDE has deployed an innovative web support solution for teaching learning for distance educators as well as learners by using open source tools with platform independent technology. The web support solution enables the distance educators specifically teachers by using drag and drop facilities to create a synchronous and asynchronous web enabled teaching and learning environment which includes uploading of interactive ready reference self-learning material, creating important programme/course announcements, assignments, uploading useful learning resources like PowerPoint presentations, web resources, video resources, creation of discussion forums, etc. The learners can also access interactive self-learning material, programme/course relates material anytime, anywhere, through the web support platform. They can interact with the peers, and counsellors synchronously and asynchronously using discussion forums, chat and video conferencing facility. As a prototype the solution is being implemented for the Certificate in Health Care Waste Management Programme of School of Health Sciences, IGNOU. Some of the innovative features (See Figure 2) include the following :

- Students can access web enabled self-learning material as soon as their admission is confirmed, they need not wait for the printed material.
- Pedagogically, the web support platform enables the learners to access the content through various e-learning methods and strategies including mind-maps, interactive self-learning materials presentation, demonstration of skills through video, drill and practice through virtual class, open source games, case studies, role-plays, discussion and interaction and collaboration, through synchronous and asynchronous mode of communication.
- As the web support is based on technologies provided by Google the technology infrastructure in context to hardware as well as software required by distance educators and counsellors as well as the learners is minimal.
- As software has pre-installed themes, templates, sites pages and page design layout interface designs for the creation of web pages, content, navigation, etc. it is very easy for distance educators to create their own pages by using drag and drop facilities and publish them nicely for any device.
- Content can be inserted from Google drive as well as other applications. For example, content from Google Docs, Sheets, Slides, Forms, Charts, Videos, or Images from Google Drive into a section of the web portal. One can also insert Google Calendars, Maps, and YouTube videos, too.
- Through the web support portal the learners can download assignments and have access to latest information.
- The eligible learners can use the facilities provided by the web support portal.

- Multiple layers of security, including leading encryption technology like HTTPS and Transport Layer Security.

Figure 2 : Screenshot of the Web Support Portal

Achievements

The web support portal was tested on the learners of January 2018 session. After receiving the feedback from the learners of the web support portal is being made ready for January 2019 batch of the CHCWM programme. The learners appreciated the web support portal.

Applications and Uses of the Innovation

NCIDE is collaborating with School of Health Sciences and has developed an interactive web support portal for Certificate in Health Care Waste Management Programme, a programme developed in collaboration with World Health Organisation (WHO), SEAR Region. The portal includes interactive learning material, resources like PPT, videos, PDF of reference material, etc. Other sections of the web support portal includes provision of downloading assignments, and old question papers, announcements, calendar, feedback, quiz, etc. A prototype of the web support portal for the CHCWM Programme for the July 2017 batch and January 2018 batch has been deployed.

The innovations developed were used for the preparation of the course material. The course writers included eminent subject experts from different parts of the country. Although the course material had been meticulously worked out by an expert committee consisting of experts belonging to the Health Ministry, WHO, Medical Colleges, Programme in charge and subject experts, overlaps in the units across the blocks was foreseen during material

development. To avoid this, it was imperative that the course writers interact with each other during the writing process. This would not only ensure that the overlaps could be eliminated or at least minimized, but also enable to maintain a uniformity among the different units as far as the difficulty level and style of writing was concerned. The experts were very busy senior people residing in different parts of the country. To save on the time and money, viber conferencing was carried out instead of the course writers meeting. This turned out to be useful in not only smoothening out the differences between the texts but also helping the experts get a feel of working together for a common cause. The viber conference also helped to clarify a number of doubts that the writers had during the process of writing and could be attended to multiple times, without waiting for a single face-to-face interactions to be arranged.

The web portal was also put to a test on the first and pilot batch of the revised CHCWM programme. There was continuous two way communication between the programme coordinator and the students. Administrative and academic support was provided, by providing the relevant and required information from time to time and clearing their doubts within an hour or two. An interaction between the programme coordinator and the students was made feasible by the programme incharge during the induction meeting of students conducted in the respective the programme study centres by using the WhatsApp call, wherein the individual students addressed their administrative difficulties that they faced. The students could access the study material from the portal and received regular updates regarding the last date for submitting assignments, filling of the examination form, uploading of hall tickets, etc.

Way Forward

The web support portal with the above mentioned technology features is developed using G-Suit which is free for IGNOU. On the same pattern all the schools can have their programme portal and can use the facility available to interact with the learners, to facilitate and support the learners.

Coordinators and Innovators

Dr. Jyotsana Dikshit
Prof. Ruchika Kuba, Professor, SOHS, IGNOU, New Delhi
Email : jdikshit@ignou.ac.in, rkuba@ignou.ac.in
Facilitators : Dr. M. Murli Rao, Head CD and Mr. L. M. Pant, Deputy Director Computer Division (For providing access to few tools)
Period : 2016 Onwards

Online Admission System

A Technology Enabled Admission System in IGNOU

Background

The Indira Gandhi National Open University (IGNOU) is the world's largest Open University offering high-quality higher education through Open and Distance Learning (ODL) system. IGNOU fulfills the educational needs of more than 3 million students in India and other countries by offering about 228 Certificates, Diploma, Degree, Master and Doctoral level programmes. The programmes are being offered through a network of 56 Regional Centres (RCs), around 2,667 Learner Support Centres and 29 Overseas Partner Institutions. With the diverse range of programmes and inherent features like low cost and learner friendliness, the IGNOU has succeeded in reaching out to a significant group of learners from amongst the disadvantaged and marginalized groups. Access, quality and equity have always been the matter of concern for the university. In this context, the university has made specific efforts to increase the access, improve the quality of education and provide equal opportunities for all irrespective of gender, caste, region, religion and creed, socio-economic background, etc. by way of using technology to reach out to all equally. Admission is the first step of the students' life cycle in an educational institute. It should be so easy and user friendly that their entry into the system is smooth and hassle free.

Need of This Innovation

The off line admission process in IGNOU starts with releasing of notification by the Student Registration Division to all the Regional Directors for both January and July sessions every year. The applicant needs to collect the IGNOU prospectus by visiting directly at the Regional Centres, Study Centres or by sending the request along with demand draft by post or courier service to the Regional Centre. As of now the candidates willing to take admission in IGNOU used to fill up the admission forms and submit them at the nearest Study Centre (SC) and the Regional Centre (RC) of IGNOU by post or by hand. After receiving the duly filled in application form and documents, the respective Regional Centres enter the data of admission forms into computer systems. The demand drafts received with the admission forms are deposited in the bank. Admission data of each RC is then forwarded to Student Registration Division (SRD) at IGNOU Head-Quarters through file transfer facility called Registration Data Transfer System (RDTS).

However, on reviewing the existing admission system, it was observed that the offline admission system had some limitations and difficulties such as printing of prospectus for around 250 programmes, their transportation, sell, maintenance

and storage at the RCs and SCs, receiving and storing of the filled in applications and related documents, lack of trained manpower for error free data entry of applications, cost and time involved in all these activities and so on.

In view of the limitations of the offline admission system and the increased use of Information Communication Technology (ICT) in the field of education, it becomes imperative to design, develop and implement an online admission system at IGNOU. Particularly in a situation when most of the candidates aspiring to pursue their higher education through open and distance mode are geographically spread all over the country and it becomes difficult for them to visit the university or RCs every time, it becomes more important to provide access through online admission system.

Moreover, in view of the notification from the University Grant Commission (UGC), Government of India vide which the UGC has made it mandatory for all the central universities to implement Online Admission System for all the programmes. Besides making the admission system more learner friendly and cost effective, the need of hour is to keep pace with the technology.

Description of the Innovation

As discussed above, offline system of admission was being used in IGNOU since its inception. There were certain problems and limitations of this traditional system of admission. Moreover, with the increased use of technology and also to keep pace with other institutes, it was necessary to introduce the technology enabled online admission system. But, in view of the vast number of admissions every year, it was not advisable to switch over completely to the online admission system. There were several reasons not to completely go for the online admission system. For example, all aspiring candidates may not have facility of internet and computers, they may not be able to handle the online admission portal for filling and submitting the application forms, they may have apprehensions in making online payments, and so on. That is why the IGNOU decided to develop a hybrid model of admission integrating both online and offline admission systems at IGNOU. Accordingly, an architectural design of the hybrid model as shown in the Figure 1, was designed, developed and implemented.

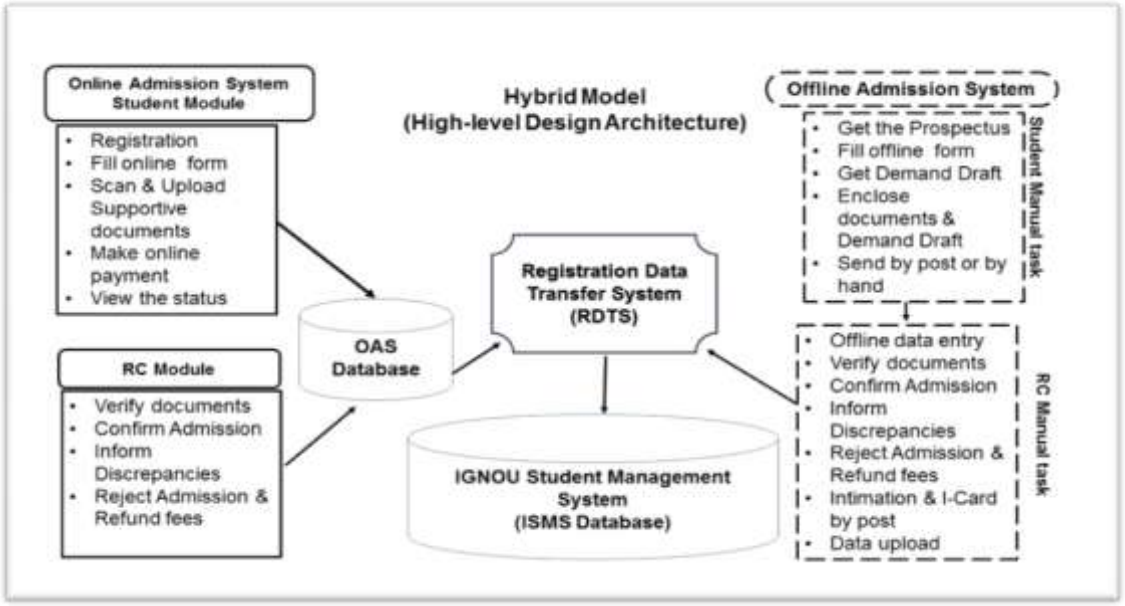


Figure 1 : Hybrid Model : High-level Design Architecture

This model has basically three components- Online Admission System, Offline Admission System and the Registration Data Transfer System (RTDS). RTDS plays a very crucial role as it captures students' data both from Online and Offline Admission System and then integrates the data with the existing IGNOU Student Database Management System (ISMS). ISMS is basically the main database of the students receiving data from both the admission models. This database is then used for all purposes like admission card, identity cards, material distribution and for examination purpose. The students seeking admission through online mode access the OAS portal through IGNOU website https://onlineadmission.ignou.ac.in/admission/.

Online Admission System

Online Admission System is one of the important components of the hybrid model of admission at IGNOU. The OAS has mainly four modules- Student Module, RC Module, SRD Module and Admin Module.

a. **Student Module :** The candidates aspiring to take admission at IGNOU are the main users of OAS portal. They get access to the OAS portal through Student Module as the main interface for the students. For online admission, the aspiring candidate has to register on the OAS portal to obtain login information by providing his/her basic information like name, date of birth, email address, mobile number, password and confirm password. After registration, an automated email/SMS is sent to the student on his/her registered email address/mobile number which contains unique registration ID which is required for future login to the portal. A workflow diagram of the Student Module is shown in Figure 2. After registration, students again login to the OAS using their login information and then fill up the online admission form, which includes the details of programme, courses, regional centre, study centre, eligibility and personal details like religion, category and correspondence address, etc.

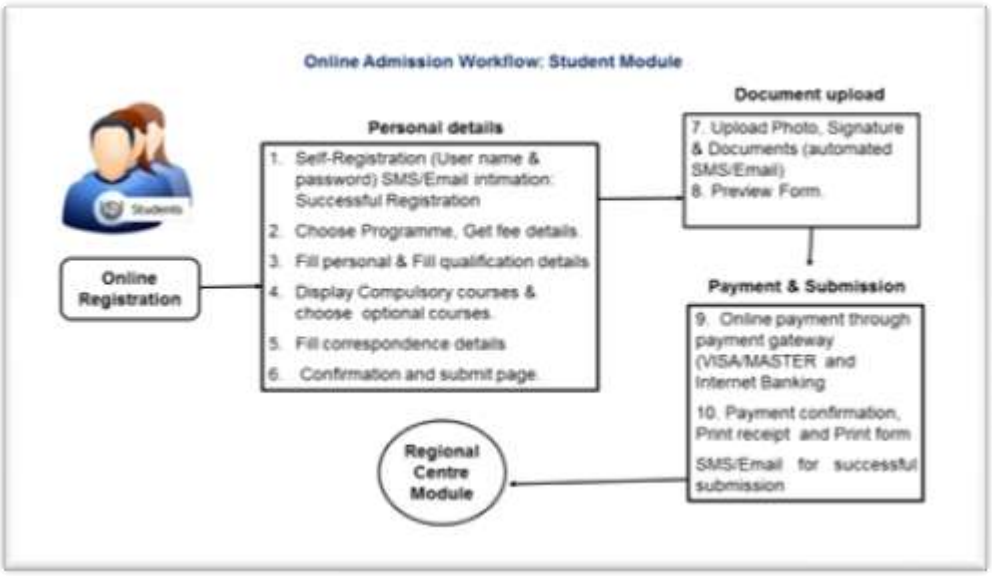


Figure 2 : Online Admission Workflow : Student Module

After entering the personal and programme details, the student is required to upload his/her photograph, signature and supporting documents with specific file format and size. A confirmation page allows the student to verify or check details provided by him/her so that typing or any other mistakes could be corrected before final submission of the form. A separate edit option is also made available in the admission form for each section like personal details, qualifications, courses, etc. so that changes, if any, could be made directly by the candidate in the appropriate section. Subsequently, student can pay the programme fee online through payment gateway by using credit/debit card or net banking; automated payment confirmation is sent to the student through SMS and email. However, no change or editing is allowed in the application form after successful payment of fees. After successful submission of the admission form, an auto-generated acknowledgment slip is also sent to the candidates through email and SMS. Candidates can also print and save the acknowledgement in PDF format for reference and further use.

b. RC Module : The second important user in this system is the staff of Regional Centres. They are given different types of authorized access to the OAS portal through RC Module. RC users have a separate login and password to view the RC dashboard. A workflow diagram of the RC Module is shown in the Figure 3. In order to process the online admission forms, the Regional Centres are given following facilities and responsibilities with authorized access

i. They can view the overall status of the online registration at their RC including the details of the individual admission forms by selecting/searching the forms.

ii. They can view the details of the documents attached with each individual admission form and verify the admission forms with the attached documents for approving or rejecting the admission form.

iii. After verification of the admission forms with the documents, RCs can confirm admission, if satisfied and inform the candidates accordingly.

iv. If there is any discrepancy in the admission form, the same can be intimated to the concerned candidate through SMS and email.

RCs can generate the welcome letter and identify cards for the confirmed students.

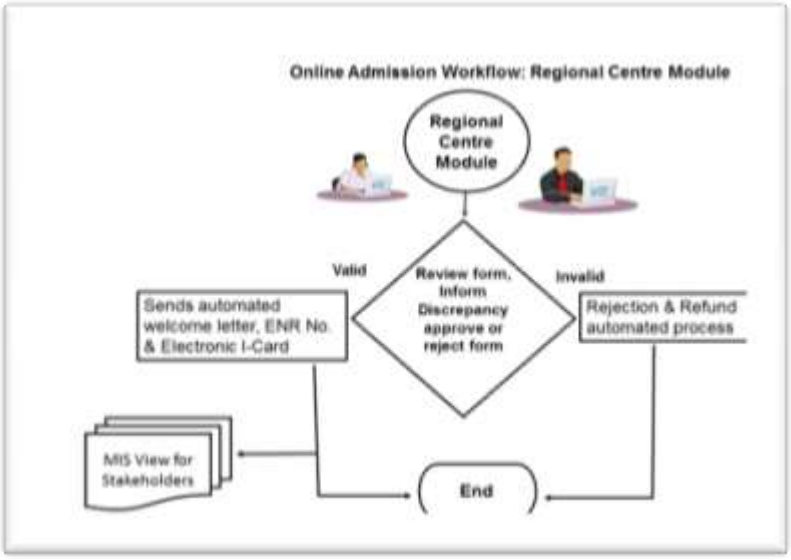


Figure 3 : Online Admission Workflow : Regional Centre Module

- RCs can reject the admission forms, if not found suitable or eligible just by clicking a button. This action automatically triggers for refund of fee online as per norms of the university.
- RCs can download various kinds of reports and data of admitted students for the purpose of study material dispatch and other support services.
- RCs can also activate or de-activate programmes or study centre as and when required.

c. SRD Module : Student Registration Division (SRD) is the basic custodian of admission database. The SRD module enables them to use master-data setup including session wise admission, programme activation/de-activation and details of programme fees, etc. Besides it, they can view the student data, generate specific query based reports like RC-wise, course-wise, school-wise, programme-wise reports on day to day basis for monitoring the admission process. This SRD Module also enables the SRD to take decisions on all those cases of admission which are beyond the powers of RCs such as refund of fee, confirmation or rejection of admission, etc. It also enables SRD to coordinate with the banks regarding payment gateway and related issues like chargeback cases.

d. Admin Module : The Admin Module is basically used by the Coordinators and other support staffs of the OAS to resolve the day to day technical queries of the students seeking online admission such as problems in uploading documents, fee payment, error correction, etc. and for over all support to all the stakeholders.

In addition to the above mentioned modules, the OAS has a VCO Dashboard also using which the Vice Chancellor can view the overall status of the admissions programme wise, RC wise, and Study centre wise, etc. VCO can also view on regular basis the status report of online admission with details like total number of registration, number of filled up forms, number of forms with which complete documents have been uploaded, number of candidates who have paid fee and number of candidates who have submitted forms complete in all respect.

OAS has been used by all the stakeholders successfully and regular updation is being done on the basis of the queries and feedbacks received from RCs, RSD, SRD and students. The entire functioning of the online admission system was also monitored by a Quick Response Team and Monitoring Committee of OAs comprising of senior officers of IGNOU.

The server of the OAS is located in Computer Division, IGNOU headquarters. The server is active through Internet Information Services (IIS) for web based access to all the students, RCs, SRD, RSD and administrators of OAS. Using DNS services, the OAS server is connected to IGNOU server and from there all stakeholders can access the Online Admission System. This OAS application is developed in dot NET framework 4.0 with ASP.NET 2.0, C# language, IIS 7.0 along with Oracle 10g database. OAS and ISMS both are Oracle 10g databases.

As mentioned earlier, the OAS database is finally integrated with the database of other students registered through offline mode. For that purpose, Regional Data Transfer System (RDTS) plays a key role. It is basically a network communication tool between a local (client) and a remote computer (server) to provide transfer of data facility. This tool has been developed by IGNOU to transfer data from Regional Centres to IGNOU Student Management Database (ISMS). Offline and online admission data are passed through this system to ISMS, which is the main core database for entire hybrid model of admission process and from this database specific information, are shared among the stakeholders as and when required.

Innovative Features of the Innovation

The Online Admission System integrated with the existing system of admission is quite innovative in the sense that without disturbing the traditional method of admission, a new and technology enabled admission system was implemented very successfully. Following are the innovative features of this model :

- It is an online interactive, web enabled admission system having a provision of fresh admission as per common prospectus and online application tracking system for students.
- It is a step towards creating a centralized database of the university which could be used in run time by the authorized stakeholders.
- This system facilitates the RCs to view, review, approve and reject the online application forms and also to refund the admission fee in case of rejection or otherwise.

- It facilitates the data integration between the data captured through online admission and offline admissions by reusing RDTS options.
- It has a web interface for online fee payment using the Online Credit or Debit card as well as Net banking facilities.
- It has a provision of anto-refund of the course fee for rejected applications through any kind of online payment.
- It has a MIS dashboard for Regional Service Division (RSD), Student Registration Division (SRD), and Regional Centres with authorized access.
- There is provision of automated acknowledgement and communication to the candidates about their admission status through SMS, e-mail, etc.

Achievements

So far the admission to various programmes of IGNOU was done offline through RCs and SCs. But to make it easy and more user friendly, the University has implemented the Online Admission System (OAS) from July, 2015 session. The new system of Online Admission in IGNOU has been implemented along with the existing offline admission system in a hybrid mode. In July, 2015 session total 131340 candidates registered for online admission out of which 43632 candidates finally got admission in various courses of IGNOU. In the next July, session, i.e. in July, 2016 the number of registered candidates (255403) as well as the admitted candidates (85508) through online admission system was almost doubled. Similarly, during January session also the trend of registration and admission was same. This trend of increasing number of candidates opting for online admission system in IGNOU indicates the need and effectiveness of the new and technology based system of admission. After successful implementation of the scheme for four admission sessions, it has been transferred to the concerned division, i.e. the Student Registration Division.

Applications and Uses of the Online Admission System

The online admission system has many advantages not only from the students' point of view but from the university point of view also. Some of the advantages are discussed below :

A well-designed online admission system provides easy access to the students for selecting appropriate programme, electives, regional centre, study centre, etc. from anywhere any time. Instead of going through the common printed prospectus page by page, students can search required information online. Readily available instructions and help menu facilitate the students in seeking admission and filling admission form easily. Students need not to depend on postal services for ensuring whether the application has reached to RC within specific time. Online admission system intimates about the successful submission of forms and documents through email and SMS immediately after submission of form. Student can access the online admission system from anywhere, anytime across the world. This system facilitates the candidates with disabilities as well. Payments can also be made easily online without going to a

bank physically. For using the online admission system, aspiring students only need a computer and internet connectivity.

Online admission system is highly useful for the university also as there is no need to maintain paper based application forms and related documents at RCs and SCs. This system is not only eco-friendly as lot of paper is saved, but it is cost effective also. The online admission system enables the university to capture error free data without any additional manpower for data entry of the application forms received from the students. The information which is mandatory for the university can be easily captured from the students' data. Moreover, students' fee is directly deposited in the bank and instant acknowledgement is sent to the students for their successful completion of admission. In fact online admission system facilitates to maintain effective student database with accuracy.

Way Forward

The critical review of the existing offline system and the feedback of the applicants on the Online Admission System reveal that a majority of applicants are finding the online admission system useful and simple to use. Moreover, the OAS gives solution to almost all those problems and limitations which are faced with the offline admission system. This facilitates the university to provide better services to the students so that they could access the system at their own pace and place. Over whelming response of the candidates towards the online admission system and continuous increase in the online registration in IGNOU during different admission sessions is certainly an indication that the candidates prefer technology enabled solutions in ODL system. In future the OAS can be extended for all the programmes offered by IGNOU and the entire admission system can be made online. It can also be integrated with the Learning Management System (LMS) and modules of Pre and Post Admission Counselling. The OAS may be further strengthened by providing sufficient infrastructure and technical support both at the headquarters and RCs for more efficient and robust system.

In future the synchronous and asynchronous learner support mechanism can be embedded with the online admission system so that learners' grievances could be minimized. A dedicated support system may be set up for instant solution and support to the applicants. Further, instead of the hybrid model of admission, efforts should be made to completely switch over to the online admission system. It will not only facilitate in creating and marinating a centralized database of the students which could be updated and used by the different stakeholders in a runtime, but it will help in cutting cost and time in the entire process of admission. In fact, in future this OAS application may also be integrated with entire student life cycle at IGNOU. It would be suggested to develop a complete Student Life Cycle Management System (SLCMS) covering all the phases of the life cycle of a student at IGNOU staring from pre-counseling to admission, material distribution, learning management system, supplementary e-content, virtual class, assignment submission and evaluation to the final result processing, convocations, placement and alumni portal, etc.

Coordinators and Innovators

Dr. Oum Prakash Sharma
Dr. K. Gowthaman, Deputy Director, IUC, IGNOU, New Delhi

Innovators : Dr. Oum Prakash Sharma
Dr. K. Gowthaman, Deputy Director, IUC, IGNOU, New Delhi
Dr. Jyotsana Dikshit
Facilitators : Dr. Gautama Bose, Former ICT Advisor, IGNOU
Period : 2015-2016

9

ShodhDhara

One Point Research Database Management System

Background

Research and Development is a very important component of any higher education system. Particularly, in the university system like IGNOU, research is done by the students as well as the teachers. Research Unit at IGNOU coordinates the research work of MPhil and PhD students in the university. A large number of research papers are published by the students and faculty. But, so far there is no system in the university to maintain the centralized database of students' profile, their research work, and research papers published by the faculty and students. If at any point of time some specific data is required instantly, it may not be possible to get information about the details of research students discipline wise, gender wise, category wise, etc. In such a situation, it becomes necessary to develop a system for maintaining and managing a centralized database of research students and their work in the University.

Need of the Innovation

Once the Research Unit was asked by the MHRD to give details of the SC/ST students pursuing research studies at IGNOU.

As the database was not readily available, it took so much time and effort to prepare consolidated list of SC/ST candidates. Thereafter, the Research Unit thought of developing a software to create a database of research students. The matter came to the NCIDE for software development. After going through the proposal of RU and visualizing the scope of research database

management in the university, it was suggested to develop a complete database management system and a dynamic repository of research papers of teachers as well as students. This comprehensive research database management system was named as “ShodhDhara”.

Description of the Innovation

Shodhdhara is a server based application designed and developed for development and management of research database of IGNOU students and faculty. The shodhdhara application has been developed on dotNet platform using SQL database. Shodhdhara has a home page as an open interface for the students and other stakeholders. It takes care of all kinds of activities pertaining to the research students starting from registration for admission to final submission of the theses. The shodhdhara application has mainly following five modules :

1. Admission Module
2. Students’ Module
3. Supervisor’s Module
4. Programme Coordinator Module
5. Research Unit Module

The Admission Module is basically the first interface between prospective students and the university. Here students find all kinds of information related to university’s research programmes, process of admission, instructions for filling the admission form, general guidelines and Research Degree Prospectus, etc. The access to the Online Admission Form is also given in the Admission Module. The Online Admission Form is designed on dotNet platform and it has six sections-Registration, Personal Profile, Educational Qualification, Document submission, Online Payment, Preview and Submission.

Students’ Module is mainly meant for those candidates whose admission is confirmed and paid requisite fee. The authorized students can login the module and they can view their profile, announcements, if any, deposit fee, update their research progress and upload research papers or progress reports from time to time.

Supervisor Module is only for the research supervisors where the authorized supervisors can login and upload and view their profile. They can check the status of the students working under them and they can also approve pending requests of students, if any. Supervisors can view the list of candidates, add and view announcements for their students.

Through the Programme Coordinator Module authorized programme coordinators can view the profile of supervisors and students in their disciplines after authorized login. They can also generate different types of reports of the students pertaining to their discipline.

The Research Unit Module empowers the Research Unit to access the entire database of students, supervisors and programme coordinators. They can create more than one users and provide them authorized access for login. Research Unit can generate various kinds of reports, activate students by

approving their admission, add students' supervisors and coordinators in the database, and they can add and view announcement for all the stakeholders. Shodhdhara is basically a very powerful tool for the Research Unit to develop and manage the all types of database pertaining to research students and other stakeholders.

Innovative Features

The Shodhdhara is the first online application of its kind which aims at managing all types of research database of a university. The innovative features of this platform are given below :

- It is a single window platform providing all types of information in a comprehensive manner to all the stakeholders involved in research degree programme in the University.
- It provides runtime up to date data of research students on various parameters.
- The facility of authorized access to the stakeholders enables them to update the information and database anytime from anywhere.
- It facilitates the stakeholders to generate various types of reports as and when required pertaining to research students, supervisors and programme coordinators, etc.
- Students can access their profile and update their status of progress anytime from anywhere.
- It is highly cost effective and easy to use the different modules of Shodhdhara.

Achievements

In the first phase, a prototype of ShodhDhara was developed in consultation with the Research Unit. Students Module, Supervisor's Module and Research Unit Modules were fully developed and tested. Initially, the work started in 2011 and completed for testing in 2013. Thereafter, because of unavoidable circumstances, the work got stuck. On pursuance of the Research Unit, the work on SodhDhara again started in 2017. By this time priorities of Research Unit changed and they wanted a new module on online admission to be added in the application. In this phase, the Admission Module was designed, developed and tested on pilot basis.

But now the priorities and needs of the concerned division changed, new research ordinance came in existence, and new provisions of admission were added, so the earlier software was to be full overhauled.

Keeping in view the above mentioned challenges and barriers, the software design document was revised, new provisions made and priorities were redefined. Revision and updation of the Shodhdhara was re-started. Within about four months first two modules, i.e. Admission Module and Students Module were completed and tested in house. But unfortunately, the services of the programmer were terminated and this way again the work got stopped.

Applications and Uses of the Innovation

The Shodhdhara is highly useful application for development and management of research database in the University. Being a single window platform, it is a very student friendly system making it easier to use different modules without any problem. As all kinds of research database is available on server, it would be easier to access the data anytime from anywhere and generate various types of reports whenever required. All kinds of information related to the research programme, like research policy, guidelines, prospectus, etc. are available at one place through Shodhdhara.

Way Forward

Though, the Shodhdhara in the present format is very useful for development and management of research database in the university, it has scope of adding additional features in future. Students can be given facility to upload their research papers and other data for storage purpose as well as for review and use by other researchers.

A special module for IGNOU faculty can also be developed where each faculty member can be given a dashboard and authorized access to upload their research papers. This module can be made public for use and comment of other persons. This can be used as a complete database of research done by the IGNOU faculty and thus can have a pride in it.

Coordinator and Innovator

Dr. Oum Prakash Sharma
Period : 2011-2017

10

e-Resource of Experts

An Online Repository of Academic Experts

Background

The current evolution in information technology brings major changes in the way of information communication. Technological developments have opened up new avenues to create and use e-resources for different purposes in a big way.

The IGNOU, following the principle of sharing the available resources and manpower, wants to take the benefit of the services of the experts in different areas for different purposes. Keeping it in view, NCIDE has designed and developed a web based application for creating a comprehensive database of experts in different fields who may be interested to be associated with the various educational activities of the University.

Need of the Innovation

While developing the question bank for On-Demand exam in the university, we required subject experts for developing questions for different courses. The database of the experts available with the concerned division was very limited and in that too, many experts were not willing to come to the University for different reasons. Thus, in order to identify more experts in different subjects, it was decided to create a huge database of experts not only for question paper generation, but for all other academic activities like Unit writing, editing, translation, evaluations, etc. For that purpose an idea of designing and developing a software named as 'e-Resource of Experts' came up. Thus, an innovative application named as e-Resource of Experts was developed and hosted on the server. Main purpose of the electronic resources was providing current and up-to-date information about the experts in different subjects for different purposes.

Description of the Innovation

IGNOU's **e-Resource of Experts** has three modules – Data Entry Module, Data Access Module and Data Editing Module.

Data Entry Module gives a facility for Login to the experts from anywhere anytime. It is open for all. Any subject expert who thinks that he/she can contribute for the IGNOU as Course Writer, Editor, translator, Question Paper Setter, Moderator and/or Evaluator, can submit his/her profile online. An important feature of this module is that the experts can edit their profile, if there is any change in their credentials.

Data Access Module has restricted access for IGNOU officials only. The authorized IGNOU faculty and staff can log in and access the e-Resources of Experts to search for an expert by name, subject area, specialization or location, etc.

Data Editing Module has restricted access for the administrator only for generating different types of lists of the experts. The administrator can add, edit and update profile of an expert from time to time. Different types of reports can also be generated by the administrator.

All the profiles received can be scrutinized by the concerned faculty and the approved list of experts is made available to the concerned staff and faculty. All the experts willing to be the part of the e-Resource of Experts should ensure that the information they provide is accurate. IGNOU reserves the right not to consider an expert for any work in IGNOU and also to remove anyone from the Database if we have good reason to believe that their details are inaccurate or misleading or not suitable for us.

Innovative Features of the Innovation

The main features of the e-Resource of Experts are as follows :

- It is highly user friendly for the experts, faculty, staff and the administrator.
- Anybody anytime from anywhere can upload his/her profile.
- It provides a facility to search for an expert by name, subject area, specialization or location.
- The profile of an expert can be updated from time to time by the expert as well as by the administrator.
- It also gives a quick view of subject wise list of experts.
- Complete profile of an expert can also be viewed and printed through advance search.

Achievements

The application e-Resource of Experts was implemented on pilot basis in 2010-11. The link of the application was given on the home page of the IGNOU Website. Within a short time of about six months more than thousand experts from all over the world registered and submitted their complete bio-data online as per the given format. Some of these experts were involved for the Question Bank Development for On-Demand Examination in the University. But because of the non-availability of the space on server for its hosting, it was discontinued. If it is again made functional and hosted on server, it will certainly help in creating a huge database of the experts for different academic activities of the University.

Applications and Uses of the Innovation

A number of experts from this database were involved in the process of question bank development and evaluation of the answer sheets of On-Demand Exam.

It is expected that the database of experts will be useful for the faculty of IGNOU as well as for the experts. In other words this database promotes global participation of experts in different activities of the university. On one hand many of the specialists in different subject areas from all over the world may be having interest to be associated with the IGNOU for different purposes. Whereas on other hand IGNOU is always in search of experienced subject experts for different academic activities. This application connects them at one platform.

Way Forward

In future the e-Resource of Experts may be officially announced and publicized for its wider reach. The selected subject experts may be involved in other activities of the University like Unit Writing, Editing, Translation, etc. It can also be extended to capture and manage the database of other functionaries of the University like Academic Counselors, Coordinators of Study Centres, Evaluators, etc.

Coordinator and Innovator

Dr. Oum Prakash Sharma
Period : 2011-2012

11

Automation in Admission and Examination

Automated Admission and Examination Data Management System for Community Colleges in IGNOU

Background

Information and Communication Technology (ICT) provides several facilities and possibilities for educational administrators for better and effective management. Managing the huge database of thousands of students in the traditional way of data submission through CDs or e-mail etc. becomes very difficult. Similar was the case with the Community Colleges of IGNOU. The admission data as well as the examination data including the awards and marks was received in different formats and structures through different means, due to which the finalization of database normally took too much time. Because of it, many other problems were also created. Particularly in the Open and Distance Learning (ODL), where its constituent units like Regional Centres and study centres, etc. are geographically apart from each other and also from the Headquarters, it becomes necessary to use latest technological tools and applications.

Need of the Innovation

For the purpose of effective and efficient collection and management of the admission and examination data of the Community colleges spread all over the country, it was felt that an Automated Admission and Examination Data Management System for Community colleges should be developed.

It was felt that the use of ICT in the admission and examination database management could reduce the possibility of mishandling of the data and delay in finalization of the data. Therefore, it was decided that most of the facilities for the students as well as for the Community Colleges should be made online. This initiative could reduce the use of papers, cost in database development and management. Moreover, the distributed data entry system would save time and efforts also.

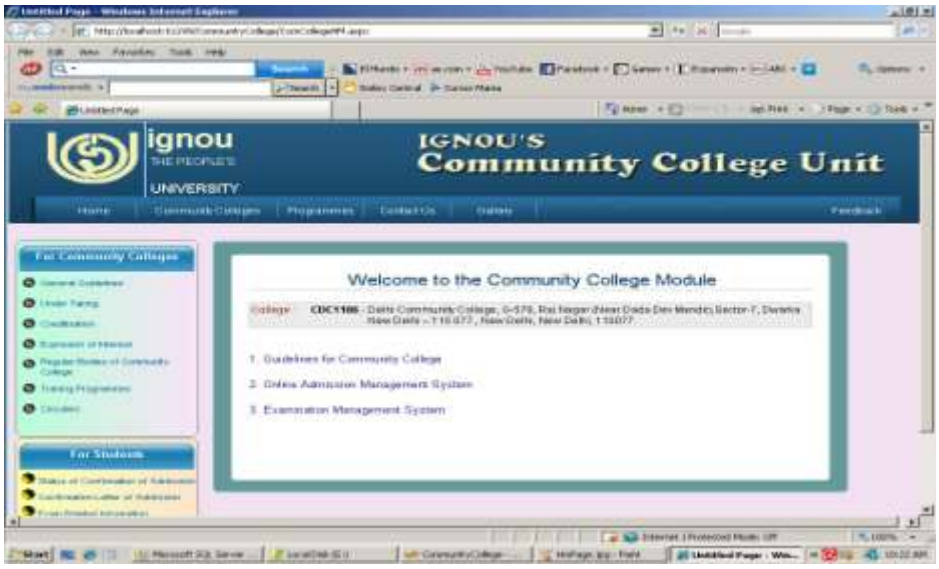
Description of the Innovation

It has basically three modules – CCU Module, Community College Module and Students Module. All these modules have multilayered security features, well defined accessibility and provisions for scalability.

The Automated Admission and Examination Data Management System for Community Colleges have the following ICT enabled components :

- Specially designed and customizable software capable of adding any number of community Colleges and any number of programmes and courses, with a number of security features.
- Web based on time transaction of database of students and community colleges, which can be accessed by the CCU, SRD, SED and CCs anytime from anywhere.
- 24 × 7 Online students Facilitation services such as online registration (presently by the CCs only), online issue of admission confirmation letter receipt and Hall tickets for exam, online clarification of doubts, checking of result, etc.
- Web-based facilities for the Community colleges for online entry of the admission forms, examination forms, online posting of awards and marks, printing of award lists, attendance lists, etc.
- Besides the above, this system has facility of automatic generation of enrolment numbers to the students after confirmation, authorized access to the Community Colleges and Community College Unit, each CC is given separate user ID and password and the password can be changed by the Community College.
- Though database management is centralised, but it gives authorized access to use the database anytime from anywhere by the user entities. There is no possibility of duplicacy of data entry. Further, the data can be updated/edited by the authorized Community colleges before registration is confirmed by the CCU.

Automated Admission Management System



Innovative Features of the Scheme

The innovative features of the entire scheme are as given below :

- It is a completely flexible and ICT enabled system of admission and examination database management. Submission and management of database *is completely on-line.*

- There is *inbuilt mechanism for checking the validity of the courses and programmes approved by the CCU. Only valid and eligible students can apply for examination* which ensures that only eligible students appear in exam.
- It is not only simple and user friendly, but it is also cost effective and saves time and effort in data base management and in data transfer.
- It has an *inbuilt provision of backup of the data base*. For example, Log files are created indicating the date, time and the IP address of the system from which the server is accessed.
- It has *centralized control on the whole database* starting from the admission to the declaration of result.
- There is inbuilt mechanism to minimize or eliminate double entry.
- The *in-built multilayer security mechanism* of software takes care of the security of the data base.
- Enables Generation of reports by multiple users i.e. CCU, CCs, SED and SRD.
- It reduces the manual work in printing and submitting the database.

- Allows the candidates and or community colleges to fill the application at their convenient time.
- No postal charges or postal delays are associated with the data base submission or sending of the manual application forms to the CCU.
- The system is very dynamic and sustainable which can be extended to any extent.
- Allows to have customizable reports as and when needed both by the CCU and the CCs.

Achievements

The Automated Admission and Examination Data Management System for Community Colleges of IGNOU was designed and developed in house at NCIDE during 2011-12. This application was very successfully tested and

implemented for all the Community Colleges. It was basically a 24 × 7 facility for students and Community Colleges giving them authorized access for submitting data online through this portal. There was a provision for generating different types of reports and lists using the centralized database. After successfully implementation of the application, it was transferred to the Computer Division for handling and managing the software and database.

Applications and Uses of the Innovation

The most important application of the Automated Admission and Examination Data Management System for Community College was that all the community colleges started submitting the database online, database management had become decentralized, but the database was centralized which could be used for any purpose anytime from anywhere. It had been appreciated by all the users CCs and the CCU also.

Immediately after starting of the system, all the Community Colleges and the Community College Unit started using the system for all types of database entry, and management related to the community colleges.

Automated Examination Management System

The scheme was being regularly extended to the new CCs and for new courses and programmes. The system had very clearly shown its strength and impact that in a short span of less than one year from its starting, almost all the community colleges started submitting data of their students online. Initially, the scheme was started for automated admission Management system but, in view of its user friendly features and utility, the system was further extended to the Exam Data Management System also.

Way Forward

It does not require specially skilled or trained manpower to handle the entire process of Automated Admission and Examination Data Management System at the Community Colleges or at the CCU. It is highly user friendly programme.

The training of the personal of the Community Colleges has been done through teleconferencing. Hence, there is no problem in extending it to any corner of the country. There is no additional expenditure involved in implementing the Automated Admission and Examination Data Management System because almost all the Community colleges and CCU already have the required infrastructure like computer, internet and printers, etc.

The Automated Admission and Examination Data Management System is an adaptable and customizable system which can be easily up-scaled to any number of programmes, courses, to any number of Community Colleges catering to any number of students. The software developed by the NCIDE for Automated Admission and Examination Data Management System for Community Colleges can be easily extended to the Admission and Examination management of the entire university without any additional expenditure and special arrangements except a high end server at Headquarters.

Coordinator and Innovator

Dr. Oum Prakash Sharma
Technical Team : Mr. Ajay Bhardwaj, Mr. Akhilesh Kumar and Ms. Kamini Barna
Period : 2011-2012

12

Science@Mobile

An Innovative Scheme of Science Popularization through Mobile

Background

The increasing number of mobile subscribers in India indicates that the mobile is not now the symbol of status or urbanization. In fact, it has become the necessity of the people. It is not remained the means of communication, but it is proving to be an effective tool of teaching-learning all over the world. It is well recognized that the mobile phones could add a completely new dimension to the teaching-learning process due to a wide range of attributes such as talk, text, camera, video, radio and internet, etc. According to a TRAI report, India added 9.88 million new mobile subscribers in the month of Jan 2012, taking the total tally of mobile subscribers in India to 903.73 million. India now has a overall teledensity of 77.57, with Delhi having the maximum density of 237.5 percent while Assam has the lowest with 46% teledensity. The mobiles have penetrated into the rural areas also and the number of users is increasing year after year. Because of its value added functions and wide spread, the mobile phones have potential to be used for teaching-learning purpose.

Need of the Innovation

In view of the decreasing cost, increasing penetration, and adding of new features, it was thought that, the mobile could be a very effective means of spreading scientific knowledge and cultivating scientific temper among the people.

In order to exploit the potential of mobile phones for science popularization in the society, and to spread the scientific knowledge including science news and updates among the people through mobile service, the scheme of Science@Mobile was launched.

Description of the Innovation

The scheme of Science@Mobile had basically three components – variety of content for SMS, software application to select and send SMS automatically and a gateway for sending SMSs.

In the first phase of the scheme eight different types of SMS items were delivered through mobiles which included interesting science facts, science quotations, latest science news, about scientists, science humour, health tips, green tips, and events and days of scientific importance. In the next phase it was planned to add more categories of SMS such as agriculture, energy, career in science, etc. In order to ensure the quality and correctness of the SMS content, each and every SMS item used for Science@Mobile was reviewed and edited by a group of experts. It was tried that the SMS content was interesting, informative and was useful to the subscribers both in terms of imparting knowledge of science and inculcating the scientific temper among the people.

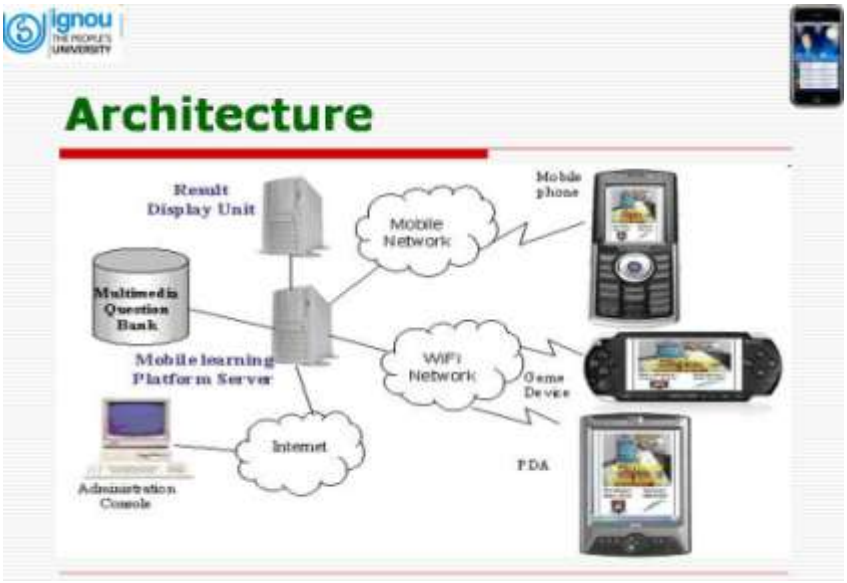
The software application to short out different types of SMS, as per the choice of the users and to push it to the SMS gateway was designed and developed by the NCIDE. There was a provision of adding and updating the content of SMSs in the database of Science@Mobile.

The people interested in getting the facility of SMS on their mobile were required to give a missed call on the given mobile number. They could also call on this number and register their choice of getting SMS on their mobile.

The scheme of Science@Mobile, basically targeted all the people irrespective of age, gender, socio-economic background, geographical location. However, the content was categorized for three categories of people. First category included the less educated common man who needed basic scientific literacy. The second category was meant for the educated people having no science background. The third category was for the educated people having science background.

Innovative Features of Science@Mobile

The scheme of Science@Mobile had certain innovative features. One of the important features of the scheme was that there was no fee for subscribing science SMS and it could be subscribed through mobile as well as through computer from anywhere and anytime. Another features was that the people had the option to select what type of information they would like to receive on their mobile as per their choice and interest. Also they could select the frequency of receiving the SMS, i.e. daily or weekly. There was a provision of getting feedback from the subscribers. Subscriber had also the option to unsubscribe the service anytime from anywhere.



Achievements

In order to exploit the potential of the fast spreading mobile technology in the country, the National Centre for Innovations in Distance Education (NCIDE) in IGNOU in collaboration with *Vigyan Prasar* (Department of Science and Technology) Government of India had started **"Science@Mobile** – an innovative scheme of science popularization through mobile in 2012 on the occasion of National Science day.

The scheme worked smoothly and successfully for one year. But the project could not be funded further by the Vigyan Prasar, therefore, it had to be stopped.

Application and Uses of the Innovation

The response of the people towards the newly launched scheme of science popularization through mobile was overwhelming. Within two months of launch of the scheme, around sixty thousand people had subscribed which included 37850 through mobiles and around 21256 through internet. The internet subscribers included 65% students and 34% others which indicates that the scheme was most liked by the school children. Such a big response was highly encouraging and it indicated that majority of the people liked to gain knowledge at all stages provided they get right kind of information relevant for them.

The scheme of Science@Mobile was highly useful in creating an awareness about the health, energy and environmental issues of common interest in the society through mobile devices, to create interest among the people towards science and hence to develop a scientifically empowered society in India.

Way Forward

The scheme of science@mobile has great potential to popularize science and technology in the society. As the use of mobile phones is increasing day by day, some interactive mobile apps could be developed in future.

In order to make it interactive, mobile based science quiz may also be planned for the next phase which could aim at developing interest in science and its application in day to day life. Presently, the scheme is available in English medium. The Hindi version of the SMS can also be developed in future so as to reach to a larger section of the society. If possible, with the support of state level agencies, the scheme could be extended in the regional languages also. Further, it would be made interactive, i.e. the users could respond to the information received on their mobile. In view of the favoruable response from the society, this project need to be continued with added features.

Coordinator and Innovator

Dr. Oum Prakash Sharma
Technical Team : Mr. Ajay Bhardwaj, Ms. Poonam Trikka and Mr. Akhilesh Kumar
Period : 2012-2013

13

Mobile Enabled Chartbooks

Mobile Enabled Interactive Assessment and Identification of Treatment using Chartbook for Health Workers

Background

One of the integral components in India to meet the Millennium Development Goals (MDG) through IMNCI strategy is the training of front-line functionaries (health workers) including ANM's and Anganwadi Workers (AWW's). This training facilitates the health workers to take care for newborns and their mothers; infant and young child feeding; vaccines; prevention and case management of pneumonia, diarrhea, malaria control in the community settings. The recent developments of mobile technologies and the wide access of mobile devices at the grassroots levels have generated a wide range of opportunities to support the usage of mobile application for teaching, training, and to accomplish day-to-day work at hand. Many health workers at the grassroots levels have mobile phones, and some even have low cost tablets and smart phones. In general, most of the health workers specifically in India have basic multimedia enabled mobile phone. India has the world's second-largest mobile phone user base with over 929.37 million users as of May 2012. NCIDE-SOHS, IGNOU under the UNICEF funded project "Development of a Bilingual IDVD enabled and Mobile Supported IMNCI Training package for Health Workers" developed mobile enabled chartbooks for health workers both in English and Hindi which can be used by them during the training as well as in the field where they provide health care services to the community.

Need of the Innovation

For many villages where hospitals are not accessible easily, 860,000 ASHAs across the country are the only ray of hope in providing medical assistance. Instrumental in bringing down the infant mortality rate from over 50 deaths per 1,000 live births in 2005 (when ASHA was launched) to 34 deaths in 2016, these women provide information to people in rural areas about health, sanitation and nutrition; conduct ante-natal and post-natal checkups; assist women during their deliveries, deliver polio vaccines and conduct health surveys. The IMNCI chartbook is used by health workers to access, classify and treat or refer young infants and children less than five years old through a case management process. Each health worker accomplishing this task has to carry the chartbook with them which facilitates them in accessing and classifying the young infant or child less than five years of age. To lessen their load and to facilitate them in taking correct decisions by using the chartbook, a need was felt to develop a mobile app for the same.

Description of the Innovation

The mobile enabled chartbook application enables the health workers to assess, classify, identify treatment, treat the young infant or child, counsel the mother and refer growth charts on their mobile devices through a simple and algorithm based scheme. Mobile component of the IMNCI Package for health workers which include interactive chartbook for handheld basic multimedia, JAVA enabled mobile handsets. The software on the basic multimedia phone is designed primarily to support the listening to audio, capturing and viewing images, video and playing java or flash enabled games. While these are of some use to the health workers, they are to be customized to meet their training and day-to-day activities at work. The mobile enabled chartbook for health workers both in English and Hindi is developed in such a way that it can be used by the health workers during the training as well as in the field where they provide health care services to the community. The mobile enabled chartbook application enable the health workers to assess, classify, identify treatment, treat the young infant or child, counsel the mother and refer growth charts on their mobile devices through a simple and algorithm based scheme. The choice of software tools was pragmatic. Though we had a lot of options and high-end tools like flashlite to develop the chatbook for mobile phone, but keeping in view the group of health workers who hailed from rural, tribal and urban areas, the chartbook was developed on the J2ME platform, which had the capability of running on basic multimedia mobile phones. Initially, the chartbook was interactive as it opened the relevant section on the basis of the menu based input given by the end user and later we developed an automated responsive chartbook. In order to ensure that, the mobile enabled chartbook application for basic multimedia mobile phone is user friendly, compatible, and effective for health workers in the field as well as during the training a pre-test and pilot test were conducted. A group of 63 health workers from the state of Rajasthan and Haryana were identified for the experiment. Most of the health workers had basic multimedia mobile phones.

Figure 1 : Screenshots of Interactive Chartbook

Innovative Features

The time when the interactive mobile enabled chartbook was developed, experimentation of using mobile as an educational and training tool were being carried at the other parts of the globe. However, this was a unique intervention in training of health workers where it is not only a part of their training process, but they can use the interactive chartbook app on their mobile phone for day to day use. Some of the features of the interactive chartbook are given below :

- Mobile enabled interactive chartbook is a light weighted portable application.
- The mobile enabled chartbook is very useful to the health workers while accessing the IMNCI charts during home-visits.
- The process of identifying treatment is automated and hence leads to correct classification and identification of the treatment for sick young infant and sick children on the basis of the signs ticked by the health workers.
- The interactive chartbook is available in both English and Hindi languages.
- Navigation of the mobile enabled chartbook is simple.

Achievements

The product was developed keeping in view the basic multimedia mobile sets. This enabled the application accessible to a large group of health workers. The application was used by health workers of Haryana and Rajasthan.

Applications and Uses of the Innovation

In the beginning a testing of the mobile enabled chartbook for health workers was conducted to get the comments, observations of the health workers regarding the concept of using mobile enabled chartbook for training and in field, to identify problems faced by the health workers while going through the chartbook on mobile and to test the usability of mobile enabled chartbook for health workers in field. Feasibility of the mobile support program was tested, it was found effective, operable and useable by the grassroots health workers. Changes were also made accordingly for the mobile enabled chartbook to be more effective in the field.

Way Forward

The interactive chartbook component could be further developed to provide the health workers an interface through which they can also process the referral cases where the concerned district hospital can get a call or message even before the referred young infant or child reaches the hospital.

Coordinator and Innovator

Dr. Jyotsana Dikshit
Prof. T. K. Jena, Professor, SOHS, IGNOU, New Delhi
Email : jdikshit@ignou.ac.in, tkjena@ignou.ac.in
Funding Agency : UNICEF
Period : 2011-2012

14

IGNOU Online

A Technology Enabled Learning Management System

Background

IGNOU offers around 150 programmes at different levels through a network of regional centres, and several study centres/tele-learning centres spread all over the country and overseas. The study centres to provide easy access and effective support services to learners.

The University provides multi-channel, multiple media teaching- learning packages in the form of self-instructional print and audio/video materials, radio and television broadcasts, face-to-face counseling/tutoring, laboratory and hands on experience, video conferencing, interactive radio counseling, interactive multimedia CD ROM and internet based learning. With the advancement of technology, ICT is being used for teaching-learning to a great extant in all sectors of education. Technology enabled learning becomes more pertinent in the open and distance education system. During last few years, IGNOU has also developed an online system of education for the distance learners who would like to perform their studies by using internet based technologies.

Need of the Innovation

IGNOU imparts education to a large number of learners through open and distance mode. Use of technology is increasing day by day for better and effective education. Moreover, with the increased use of internet and mobile, people find it comfortable with web based teaching learning system. IGNOU Online portal is to provide one stop window catering to the learning needs of IGNOU learner community using learning management system that will help students to learn according to their own choice of time and place convenience through the internet. Portal should be user-friendly, ‘quick to learn’ for the above purpose.

Description of the IGNOU-Online

During 2012-2015 IGNOU has created a dedicated website http://www.ignouonline.ac.in to catering to the learning needs of IGNOU online learners' community.

The Web applications described in this document is the http://www.ignouonline.ac.in/website and associated support pages. This document seeks to provide the requirement specifications for the IGNOU Online Website. IGNOU-Online is one stop window catering to the learning needs of IGNOU learner community. It is a Learning Management System that will help students to learn according to their own choice of time and place convenience through the internet. It helps in exploring the links to access all learning resources available online. IGNOU-Online has a provision of linking Education Broadcast also which is a webcasting facility linking students to educational channels – Gyandarshan, Gyanvani and EDUSAT. Virtual Class provides links to all the online programmes of the University.

The basic purpose of the IGNOU-Online is to provide the course wise search, submit the on-line registration form and make the online payment using their credit and debit cards. It also facilitates the assignment and term end examinations by ensuring the process of Student Evaluation Division (SED), IGNOU.

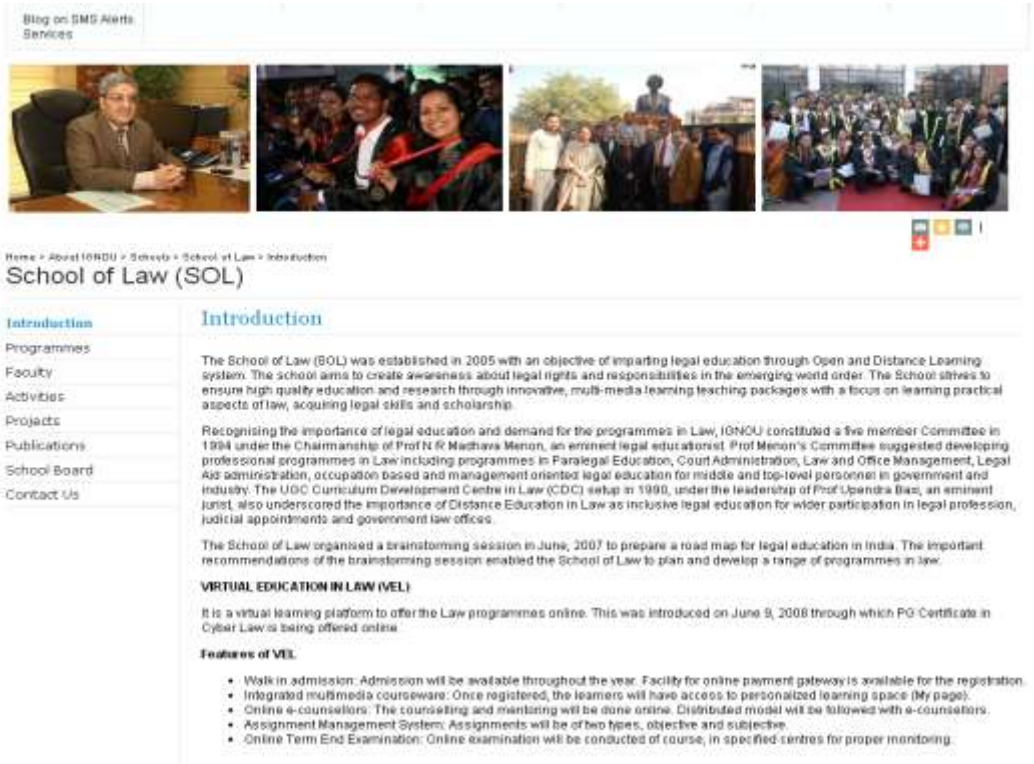
Faculty provides e-content of the units to be offered through online in word format along with related web resources like articles, video's etc and scripting for organizing the flow of content, designs and interactivity. Special templates have been created to organize the content modules (Sections, Pages...). An interface has also been made to upload the course content and other interactive

components by the course coordinators. They can review the content and other design elements for technical and subjective accuracy. The course coordinator with the help of the administrator can publish the content on the IGNOU-Online.

Innovative Features of IGNOU-Online

IGNOU-Online is a specially designed and developed Learning Management System to meet the requirements of IGNOU students. It has certain innovative features as described below :

1. Online learning allows a more student-centered teaching-learning approach. Because every student has his or her way of learning that works for them, getting an online education may help in ensuring that each lesson or material is completely understood before moving on to the next, which in turn, could result to better learning.
2. Online course materials can be accessed 24 hours a day every day. This means that students can easily read and review lectures, discussions and other materials relevant to their courses. There are some students who find it a bit difficult to understand spoken material in a typical classroom setting because of a number of distractions, boredom or tiredness. Such students can simply access the material online whenever they are prepared to learn.
3. In IGNOU-Online setting, a student is marked present if the student has actually participated in the classroom discussion. This encourages students to interact, increasing the diversity of opinion as everyone, and not just one or two students, is given the opportunity to share their thoughts.
4. IGNOU-Online offers a lot of savings because there are no additional costs for transportation and accommodation. Online education programs and courses also cost a lot cheaper than courses that can be taken in a traditional manner of open distance learning.
5. Making use of the tools and resources available in the IGNOU-Online, a student can interact with other students that can help in learning the skills and individual needs in order to adapt with the present and future technology.
6. Students who are taking online classes can also socialize, interact and discuss things that are not related to the course through "chat rooms" facility of IGNOU – Online.
7. IGNOU-Online has a provision for online instructor who can come from different locations across the globe; students are exposed to knowledge shared by the instructor which cannot be learned through books.
8. Students of online courses are also given the chance to talk with their instructors whenever they want to. Through online chat, email and newsgroup discussions, students and teachers can discuss concerns related to the material without having to wait for office hours.



Achievements

A prototphe of IGNOU-Online was designed and developed in house. It is a full fledged Learning Management System having the facilities of uploading e-content, discussion forum, chat, self evaluation, etc. This LMS was successfully tested for few programmes of School of Law, School of Health Sciences and School fo Agriculture. e-content for the programmes was also developed with the help of the concerned faculty.

Applications and Uses of IGNOU-Online

IGNOU – Online gives students an opportunity to choose from various schools, programs and courses which are not available in the area where they live in. This is especially beneficial for those who live in rural areas that only have one or two educational facilities, which most of the time, offer limited course and programme options for students.

Another benefit of taking online courses, and probably the most popular one, would be that it offers flexibility to students. Because they can attend classes and courses whenever and wherever there is a computer and access to the internet, they can easily plan out a schedule that would work for them. Because of the flexibility offered by online learning, not only students, but also individuals who already have full-time jobs or other commitments are able to take supplementary courses and even earn their degrees online.

Way Forward

As the use of technology in teaching-learning is increasing day to day, there is great scope for using web based technologies and programme for imparting need based education as per the pace and place of the learners. In that

situation IGNOU-Online Learning Management System will prove to be a very important and useful system to provide online education. In future it can be further customized to be more user friendly system. A special e-learning or online-learning Cell having a core technical team may be created in NCIDE to develop e-content in dynamic format and to offer the online courses. Faculty may also be imparted appropriate training for developing e-content and offering online courses through IGNOU-Online.

Coordinators and Innovators

Dr. Oum Prakash Sharma
Dr. Jyotsna Dikshit
Email : opsharma@ignou.ac.in, jdikshit@ignou.ac.in
Period : 2014-15

15

ResearchMate

A Mobile App for Research Scholars of the ODL System

Background

A mobile App named ResearchMate has been conceptualized, designed and developed specially for the IGNOU research scholars (Figure 1). The prototype app has been developed using free app builder software. This app is a one stop portal for the research scholars in their life cycle as an IGNOU student. The app has innovative features to nurture their research skills, communication skills, interpersonal skills and academic scholarship to help them be successful. The app also provides learner support by providing information on various requirements pertaining to their course of study. This app has been transferred to the Research Unit of IGNOU for implementation.

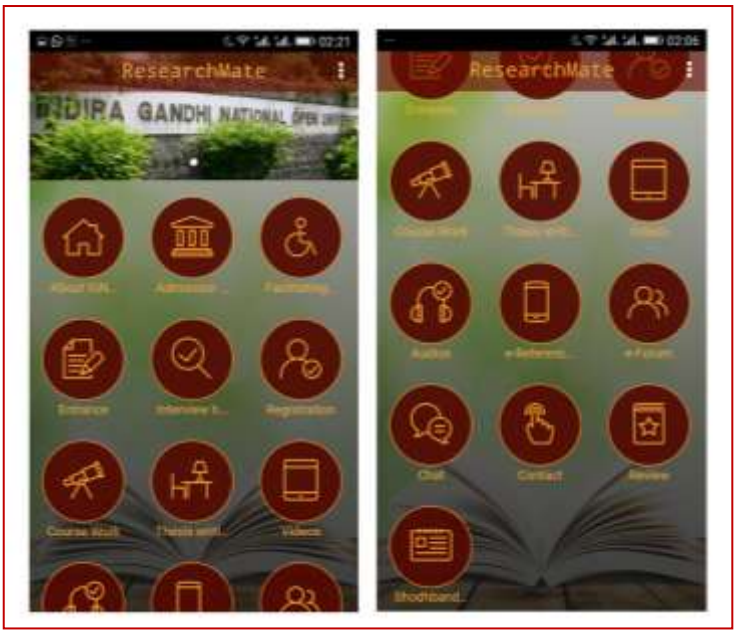


Figure 1 : Screenshots of the Main Menu of ResearchMate

Need of the Innovation

Mobile devices have become an essential part of our lives. The Telecom Regulatory of India estimated that in 2017 there were 1.19 billion telecom subscribers. Needless to say the IGNOU students are also not exempt from it. Many Universities and institutions are using mobile technology in offering various student support solutions.

Mobile technology could not only be a very useful tool for establishing quick communications and social engagement with the distance learners but also a

didactic tool for imparting subject based modular audio-visual content, which is commonly known a m-learning. Delivered in a personalized or customized package, these apps can help develop learner competencies in a desired manner. Indeed many Universities and institutions are already doing so. To cite three examples, at the international level, the Stanford University offers the SMILE, which is acronym for Stanford Mobile Inquiry Learning Environment app for its students. This app provides a tool to the students to inquire or ask questions, create a homework item, generate multimedia from their own environment, track their academic performance, work on competitive games and collaborate among themselves in real time as the class is in progress on that day, essentially becoming a research lab in their pockets. Additionally, the app provides information on the shuttle services, events of the university and other operational activities of the University. The Harvard University has its mobile app Thrive, that provides emergency contact and health and wellness information in addition of other information, such as campus map, lunch and dinner options for the students at the University café etc. The National Open University Nigeria has its app NOUN-Mobile APK that allows the student to view their profile, fees payment history, registered courses, check results, view and download course materials and even view the information offline after viewing it online. As it is obvious, these apps are built to facilitate the students very well.

In India, some examples of mobile apps are presented here from three state open universities. In January 2017, the Odhisha State Open University launched its mobile app “OSOU. The app makes available general University information to its students, an OER repository and a facility to collect feedback on support services. The Krishna Kanta Handiqui Open University has developed the mobile app Smart KKHSOU for its students, which received the IGNOU Gold Medal for Innovations in Open and Distance Learning for the year 2016. This app enables the learners to read the study materials, watch video online and also listen to the Internet radio of the University, in addition to providing access to the regular university information. The official mobile app of the Yashwant Rao Chavan Maharashtra Open University is named e-*suvidha* to access their digital University web portal. It enables the earners to access their learning management system and also facilitates learner support services through alerts, in addition to emails and sms. It is beyond any doubt that ICT has become an indispensable part of the ODL system.

IGNOU is in the process of developing its own mobile app. The millions of learners of IGNOU, with their unique profile, have the need for obtaining information anytime anywhere through mobile phones. The research scholars of IGNOU have a special need for this app. Firstly, they need to app for obtaining information on various schedules, such as dates of proposal presentation, coursework training, coursework examination, presentations, etc. They also need information on various guidelines for research scholars. They need information about their supervisors and other related functionaries. They need access to the library resources and other academic resources. They need personalized interaction with their supervisors. They need skill development on communication and presentation skills. All these needs could be addressed through a one-stop solution through mobile technology. The NCIDE is working towards the use of new and emerging technologies for the benefit of the learners and believes that mobile technology can be developed for the

facilitation of IGNOU learners, especially research scholars to cater to their specific needs.

Description of the Innovation

The motivation to develop this mobile app was a seven-day workshop for the M.Phil and PhD research scholars of IGNOU. This workshop was conducted by NCIDE and Research Unit on the topic “Research and Innovation-A Road Ahead” on 19-27 March, 2018 in which the ResearchMate developers were closely involved. The scholars’ feedback was the motivating factor and provided a vision for developing this mobile app. Following the workshop, a half day seminar was organized by the InnovationClub@IGNOU, NCIDE on 16 May, 2018 on “Developing a Mobile App for IGNOU” inspired by Prof Kulshrestha, which further gave the innovators an impetus to appropriately design a mobile app based on the experiences and feedback shared by the students and faculty members. The prototype app is available at the following link.

Weblink : https://snappy.appypie.com/index/app-download/appId/ad99b5617682

Innovative Features

The innovativeness of ResearchMate lies in its design concept. Such an app does not exist in IGNOU at present. Mobile app providing administrative information to undergraduate, post graduate and research students, of course, are in existence in at least three State Open Universities in India; the OSOU app of Odhisha State Open University, Smart KKHSOU of Krishna Kanta Handiqui Open University and e-suvidha app of Yashwant Rao Chavan Maharashtra Open University. However, there is no mention in the literature about a mobile app created specifically for the MPhil and PhD research scholars in any Open University in India.

Some of the unique features of ResearchMate are highlighted below :

- Provides anytime, anywhere access to IGNOU research related information (IGNOU, Research Unit, SRD, SED, Schools).
- Facilitates direct communication with IGNOU functionaries for learner support (Research Unit and Schools).
- Facilitates quick and easy interaction with Programme Coordinator; supervisor and co-supervisor.
- Facilitates quick and easy interaction with the peer group.
- Provides academic support during entrance examination, proposal writing during interview, presentation, and communication skills through various media, such as audio, video, blog, and website links.
- Provides administrative and academic support on IGNOU guidelines, literature review, tips for finalization of proposal, research methodology, writing and editing skills and publishing, using various media.

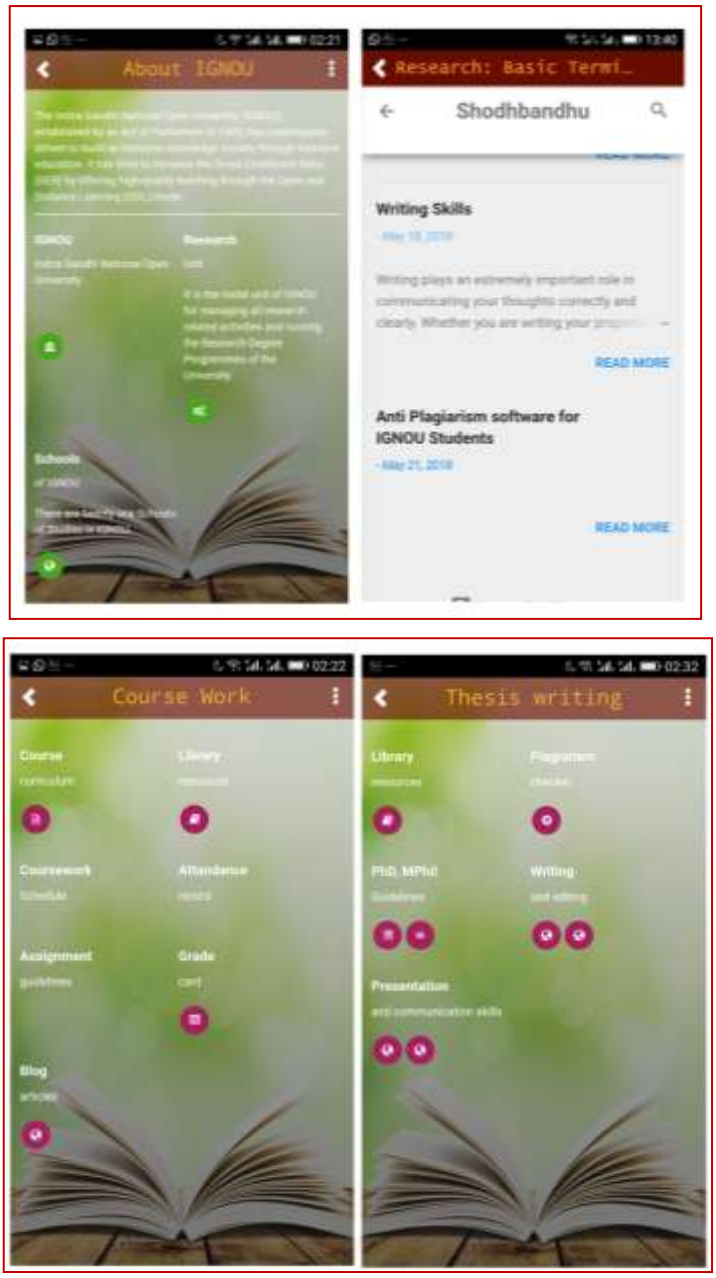


Figure 2 : Various Facilities Provided by ResearchMate

Achievements

A prototype and first version of the app has been developed and tested on IGNOU's Research Scholars. The work is in progress for further development and implementation of the app.

Applications and Uses of the Innovation

The app was tested on IGNOU research scholars. They were asked to provide their feedback on ResearchMate (Figure 3), which is provided below :

1. "A great initiative in field of Research. It is a really helpful app to gain knowledge ranging for anything to everything. Very helpful and great initiative by NCIDE. Rated it 5 star."

2. “It is a very very good app and its operation too is very easy. This endeavor is really appreciable.”
3. “App contains every area for research students...I like this app…is necessary for researchers.”
4. “A praiseworthy effort.”
5. “The app is very good and will be beneficial to the research scholars once it becomes functional. The lecture videos and of course references are great and informative for students who are unable to access the foreign author books of good publications.”

The above feedback indicates the usefulness of this app for the research scholars. The applications of this app have been described in the sections above.

Figure 3 : Feedback from Research Scholars

Way Forward

ResearchMate has been transferred to the Research Unit for implementation. This app can be appropriately customized for each discipline, wherein the PhD Supervisors can provide personalized guidance to each and every research scholar in their specific subjects. A bouquet of app on different subjects can be developed on the model of ResearchMate for IGNOU and other ODL institutions.

Innovators

Dr. Moumita Das
Dr. Neerja Sood, Assistant Professor, SOHS, IGNOU, New Delhi
Period : 2018

16

Virtual Training Lounge
A Web Based Training Platform

Background

The NCIDE strives to provide innovative solutions to the Open and Distance Learning (ODL) system. The Centre has undertaken training the ODL functionaries as one of its activities. The aim of these training programmes is to nurture creativity and innovation, and orient and prepare them to use the new and emerging technologies, and empower them to use the right technology. To impart these training programmes, the NCIDE has designed and developed an online platform- the Virtual Training Lounge (VTL).

Need of the Innovation

In today's knowledge society, there is a need to develop the intellectual capability of every person. In the education sector, skill development through periodic training programmes, especially in the new and emerging fields of Information and Communication Technology (ICT), innovation and creativity, is important not only among the teachers and academics, but also among the administrative functionaries. With the ICT tools becoming the mainstay of teaching-learning and training, these ICT tools can be leveraged in various innovative ways to serve the specific needs of teaching-learning and training, not just in the Open and Distance Learning (ODL) system, but also in the conventional system of education.

Description of the Innovation

The idea of developing the VTL came to us in a faculty meeting way back in 2009-2010. Dr. Jyotsna Dikshit, Dr. O. P. Sharma, Dr. Moumita Das and Ms. Sujata Santosh ideated and conceptualized the VTL in this meeting. At that time there was no such platform where the learning experience of the trainees could be sustained. Subsequently, the VTL was developed using an open source software, Moodle.

The VTL provides training and capacity building of the ODL functionaries through an online platform for interaction to the trainers and trainees. One such novel solution developed at NCIDE is the Virtual Training Lounge (VTL) through a web-based platform.

The objectives of the VTL are to :

- provide training and capacity development to the IGNOU functionaries through online modes, and
- sustain the learning experience of the trainees online.

Website : http://vtl.ignouonline.ac.in/

Innovative Features

The innovativeness of the VTL lies in its concept. A platform for the trainers and the trainees to sustain their teaching-learning experience was lacking at IGNOU, and perhaps the ODL system in India, at the time of designing the VTL. There was thus, a gap area and the VTL bridged this gap. The VTL is designed to provide not only synchronous training, but also to sustain the learning experience of the trainees online. The VTL can be accessed through personal mobile phones as well. The ease of access to the VTL anytime from anywhere makes it an ideal platform for training and its sustainability. Some of its key features are :

- It can be accessed anytime, anywhere through a web based platform.
- It provides asynchronous and synchronous collaborative tools, such as discussion board, chat, wikis, blogs, etc.
- It is flexible having a provision of content uploading by the trainers.
- WYSIWYG editor has been used for interactive content generation.

Figure 1 : Interface of the Virtual Training Lounge

The VTL is designed to facilitate the trainees by providing :

1. quick access,
2. quick upload at all times, where documents in Word, PDF, PPT, photos, etc., can be uploaded easily, and
3. quick response.

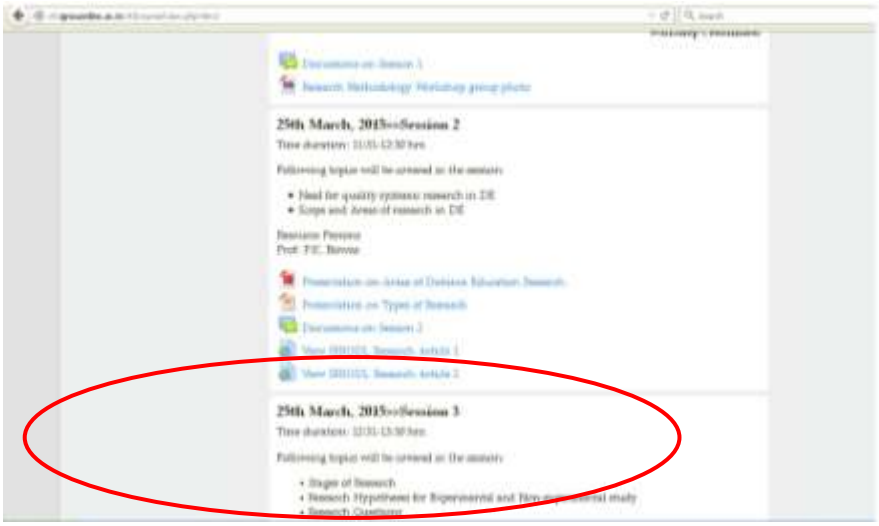


Figure 2 : Training Resources uploaded on the Virtual Training Lounge Sessions

Achievements

The VTL has been successfully used in several training programmes organized by NCIDE. It was used successfully in its workshop organized in 2013, and later on by the Staff Training Research Institute in Distance Education (STRIDE), IGNOU in its Workshop on *Research Methodology* held on 25-26 March 2015. Another successful workshop was organized by NCIDE and STRIDE on *Creativity and Innovation in ODL* from 9th March to 14 March, 2016. The trainers successfully used the VTL and could access from anywhere anytime. They could post their contents and engage in discussion on VTL.

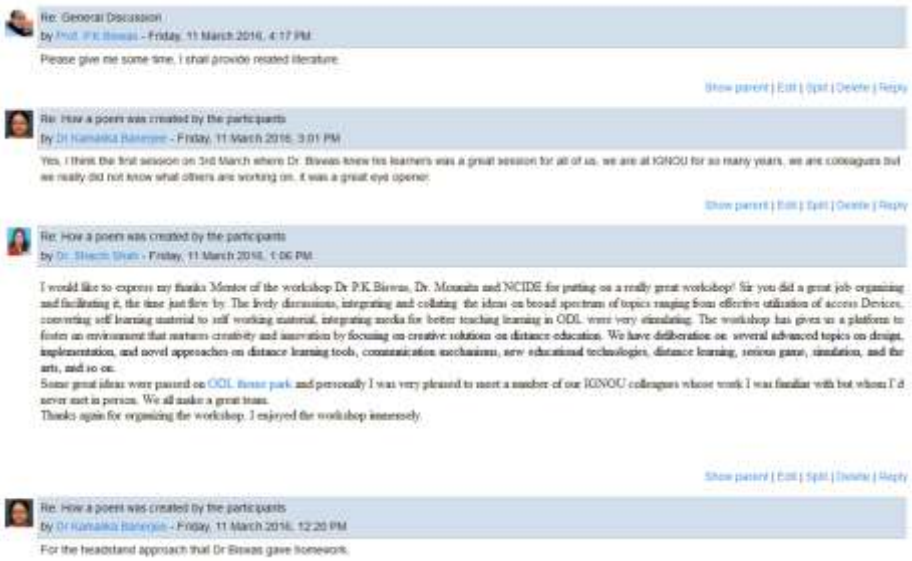


Figure 3 : A Screenshot of the Discussion Forum of the Virtual Training Lounge showing the Responses of the Participants

Applications and Uses of the Innovation

The Virtual Training Lounge has the potential to be an effective tool for training the distance education teachers and staff. The familiar philosophy of distance education, namely accessibility anytime anywhere is being employed in the VTL

which was helpful by the users of VTL. Further, the VTL could be accessed through various devices, such as laptops, tablets and mobiles, making it extremely flexible.

Way Forward

As suggested by the users, some improvements to this innovative training tool needs to be made for its complete functionality. The Virtual Training Lounge can be scaled up to be used in many more workshops by the ODL system in the future. It can be used for follows updated about the developments pertaining to the area of the workshops.

The feedback of the participants of the training programmes using the VTL indicates that the VTL needs to be made more accessible and navigable. For enabling navigation, the design of the VTL needs to be worked upon. For the accessibility part, a more robust IT support is needed from the University so that this training tool can be used by all Schools/Divisions/Centres/Units of the University intending to offer training and capacity development programmes.

Innovators

Dr. Oum Prakash Sharma
Dr. Jyotsna Dikshit
Dr. Moumita Das
Dr. Sujata Santosh
Period : 2010 onwards

17

Interactive DVDs

Bilingual IDVD Enabled IMNCI Training Package for Health Workers

Background

In 2002, India and nations around the world committed themselves to achieve the Millennium Development Goals (MDG) with the fourth goal specifically focusing on reducing the under-5 mortality by two-thirds between 1990 and 2015. In India, Ministry of Health and Family Welfare approved the implementation of Integrated Management of Neonatal and Childhood Illness (IMNCI) strategy which includes both preventive and curative interventions that aim to improve practices in health facilities, in the primary healthcare system and at home. The IMNCI training is divided broadly in two categories training of health professionals and training of front-line functionaries, i.e. health workers which include Auxiliary Nurse Midwives (ANMs), Anganwadi Worker (AWW) and Accredited Social Health Activist (ASHA). Training of health workers holds the key for practicing IMNCI at household/village level. SOHS and NCIDE under the UNICEF funded project “Development of Bilingual IDVD enabled and Mobile Supported IMNCI Training package for Health Workers” introduced a long-term solution for training the health workers for the IMNCI component.

Distance Education is now recognized globally as a mechanism to meet the escalating demand for higher education, and professional development at all levels. It was planned to apply distance education methodology to the training process. Thus, apart from print material which was already developed by WHO, Ministry of Health and Family Welfare, GOI, and UNICEF, we thought of developing interactive DVD (IDVD) and mobile technology to be integrated with the existing training process. We have developed an innovative ICT enabled mechanism for providing a quality assured, cost effective and accessible training through trainee centric pedagogic approach, and simple technology where interactive content including quiz can be played on TV, Computers and Tablets. The development of interactive chart book was also a part of this project which has been elaborated in another chapter.

The IDVD package helps in training the health workers, to manage sick children rationally using the integrated management of Neonatal and childhood illness that is IMNCI approach. The package is designed to allow users to work at their own pace at their home or Public Health Centres (PHC).

Need of the Innovation

IMNCI training has become a necessity for all levels of health functionaries starting from doctors to grassroots level workers. Training of health workers

holds the key for practice of IMNCI at household/village level. But the large number of health workers and the lengthy training process requires displacement from workplace which is delaying the training goal of 100% coverage at PAN India level. It was strongly felt that an effective, accessible and sustainable distance education methodology for training health workers can make training useful and could also facilitate 100% coverage. The proliferation of Information Communication Technology (ICT) in the 21st century has created a global impact on the development of higher education in particular transformation of distance education from providing learning through print based technology to interactive, flexible, intelligent learning environments.

Initially, in view of the dynamic nature of training health workers readiness in infrastructural, technological, and content, domains were assessed. Based on the readiness assessment it was thought that the training process could be made more effective if interactive DVD and smart training (training through tablets) is integrated in the training process. It was also felt that use of local language and playing DVD through TV sets at home/training venue could make the learning feasible and interesting. This methodology can help in decreasing the duration of training besides making the training more interesting. It could also be used as a tool for re-orientation of trained health workers.

Description of the Innovation

The IDVD enabled multimedia package for health workers has been developed in both English and Hindi languages. The technology used to develop the package enables it to easily convert into other languages where only 20% of software coding is required. In total, we have developed four useful products for the health workers as mentioned below :

i. Interactive DVD enabled IMNCI package for health workers (Hindi).

ii. Interactive DVD enabled IMNCI package for health workers (English).

iii Interactive DVD enabled and tablet enabled IMNCI package for health workers (Hindi).

iv Interactive DVD enabled and tablet enabled IMNCI package for health workers (English)

Based on the readiness assessment, we formulated an action plan for the implementation of the project. The action plan was divided into five phases, viz. incubation, analysis, design, prototype development, testing, development, and implementation.

The goal of this project was to accomplish the task of developing an interactive multimedia training package in IMNCI for helping in training the health workers to manage sick children rationally using the integrated management of Neonatal and childhood illness that is (IMNCI) approach and pilot test the product to identify learning problems, utility of the package for reorientation of doctors trained in IMNCI and to identify comfort level of health workers not exposed to IMNCI training. This package has been designed for all health workers who are involved in the care of children. The package is designed to allow users work at their own place. Each section has a large number of structured components with built in textual descriptions, images, videos, learning opportunities and self

evaluations. The package provides flexibility to skip between the sections for any review or recall during learning. The content of the IDVD package was developed by IMNCI experts. The script was further edited by IMNCI experts and multimedia experts and thus vetted. The final package was pilot tested at IGNOU and further corrections were carried out in the line of the comments received during the pilot testing. The content of the package includes the IMNCI training modules followed for training the physicians. The content therefore includes 13 modules, viz. introduction and case management process, assess and classify sick young infants of the age up to 2 months, identify treatment, treat the young infant and counsel the mother, follow up care of sick young infant, good communication skill, management of young infant where referral is not possible, assess and classify sick child of the age 2 months up to 5 years, identify treatment for the sick child, treat the child, counsel the mother and follow up care for sick child.

The major components of the package are :

i. **Virtual Training Scenario :** In this package we have simulated the face to face training scenario of health workers into virtual training with animated characters of master trainer and trainees. The goal behind this is to make trainees get a look and feel of the training session where the trainer like a virtual guide and facilitator is built in the virtual environment. It also includes virtual trainer – trainee discussions, frequently and intelligently asked questions. The virtual training environment is comprised of multimedia components like text, audio, still graphics, animations, and video. Video in the form of demonstrations role play, assessing signs and classifying sick children and home visit, has played a crucial role in meeting the training needs of the trainee. (See Figure 1)

Figure 1 : Screenshot Virtual Training Scenario

ii. **Self-Paced Training :** The multimedia rich training material in the virtual training environment mode enables the trainee to understand difficult concepts in a self-paced and flexible learning environment. The multimedia content is engaging and interactive, simulation-based and

ensures that the trainees learn exactly what they need. Training through the interactive multimedia approach, allows the learner to make many of the decisions about when, where, what and how quickly to learn. Each trainee has the same level of participation in the learning process. Participants are active rather than passive, and assume greater responsibility for their own learning. This interactive multimedia enabled training programme allows participants to begin and end a segment of the training course at any time, it is an efficient use of training time and resources. Learning activities which are organized sequentially, has objectives that must be met before proceeding to the next component. (See Figure 2)

Figure 2 : Screenshots of Content of the Modules

iii. **Interactivity :** Trainees are provided instant feedback about their performance in order to stay motivated and involved. Instant feedback allows the trainees to know where they went wrong as well as what they did well at the precise moment the information is required. In an interactive multimedia enabled training environment, feedback is provided using quizzes or problem solving activities where the trainees are informed of how well they performed or if they answered questions correctly. Interactivity gives control to the trainees to take initiative and choose how, what and when they learn, making the learning more relevant to them. (See Figure 3)

Figure 3 : Screenshot of Interactive Modules

iv. **Quiz :** This component consists of multiple choice questions, true false, video exercise, photo exercise to help the learner evaluate himself/herself. The best part is that the trainees can play the quizzes even on TV and DVD player through remote control. (See Figure 4)

Figure 4 : Screenshot of Quiz

The training model for health workers is given in Figure 5.

Figure 5 : Training Model for Health Workers

Innovative Features

Some of the innovative features of the interactive DVDs include the following :

- Trainees can obtain information and update or revise skills when they need them.
- Each trainee has the same level of participation in the learning process. Participants are active rather than passive, and assume greater responsibility for their own learning.

- As the IDVD allow participants to begin and end a segment of the training course at any time, it is an efficient use of training time and resources.
- Learning activities which are organized sequentially, have objectives that must be met before proceeding to the next component.
- The IDVD package is accessible on TV, Computers and Tablets.
- This package can be used for one-to-one learning and one-to-many learning.
- Will help in minimizing the duration of 8 days face-to-face training of health workers.
- Is a useful training tool for re-orienting the trained health workers.
- The package could easily be adapted for different local languages as per need.
- Use of local language and playing DVD through TV sets at home/training venue makes the learning feasible and interesting.

Achievements

A very major problem faced by the innovators during the development of the IMM-IMNCI packages was regular changes in a few sections of the IMNCI training curriculum. This resulted in frequent updation in the package which also resulted in revising the IMM-IMNCI package. Similarly, IMNCI training for health workers is conducted in regional languages. Thus the package was developed in such a way that the contents could be updated quickly without much effort. The product was successfully developed and handed over to UNICEF. The package was also provided to NRHM, Haryana which facilitated them in moving towards 100 % saturation in training of health functionaries in the IMNCI component at the grass-root.

Applications and Uses of the Innovation

The IDVD package was provided to NRHM, Haryana for the training of health workers using our training model.

Way Forward

This package has been designed for all health workers who are involved in the care of children. The package is developed in Hindi and English languages however; it can be converted into other regional languages also. Our training model is also tested and the same can be adopted to provide training and re-orientation to the health workers. The modules of the package can be used for broadcasting and telecasting purposes.

Coordinator and Innovator

Dr. Jyotsana Dikshit
Prof. T. K. Jena, Professor, SOHS, IGNOU, New Delhi
Email : jdikshit@ignou.ac.in, tkjena@ignou.ac.in
Name of Funding Agency : UNICEF
Period : 2011-2013

18

E-Training

A Portal for Training in Integrated Management of Neonatal and Childhood Illness

Background

As discussed in the article on the development and implementation of the interactive multimedia enabled IMNCI package for Health Professionalsthe Ministry of Health and Family Welfare is implementing the Integrated Management of Neonatal and Childhood Illness (IMNCI) as a key child health strategy within the National Reproductive Child Health Programmesolution. The challenges and issues of IMNCI/F-IMNCI training in India were mostly covered by the innovative solution as discussed in the article on development and implementation of the interactive multimedia enabled IMNCI package for Health Professionals.

However, some of the challenges still faced by the IMNCI training programme were also to be answered like regular updating of the training content due to updates in guidelines/strategies of specific diseases like if a new malaria vaccine is introduced then the same is to be taught to the learners while maintaining consistency, quality and equity, linking and regular access to new resources related to IMNCI training, etc. Thus the innovators strongly felt that rather than only providing IMM-based IMNCI training with a two day face-to-face training session including bed side teaching in hospitals one should focus also towards providing a mechanism for follow-up after training including continuous learning and development. It was felt that this strategy would not only ensure quality of training but also maintain a consistency in growth of knowledge and skills of the pre-service, and in-service health professionals according to the existing requirements. It was also felt that with an e-learning portal in place apart from the basic material which will be available through the IMM IMNCI package, constant availability of learning resources through the e-learning portal will enable the health professionals to access anytime, from anywhere learning resources which will result in enabling the health professionals in managing their roles and responsibilities at the organization where they work. Initially, the idea struck over a cup of coffee back in 2006, and the innovators started working on it in 2007 and developed a prototype of the portal. Finally, a proposal was submitted to UNICEF and on the basis of the demonstration of the portal the grant was sanctioned which enabled the innovators to develop the e-learning portal for IMNCI training.

Need of the Innovation

Notwithstanding the fact that the Interactive Multimedia enabled IMNCI package was designed reasonably well, there were certain issues and ideas which on one hand could enhance the training needs of the health professionals and also facilitate the development of virtual communities to share local resources and create a repository of resources for training in IMNCI. At the crux the following issues/ideas motivated the innovators to explore the possibilities of developing an e-learning portal for IMNCI training for the health professionals.

1. A very major problem faced by the innovators during the development of the IMM-IMNCI package was regular change in a few sections of the IMNCI training curriculum. This resulted in frequent updation in the package which also resulted in revising the IMM-IMNCI package, which is not a long term sustainable solution.
2. Need of follow-up training and updation of knowledge and skill of health professionals on regular basis
3. Need of online training for health professionals to brush up their skills and get updated as and when required.

Description of the Innovation

IMNCI online portal has been developed with the latest web 2.0 technologies, accessible from desktop computers to hand held devices including mobile devices. Such kind of online learning platform is shown in Figure 1.

Figure 1 : Online Learning Platform (eimnci)

This platform facilitates the fresh trainees as well as master trainers, where apart from bed side teaching , rest all can be taken care by the Online Learning System which will help the master trainees and trainees to share, collaborate, learn under a web-based (online/offline) integrated environment anytime, anywhere. IMNCI online portal has been developed with the latest web technologies and is a responsive website. It is accessible from desktop computers to hand held devices including mobile devices (smart phone/tab).

This platform has various modules for complete management of courses (Figure 2) and learners like site management, user management, enrolment, Roles, course management, assignment, module, chat module, choice module, forum module, glossary module, lesson module, quiz module workshop module wiki module, survey module, resource module, etc.

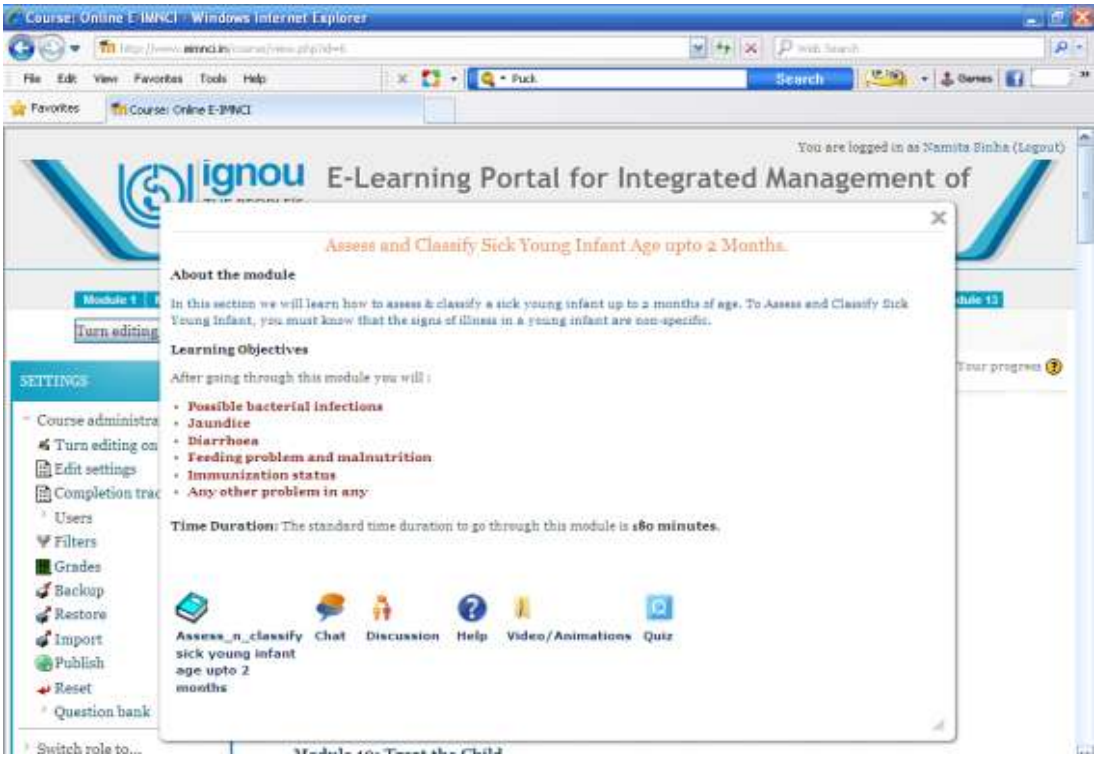


Figure 2 : Screenshot Course Management

Innovative Features

Some of the innovative features of the E-IMNCI training portal for online learning are :

1. It provides online access to e-training IMNCI Modules with text, animations, graphics, embedded youtube video (Figure 3).

Figure 3 : Screenshots of the Online Training Modules

2. It has a provision of synchronous interactions between the trainee and trainers through private, group chat forums. Trainees and trainers interact asynchronously through discussion boards, and Blogs. See Figure 4.

Figure 4 : Screenshots of Chat and Discussion Forum

3. It provides easy authoring tool for trainers with remote content authoring over the web or intranet. See Figure 5.

Figure 5 : Content Authoring in HTML View

4. It has inbuilt Trainee Management System : The platform allows the trainer to create groups of trainees which is very helpful in assigning projects to trainees that will work together. The trainee management also enabled the trainer to keep track of trainees as they login into the portal. See Figure 6.

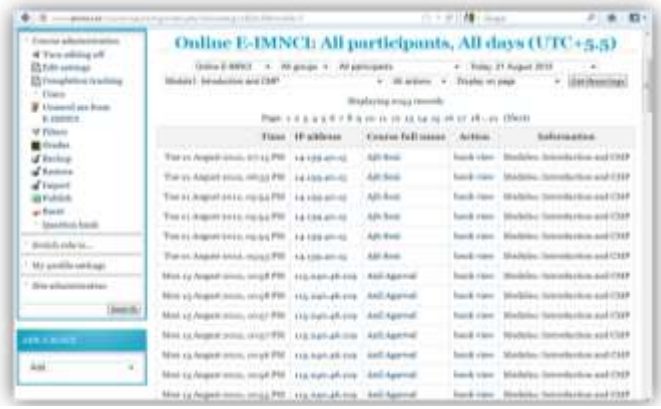


Figure 6 : Trainee Tracking

5. It has an Evaluation Management System : Trainers can design and build quizzes with different types of questions, like multiple choice, true/false, short answers, essay questions, etc. The IMNCI training

modules also had a variety of interactive quiz like picture, video, simulation, etc. See Figure 7.

Figure 7 : Creation of Quiz

The conceptual framework of the IMNCI model enabled us to experiment and try new ideas as and when required by the stakeholders, thus enabling a quick adoption of it.

A product which is incompatible with the existing social and technological environment cannot be spread as rapidly as the one which is compatible. As in our case the health professionals even at the grassroots are fully aware of using computers and tabs for their day-to-day work, hence the interactive multimedia package is compatible to their social and technological environment making the IMNCI model rapidly being spread at the grassroots. Another fact that the IMNCI training is to be imparted to health professionals who are geographically distributed but have some essential similar attributes like their educational background is MBBS, so they are like individuals who share common meanings and beliefs, thus enabling the spread of the IMNCI training up to the grassroots effectively and with a high degree of rapidity.

Financial resources are cited as a constraint for Governments to scale up the IMNCI key health interventions in some countries including India. The technology enabled intervention has enabled conducting training for large scale of medical professionals in minimum time frame where the number of face-to-face training sessions is reduced from eight to two, which includes bed side teaching also. This has lead imparting of the training to be cost-effective.

For sustaining an innovation it is very important that it is flexible. An innovation which is not closed, i.e. an innovation system which is flexible enough to try new ideas, accommodate new technological interventions, simple, user friendly, and platform independent is generally sustainable than other complicated innovations. The conceptual framework of the IMNCI model enabled us to experiment and try new ideas as and when required by the stakeholders, thus enabling it to be sustainable.

Achievements

With the help of UNICEF funded project the entire portal for providing IMNCI training was developed, launched and tested.

Applications and Uses of the Innovation

The System is ready for use for the IMNCI master trainers and trainees to undergo training virtually. This system can also be used as an Online Certification System for providing training and certification to the IMNCI trainees. This is a blending of E-IMNCI training portal for online learning and face-to-face bed side teaching. The trainees over internet can access this platform and go through the various modules using easily accessible and cost-effective technology. The trainers and the trainees can collaborate through synchronous and asynchronous mode of learning within their group and with other groups of trainees distributed in other parts of the country.

Way Forward

The benefits of the IMNCI model using the interactive multimedia package for health professionals is perceived better than the exiting training model. This has attracted many health professionals, government organizations, state governments and central government. In order to sensitize the program manager, professional bodies this material could be made available at the website under the partnership of IGNOU, UNICEF, and ministry of health. A strong need is also felt to provide an online certification system for the IMNCI training programme.

Coordinators and Innovators

Dr. Jyotsana Dikshit
Prof. T. K. Jena, Professor, SOS, IGNOU, New Delhi
Email : jdikshit@ignou.ac.in, tkjena@ignou.ac.in
Period : 2010-2011

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Interactive Multimedia Package

An Innovative Way of Imparting Training to Health Professionals

Background

The Ministry of Health and Family Welfare is implementing the Integrated Management of Neonatal and Childhood Illness (IMNCI) as a key child health strategy within the National Reproductive Child Health Programme II and the National Rural Health Mission. The School of Health Sciences (SOHS) of the Indira Gandhi National Open University (IGNOU) launched its Post Graduate Diploma in Maternal and Child Health (PGDMCH) in 1997-98. Integrated Management of Neonatal and Childhood Illness (IMNCI), which was introduced in 2003, is a crucial component of this PG Diploma and it contains very significant practical training. Many face-to-face training programmes are conducted by GOI, and agencies like UNICEF and WHO to provide training in the Integrated Management of Neonatal and Childhood Illness (IMNCI) component to the medical practitioners, health workers up to the grassroots. While each of these interventions has shown great success, accumulating evidence suggests that there is a need of a mechanism to train thousands of medical practitioners, up to the grassroots in minimum time frame. NCIDE and SOHS collaborated towards integrating the IMNCI training component (except bed side teaching) into a digital interactive multimedia package for all health professionals who are involved in the care of children.

Need of the Innovation

The Integrated Management of Neonatal and Childhood Illness is all about guiding the health professionals to assess and manage sick young infants and children and provide counselling to the mothers and care givers. GOI, UNICEF and WHO have worked out a strategy by way of which the health professionals can organize the above mentioned task by using a series of algorithms. The training component, i.e. teaching-learning transaction is handled through a 11-day F-IMNCI training programme, of which a 8-day training course is a part wherein we have a combination of classroom work and clinical practice. The challenges faced by the training programme are as under :

- Making the training programme accessible to the health professionals at the grassroots level.
- Tailoring the quality of the programme in accordance with the need-base of the people.
- Meeting the timelines which are quite stringent.

- Cost-effectiveness of the training programme.
- Effective follow-up pursuant to a suitable feedback mechanism.
- Periodic updating of the training content.

These challenges motivated the innovators to develop a product to change the way education and training are imparted to pre-service and in-service doctors for the IMNCI component by designing, developing and testing the IMNCI training package for the health professionals.

Description of the Innovation

The National Centre for Innovations in Distance Education (NCIDE) in collaboration with School of Health Sciences (SOHS) under the UNICEF funded project have integrated the IMNCI training components (except bed side teaching) into a digital interactive multimedia package enabled by virtual training scenario which consists of built in textual descriptions, animations, images, videos, learning opportunities and self-evaluation. It also includes sections like resources, quiz-bank, glossary, and videos to train all health professionals who are involved in the care of children.

Through this package we have introduced a long-term innovative ICT enabled mechanism for providing a quality assured, dynamic, cost effective and accessible training through trainee centric pedagogic approach, and simple platform independent technology by replacing face-to-face training sessions with the interactive multimedia package except the bed side teaching component.

The effective deployment of the IMNCI training in varied training environments with heterogeneous group of trainees is a complex process. It required a lot of planning at the initial stages when the project was approved. This was the initial stage in which we collected raw data like soft copies of IMNCI modules, videos already developed by UNICEF and other ppt and pdf resources and processed the recruitment of project staff. In view of the dynamic nature of the project, readiness in infrastructural, technological, and content domains were assessed. After the readiness assessment a prototype of the model was developed to identify operational problems, scarce of resources, system errors; screen out possible failures like technological or pedagogical or even managerial. The prototype development saves time, cost and improve usability of the product; correct the errors and to design our working strategies for developing the final product. The Spiral model of Software Development Life Cycle was used to design the prototype. This enabled the team to release the software incrementally which resulted in the increasing refinement of the material developed each time it goes around the spiral. The major steps of the spiral model are as follows :

1. Finding out the requirements of the IMNCI package and identifying the measures to be taken to achieve the requirements.
2. Developing a detail plan to implement the development of the IMNCI package and design the components like script based on the content, assessment, screen layouts, flowchart of working, etc.

3. Designing of interface, navigation scheme, xml schemas for quiz and other dynamic content, editing of audio and video of the prototype, development of animated texts and images.
4. Demonstration of the prototype of the IMNCI package developed to the stakeholders, experts, academics for its functionality, reliability and usability. Demonstration of prototype goes through cycle of iterative process of obtaining feedback from the stakeholders and making subsequent improvements. The cycle is repeated until the right prototype is developed. Once the right prototype is obtained then the development of all the modules take place.

The content of the package includes the IMNCI training modules followed for training the physicians.

Figure 1 : The Package

Different Components of the Interactive Multimedia enabled IMNCI Package are described below :

a. **Virtual Training Scenario :** In this package we have simulated the face-to-face training scenario into virtual training with animated characters of master trainers and trainees. (See Figure 2)

Figure 2 : Virtual Training Scenario

b. **Interactive Multimedia Enabled Learnlets :** The Interactive Multimedia enabled learnlet has an introduction to the topic, it presents engaging and interactive simulation-based content as and when required and ensures quality training of the learner. The scenarios in the package motivate the trainees for learning difficult concepts. (See Figure 3)

Figure 3 : Interactive Multimedia Enabled Learnlets

Each learnet also contains activities and give scope for self evaluation in the form of quizzes like Multiple Choice Quiz, Picture Quiz, Video Quiz, Filling Recording Forms, True/False Quiz, Fill in the Blank (Drag and Drop), Drag and Drop Quiz, Arranging Steps in Sequence, Yes/No Quiz, Case Analysis, Assessment, and Classification through Simulations, etc. As a sample see Figure 4.

Figure 4 : Simulation Enabled Self Evaluation

c. **Resources :** This give access to various free software, articles, PowerPoint presentations, and video material for reference of the trainee.(See Figure 5)

Figure 5 : Resources Page

d. **Quiz-bank :** This component consists of random generation of questions for evaluating the learner (See Figure 6).

Figure 6 : Quiz Bank

e. **Chart Book :** Users can view chart book instantly. They can view other pages through clicking on the page numbers given on top right corner. (See Figure 7)

Figure 7 : Chart Book

f. **Glossary :** Users can access the glossary section. The glossary is an alphabetized collection of computer related terms with their meanings. (See Figure 8)

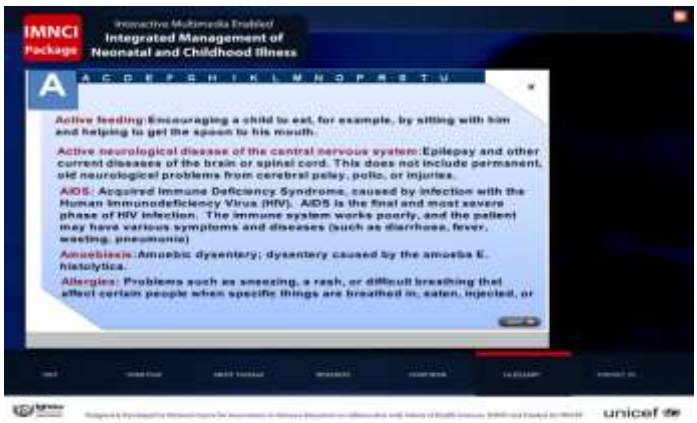

Figure 8 : Glossary

Innovative Features

The innovative features of the interactive multimedia enabled IMNCI package for health professionals are given below :

- It is a self learning package with a large number of structured components with built-in textual descriptions, images, videos, animations, learning scenario and self evaluations.
- Self-training and learning is inbuilt in the multimedia content which is, engaging and interactive, simulation-based and ensures that the trainees learn exactly what they need to learn.
- Each trainee has the same level of participation in the learning process. Participants are active rather than passive, and assume greater responsibility for their own learning.
- Trainees can obtain information and update or revise skills when they need them.
- This package caters to the need to train the doctors in IMNCI approach, re-orient the doctors trained in IMNCI and sensitize the health personnel about IMNCI.
- Trainees are provided instant feedback about their performances in order to stay motivated and involved.
- Trainees are active rather than passive, and assume greater responsibility for their own learning.
- Learning activities which are organized sequentially, have objectives that must be met before proceeding to the next component.
- Quality assurance and universality in respect of all health professionals involved in the care of children.
- It is dynamic and cost effective.
- The training is accessible through a trainee centric model.

- It is characterized by integrating the IMNCI training components (Except bedside teaching) into a pedagogically sound, technologically accessible digital package.
- It can be delivered both online and offline.
- It can be made available on other embedded systems like IPTv, android supported mobile phones, palmtops and tablets.
- The content is multimedia based where self-training and learning are inbuilt along with being engaging and interactive.
- The training is fully need based and handled by way of simulation technique.
- It is ensured that the level of participation of every trainee is same.
- Every trainee is an active participant during the process of training and thereby she/he assumes greater responsibility of self-learning.
- The trainees can update and revise their skills whenever they need.
- The conceptual framework of the IMNCI model enabled us to experiment and try new ideas as and when required by the stakeholders, thus enabling a quick adoption of it.

A product which is incompatible with the existing social and technological environment cannot be spread as rapidly as the one which is compatible. As in our case the health professionals even at the grassroots are fully aware of using computers and tabs for their day-to-day work hence the interactive multimedia package, is compatible to their social and technological environment making the IMNCI model rapidly being spread at the grassroots. Another fact that the IMNCI training is to be imparted to health professionals who are geographically distributed but have some essential similar attributes like their educational background is MBBS, so they are like individuals who share common meanings and beliefs, thus enabling the spread of the IMNCI training up to the grassroots effectively and with a high degree of rapidity.

Financial resources are cited as a constraint for Governments to scale up the IMNCI key health interventions in some countries including India. The technology enabled intervention has enabled conducting training for large scale of medical professionals in minimum time frame where the number of face-to-face training sessions is reduced from eight to two, which includes bed side teaching also. This has lead imparting of the training to be cost-effective.

For sustaining an innovation it is very import that it is flexible. An innovation which is not closed, i.e. an innovation system which is flexible enough to try new ideas, accommodate new technological interventions, simple, user friendly, and platform independent is generally sustainable than other complicated innovations. The conceptual framework of the IMNCI model enabled us to experiment and try new ideas as and when required by the stakeholders, thus enabling it to be sustainable.

Achievements

One of the biggest challenge was to make the IMNCI package accessible to all up to the grass root. In this context, through this package we have introduced a long-term innovative ICT enabled mechanism for providing a quality assured, dynamic, cost effective and accessible training through trainee centric pedagogic approach, and simple platform independent technology by replacing face-to-face training sessions with the interactive multimedia package except the bed side teaching component.Traditional barriers to facilitate new ideas and methods were worked out by getting the funds to develop the products from external agencies. The subject matter experts master trainers of the IMNCI training were provided with working prototype of every script with animations so that the interactive multimedia content could be finalized.

Applications and Uses of the Innovation

The package can also be translated into other languages and could be easily used for Hindi speaking health personnel.

Pick up from the article.

Way Forward

The benefits of the IMNCI model using the interactive multimedia package for health professionals is perceived better than the exiting training model. This has attracted many health professionals, government organizations, state governments and central government who have approached to implement IMNCI training in their states.

Coordinator sand Innovators

Dr. Jyotsana Dikshit
Prof. T. K. Jena, Professor, SOHS, IGNOU, New Delhi
Email : jdikshit@ignou.ac.in, tkjena@ignou.ac.in
Name of Funding Agency : UNICEF
Period : 2010-2012

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On-Demand Examination

An Innovative Scheme of Examination in IGNOU

Background

Evaluation and assessment of the performance of the learners is one of the important components of any teaching-learning system. The Indira Gandhi National Open University (IGNOU) evaluates the performance of its learners through Tutor Marked Assignments, project works and the Term End Examinations. As one of the learner friendly features, University has been conducting term end examinations twice in a year. But there are many students of IGNOU who find it difficult to take leaves for so many days continuously to appear in the term end examinations and also many other students appear in the term-end examination without sufficient preparations and hence fail. They will have to wait for six months for the next exam, otherwise. Because of this they might take more time to complete a particular programme and also it may lead to lower pass percentage in different programmes.

Need of the Innovation

With the advancement of ICT not only the instructional system, but the examination system is also being influenced to a great extent. In Open and Distance Learning (ODL), the examination On-Demand has become the need of the hour making ODL more flexible and learner friendly. As most of the distance learners in Higher Education are working people; they normally do not get leave from their organizations for several days at a stretch for term end examinations, so fail to complete their courses in stipulated time limit. The examinations being institute centric are conducted in a fixed time frame and therefore many of the students appear without proper preparations which lead to the lower percentage of results in many subjects. Moreover, the faculty is, all the time, engaged in making arrangements for term end examinations which takes too much of the valuable time of faculty which otherwise they could have effectively devoted to concentrate on academic matters.

These genuine problems prompted the NCIDE to develop a comprehensive ICT enabled system of examination on-demand which provides the learners an opportunity to appear as per their preparation and convenience.

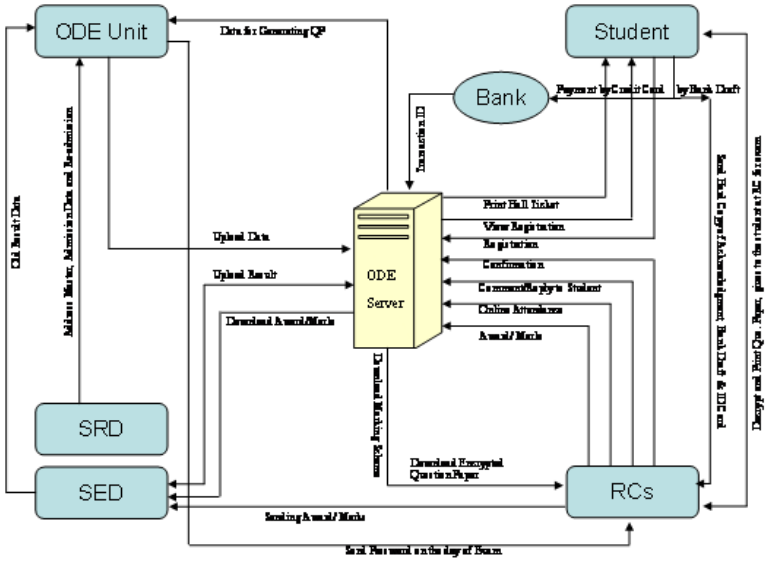
Description of the Innovation

Keeping in view of such problems of learners, the National Centre for Innovations in Distance Education (NCIDE) in IGNOU has brought out a more flexible and learner friendly scheme of “On-Demand Examination”. In this scheme of examination the students who have completed the period of

minimum study hours and submitted all their assignments can choose the date of examination as per their convenience and preparation and need not to wait for six months for term end examinations. This is a boon for the distance learners particularly for those who are working somewhere and find it difficult to appear in all courses in one go for so many days continuously as per the schedule of the term end examinations.

It has basically three modules :

- **Question Paper Module** which can generate instantaneously any number of unique question papers of comparable difficulty level as per the design and blueprint from the digital question bank,
- **On-line Registration Module** using which the eligible students of IGNOU can register for on-demand exam, anytime from anywhere and select date and exam centre from the given list as per their convenience, and
- **Regional Centre Module** which keeps the exam centres (here Regional Centers) updated with the records of students registered for OD-Exam at their centres with date, subject, names of students, etc., provides them attendance sheet, blank award lists and delivers them the requisite number of question papers online just before the exam and marking schemes a day after. There is also a facility using which the RC can send attendance on-line. An architect design of the On-demand Examination System is given in the following figure :



All these modules have multilayered security features, well defined accessibility and provisions for scalability. ICT enabled monitoring of the conduct of on-demand exam under web camera surveillance ensures fair and smooth conduct of OD-Exam.

The basic objectives of this scheme are :

- to provide opportunity to the learners to appear in the examination whenever they feel prepared for examination after completing the minimum eligibility criteria,

- to reduce the possibility of malpractices in the examinations as each student may get different sets of question papers,
- to minimize the fear of failure in the examination and thus saving the distance learners from frustration and depression,
- to improve the pass percentage of students in the university by giving chance to really motivated and prepared students to appear in the examination as per their convenience, and
- to reduce the load on the term end examinations of the University.

The target group for the scheme of on-demand examination includes all the learners of IGNOU all over the world. The facility was made available through 18 RCs of IGNOU in different parts of the country.

Innovative Features of the Innovation

The innovative features of the On-Demand Examination System are as given below :

- It is a completely flexible and ICT enabled system of examination independent of the traditional fixed time frame, the student need not to wait for the six monthly examination.
- The registration for On-Demand Exam is completely on-line. After ensuring the eligibility and receipt of registration fee, Hall Ticket indicating date & time is issued on-line.
- There is inbuilt mechanism for checking the authenticity of the student's data, eligibility for the exam, validity of the admission etc. which insures that only genuine learners are benefitted.
- It makes use of ICT to solve problems which arise due to human limitations; it makes possible instant generation of parallel question papers, and facilitates authorised data entry at different points, leaving no chance for human error. It reforms the system of evaluation without abrupt changes.

- The entire scheme of ICT Enabled examination on-Demand is an objective, reliable, valid and practical system. It is safe and secured and truly transparent.
- It is not only simple and user friendly, but it is also cost effective and saves time and effort in setting question papers, in data base management and in data transfer.
- It is capable of generating individualized question papers on the day of examination picking up the questions randomly from the question bank as per the blue print & design. Though each student may get a unique question paper, the various question papers are of comparable difficulty level.
- The Question Papers are generated on the day of on-demand exam in encrypted form and they are made available online to the RCs. The Question Papers can be decrypted by the authorized person using a specific decryption software and unique key generated along with the question paper which is different for different RCs.
- The decrypted question papers cannot be saved in the hard disc of any system.
- Each question paper has unique bar code and a unique question paper code having date and time of generation with the help of which students' question paper and answer sheet can be matched at any later instant, if required
- Marking scheme for each question paper is also generated along with the question paper which can be accessed only after 24 hours.
- It has an inbuilt provision of backup of the data base such as question papers generated and printed, changes made in the data base, etc. Log files are created indicating the date, time and the IP address of the system from which the server is accessed.
- Date wise list of students registered for OD-Exam, attendance sheets and blank award lists can be downloaded by the concerned RC.
- It has centralized control on the whole exam starting from the registration to the declaration of result.
- It has facility for multi mode registration–fee payment which includes on-line payment through credit card, through bank draft and cash challan.
- The in-built security mechanism of software takes care of the security of the question banks and data base.

Achievements

The scheme of On-demand Examination was formally launched on the Foundation Day of the University in 2008. Thereafter the Winex Software was developed and the development of Question Bank started. What started as an humble beginning in February 2009, with 8 courses of two certificate programmes of IGNOU at two Regional Centres, it had grown to about 200 courses of 30 programmes at 18 Regional Centres and hope to expand even

faster. In a short span of 5 months from the first OD-Exam, more than 1650 students got registered themselves for On- Demand Exam and more than 1000 appeared. The system has shown its strength and foolproofness as all the examinations have been conducted successfully. As a part of the scheme, a digital question bank having more than 2.00 Lakh questions both in English and Hindi medium was developed for about 200 courses of the university and it was being upgraded continuously and regularly for many other courses. But because of some administrative reasons the scheme of On-Demand Exam has been kept in abeyance.

In view of the learner friendly features of On-Demand Examination, a large number of students have been requesting to start on-demand examination in other courses at the earliest.

During the period of 20 months of launching of the OD-Exam portal, more than 5,62,993 visitors visited the On-demand exam web site, which shows peoples interest towards On-demand Examination. On-Demand Examination Website is http://winex.ignou.ac.in.

The scheme of On-Demand Examination was much talked about in the community and had a wide media coverage right from its inception as Walk-in Exam which was later re-christened as On-Demand Examination.

Preparing people to accept change was the biggest challenge. But it turned into appreciation when the new system worked and people started tasting its fruits. One has to work patiently consistently and resolutely. The same thing happened with this programme.

More than 2000 courses of 150 programmes, different subjects, different papers with different designs and blue prints developing a system which caters to every need was a real challenge, but finally, we developed powerful versatile software which is well adapted for ODL. As we were working, we were improving and updating it.

Most of the courses of IGNOU are bilingual. Developing bilingual Question Bank in itself was a huge effort – identifying subject experts who know Hindi as well as English was a challenge. Gradually we could meet this challenge with success and prepared a database of competent translators for different subjects with a view of their future involvement.

Delivery of question papers, having secrecy and security issues in mind, to different centres of the country at different places at the same time was a challenging task, but it was handled very well. With the use of technology and latest safety and security measures, we finally succeeded in resolving the issue. We can now conduct On-Demand Exam all over the world at the same time with adequate safety measures.

Initially, the On-Demand Exam started at two Regional Centres in Delhi, within three months it was extended to five more Regional Centres and in next three months demand was from five more Regional Centres. Thus, in less than one year it was extended to 12 Regional Centres of IGNOU. The extension of the facility of On-Demand Exam to new Regional Centres was very cost effective with one time very nominal investment for providing necessary infrastructure, i.e. one computer, one printer, chairs and web based CCTVs.

Applications and Uses of the Innovation

The success of On-demand Examination had helped in changing the mindset of Academia of higher education which will surely help to change the assessment and evaluation scenario in Open and Distance System in near future making the examination on demand. This scheme of On-demand Examination has been highly useful for the students who because of one or other reasons are not able to appear in the usual Term-End-Examination during June or December. Students can opt for On-demand Examination whenever they are prepared to give examination.

The software was also used for instant generation of the question papers for term end examination also, which made the process of question paper setting highly cost effective and less time taking.

Way Forward

It is an inherently adaptable system which can be easily up scaled to any number of courses, to any number of Examination Centres catering to all the students of IGNOU. The scheme of On-Demand Exam can be easily adapted by any other ODL system and it may provide a more credible system of examinations free of unfair means with less paper work before the exam. It may also provide a lot of administrative support and reduce burden on administration of evaluation in ODL system. It may also help in reducing workload on term end examination. The On-Demand Examination facility will boost the image of the University as is evident from the appreciation of the programme by the press, the educationists, the students and their parents. Further, it may help in improving the pass percent of students in different courses.

The software developed by the NCIDE for On-Demand exam could be easily installed online at the Regional Centres without any additional expenditure and special arrangements. It did not require specially skilled or trained manpower to handle the entire process of on-Demand examination at the Examination Centres. It was highly user friendly programme. The training of the personals involved with the On-Demand Examination at Regional Centres was also done online. Hence, there was no problem in making these facilities available in any corner of the world.

The software for paper generation is to be backed by a good comprehensive question bank for which experts from different fields are to be identified and involved. Initially it was thought that the faculties of different schools will get the question banks prepared and hand over the finalized Question Bank to us for paper generation but finally this responsibility also fell on us and we single handedly prepared Question Bank for different schools involving the internal faculty and the external experts identified by them.

After an initial investment on developing infrastructure, the running cost on the entire On-Demand Examination process was substantially reduced. The same infrastructure would be used for On-Demand Exam in other courses to be introduced from time to time. The scheme can be extended to all the courses in the University without additional expenditure except that for the question bank development.

The scheme of examination on-demand can be easily replicated in any educational institute at school as well as at higher education level. The on-line registration module can be customized for any registration purpose be it examination related or otherwise. The On-demand Examination Module can also be used for generating quality and parallel question papers for term end exams in no time, specially in case of emergency and where the number of examinees is very less which will reduce the burden of question paper setting and thus will reduce the cost and time of paper setting.

Developing structured and graded question banks involving objective type questions (specially Multiple Choice Questions) the software can be adapted for on-line-examinations with a provision for instantaneous result declaration. The software can be used for individualized assignment delivery or for on-line assessment as part of Continuous and Comprehensive Evaluation.

Coordinator and Innovator

Dr. Oum Prakash Sharma
Period : 2008-2013

21

E-Prashankosh
A Digital Question Bank

Background

Assessment and evaluation is an integral part of any teaching-learning process. Different tools and techniques are adopted for evaluating the performance of the learners. In IGNOU, the process of evaluation includes self assessment through in text questions, Tutor Marked Assignments, six monthly Term-End-Examination or through On-Demand Term end Examination. For all these activities, there is a need of test papers or question papers after every six months.

Need for the Innovation

It is a fact that setting up of question papers and assignments is a regular and mammoth exercise which has to be done twice in a years. Over the years the number of courses has increased to more than 3000. It means at every six month we are required to set up question papers for so many courses and also new sets of assignments are to be prepared every year. In this process, every time lots of time and effort of the faculty is consumed in setting and moderation of the question papers and assignments. University has to pursue with so many paper setters and moderators for getting the work done in time, which is not only costly but time consuming also. Many a times, it becomes difficult to find right person at right time. Besides it, the university started conducting On-Demand exam every Friday, for which a number of question papers were required. In order to develop so many question papers, different types of equivalent questions were required. To meet this need, the idea of developing digital dynamic question bank came up. This question bank scheme was named as e-Prashnakosh.

Description of the Innovation

The scheme of e-Prashnakosh included mainly two components – development of a software and development of question bank. To begin with different types of questions based on specific design and blueprint of the question papers of different courses were developed with the help of subject experts. For development of question bank mainly two modes were adopted – through workshop mode or by assigning work for home as per a specific item sheet.

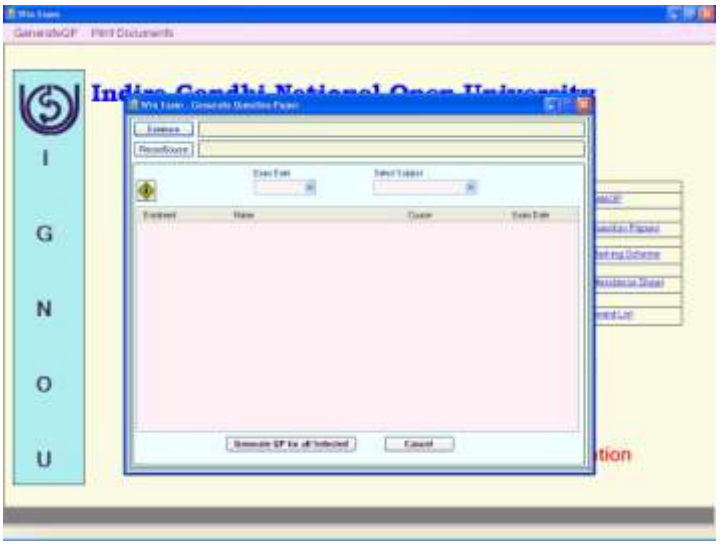
All the question items obtained from different sources were first coded in terms of course or subject area, block, unit name, topic, subtopic, type of question, marks, etc. and then converted into usable database. It was an ongoing process. All these question items were first coded as per a particular pattern

and then they were computerized and converted into database. They were finalized after proper review and moderation by the subject experts including internal and external experts. Maintenance and updating of the question bank was a continuous process, because with the passage of time many question items become outdated and need to be removed and many new question items need to be added to the question bank. Thus, the digital question bank was – dynamic in nature. The questions of this bank were used for generating question papers as and when required.

Innovative Features

Some of the innovative features of the digital question bank are given below :

- The digital question bank is highly secure as it is stored in encrypted form.
- Digital question bank can be used any time to generate question papers instantaneously for different purposes.
- It will save time and effort of the faculty. The saved time could be utilized in other academic activities.
- Online server based question bank can be updated, and modified whenever required.
- Question bank can have all types of questions with proper coding.



Achievements

The development of the Digital Question Bank – e-Prashnakosh was initiated as a component of the scheme of On-demand Examination in 2008 with 8 Courses for two Certificate level programmes. Gradually, the Question Bank for several other Programmes and Courses was developed. By the end of 2011, a huge Question Bank having about 2 Lakh questions both in Hindi and English medium were developed for more than 200 Courses of the University.

Blueprint and Question Paper designs were also developed for all Courses so as to generate identical and parallel Question Papers. Besides it, the marking scheme was also developed for all the questions.

However, the generation of digital question bank in the university had certain challenges also such as non-willing attitude of the faculty to go for such type of question bank, lack of technical support in terms of the infrastructure and server, and lack of proper manpower to coordinate and assist in the development of question bank in so many courses in the university. Initially, hardly any faculty was willing to come up for question bank development. But with the special interest and support of the then Vice Chancellor and continuous persuasion of the coordinator and also with the increased success of the scheme of on-demand exam in the university, faculty started supporting and cooperating in the development of question bank. As a result finally question bank in about 200 courses having about 2 lakh questions both in Hindi and English were developed. Finally, with the change of power, the support from the authorities got discontinued and the scheme was stopped.

Applications and Uses of the Innovation

With increasing number of students to be evaluated, increase in the frequency of the tests to be conducted and concern for the needs of human resource involved, an effective, objective, valid and reliable system of setting of question papers with least rigidity and maximum practicability is required. The solution of such issues lies in developing a multipurpose questions bank having a large number of different types of questions in digital form specifying different parameters of each question. The scheme of digital question bank can be utilized for generating any number of individualized question papers, test papers and assignment tests both for formative and summative assessment. It can be used for implementing the idea of instant testing – instant result. The use of digital question bank will not only save time and money, but it will relieve the faculty from the task of frequent preparation of question papers.

Way Forward

The digital question bank can prove to be a very powerful tool to revolutionize the entire assessment and evaluation system in the university. In future, the question bank of the e-Prashnakosh may be utilized for generating ***any number of parallel question papers within no time*** for various purposes such as for generating multiple sets of question papers for Term end Examination, for individualized question papers for on-Demand Examination, for preparing students assignments whenever requires, for preparing question papers for face to face examination, and for preparing online test papers for online examination system.

The question bank once developed will be useful for future for a longer period. The question bank may include all types of questions suitable for written examination, oral examination and practical exam or for assignments. Because of the dynamic nature of the Question Bank, it can be updated, modified and revised by the faculty and subject experts from time-to-time.

Coordinator and Innovator

Dr. Oum Prakash Sharma
Period : 2008-2013

22

E-Test

An Innovative Online Testing Tool

Background

With the advancement of ICT, not only the instructional system but the examination and evaluation system is also being influenced to a great extent. Especially in Open and Distance learning (ODL), ICT has an important role to play. The *Open and Distance Learning* (ODL) is now being transformed into *On-Demand Learning* (ODL). Likewise, the examination On-Demand and online has become the need of the hour, making the ODL more flexible and learner friendly.

e-Test is such an innovative online testing tool developed by the NCIDE, which has multipurpose utility in the field of evaluation and assessment. This powerful software may be used for learning through assessment as well as for various types of web based testing, assessment, and survey exercises.

Need of the Innovation

The distance learners particularly at higher education level, most of whom are working want "**instant testing-instant result**". In today's ICT based fast track education system the online examination and web based evaluation seems to be a viable solution, because it is quick and easy to use, and it saves time in managing tests/exams/assessments/ surveys. Besides being cost effective, reliable and more learner friendly, it saves time for paper setting, evaluation and result processing. Keeping it in view, an idea of developing an online testing tool came upon and it was named as e-Test.

Description of the Innovation

e-Test is a software application developed on dotNet platform having components of online registration for exam, test paper generation system, auto evaluation and result processing system. e-Test has any time any where testing facility for all the applications except for Online examination. The online exam will be conducted at the selected Exam Centres under closed circuit cameras. Students registered for online Exam are required to come to the selected Exam Centre for appearing in the exam. They should bring with them the Hall ticket and the Identity Card issued by IGNOU to appear in the Exam.

Innovative Features of e-Test

e-Test is a unique application having several innovative features. Some of them are given below :

- It is a user friendly system easily accessible to any person anytime from anywhere with authorized access.
- It has a provision for separate Question Banks for each application with definite security features. Also, it is flexible in terms of number of questions and time for compatibility which may be adjusted as per the requirement of teacher/learner.
- Each learner is assigned a unique assignment/test paper and questions are selected randomly from a large question bank for generating test paper.
- It has a centralized database management system with authorized access to the users.
- Data Security and confidentiality is ensured using appropriate safety measures. Such as each session of a test has a time out provision for each student, there is no possibility of URL tempering after authentication and before proper sign-out and also the administrators' password is in encrypted form.
- Instantaneous evaluation and instantaneous result is possible.
- Online statistics is maintained to track the performance of the learners.
- Authenticated online registration for exam anytime from anywhere.
- There is a provision for online fee deposition for online exam and instantaneous admit card delivery.
- Transparent operations, secured transactions, fair examination and reliable results and the unique features of this application.

Achievements

A prototype of the e-Test Application was designed and developed by the NCIDE. All of its components including Online Registration for Examination,

Test Paper Generation, Auto Evaluation and Result Processing were tested on pilot basis using the questions taken from the Question Bank. The testing of the application was found satisfactory.

Applications and Uses of e-Test

E-Test is a multipurpose online testing tool which can be used for online examination, online assignment, e-skill assessment and learning through testing.

Learning through problem solving is an age old common trick practiced by most of the students. e-Test provides an opportunity to learn by attempting different types of questions.

It helps learner to learn by solving problems and getting instant feedback through various types of questions. The learner gets immediate feedback question wise as well as consolidated performance of the test.

The student's assignments are very important component of the Open and Distance Learning System. But in the existing system of offline submission of assignments, there are number of problems. The Online Assignment system is another application of the e-Test which gives solution to almost all the problems such as instant generation of Assignment Test for each block and gives instant evaluation and instant scores/grades.

It provides an online facility for continuous and comprehensive evaluation of the performance of the learner with immediate feedback and instant result. Online Assignment can be attempted from anywhere any time by the student of IGNOU. Students can check the status of their assignment submission and scores anytime from anywhere.

Aiming at instant test- instant result, the e-Test can be used for conducting online examination in various courses and also for admission and screening purposes. The online exam will be conducted at the selected Exam Centres under closed circuit cameras. In fact, the e-test is multipurpose utility for the evaluation and assessment and it can be used for the different purposes.

Way of Forward

In future the e-Test can be up-scaled and be used for conducting online examination in the University. In future, it can also be need for online skill assessment method for ensuring whether the candidate has a particular skill needed for certain job or not. The assessment can address both the aspects of skills: theoretical as well as practical.

e-Test can also be used to generate and execute online Science Aptitude Test (SAT) which can be used by anybody, anytime from anywhere free of cost.

Coordinator and Innovator

Dr. Oum Prakash Sharma
Period : 2011-2013

23

Automation in Assignment Generation

Automated TMA Generation and Assignment Banking System

Background

Assessment and evaluation is an integral part of any teaching-learning process. Different tools and techniques are adopted for evaluating the performance of the learners. In IGNOU, the process of evaluation includes self assessment through in text questions, Tutor Marked Assignments (TMA), six monthly Term-End-Examination or through On-Demand Term end Examination. TMA is one of the important components of the evaluation system. All the courses have a component of assignments called TMAs. Students are required to complete certain assignments for completing their courses. Faculty and course coordinators are required to prepare new sets of assignments every year.

Need of the Innovation

Every time new sets of TMAs are to be prepared by the faculty which takes lot of their time. Moreover, setting up of assignments is a regular exercise which has to be done twice in a year. Over the years the number of courses has increased to more than 3000 and for all these courses new sets of assignments are to be prepared every time. In this process, every time lots of time and effort of the faculty is consumed in setting, editing and moderation of the assignments. If it is got done by the external experts, faculty has to pursue with them to get the work done in time, which is not only costly but time consuming also. Because of it, many a times it becomes difficult to provide TMAs in time to the learners which creates problems. Keeping it in view, idea came to develop an assignment banking system and to develop an application which could generate assignment test papers automatically as and when required. Thus, the scheme of automated TMA Generation and Assignment Banking System was conceptualized in 2012.

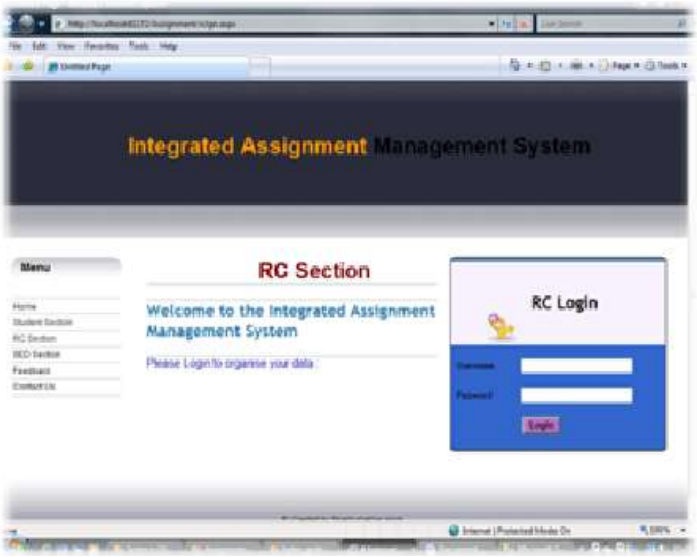
Description of the Innovation

The scheme of Automated TMA Generation and Assignment Banking System had mainly three components – Development of a software for Online Authoring of Assignments, software for generating TMA Test papers and Development of course wise Assignment Bank.

The development of software for Online Authoring of Assignment Items and TMA Test paper generation was done in-house in NCIDE. The software had the facility of Online Item Bank Management System, Automated TMA Generation facility by the faculty, and Administrator Control system.

Course wise Assignment item bank was developed by using the available question items from different sources and also getting new items developed by the faculty and external experts. All the items were coded in terms of course or subject area, block, unit name, topic, subtopic, type of question, marks, etc. The coded items were then computerized and converted into database. It was an ongoing process. The entire database was to be made available online in encrypted form to be used by the authorized faculty.

Maintenance and updation of the question bank was a continuous process, because with the passage of time many question items become outdated and need to be removed and many new question items need to be added to the question bank. Therefore, the software has a provision for adding, updating and modifying the questions in the Assignment Bank Online by the concerned faculty.



Innovative Features of the Innovation

The concept of designing and developing Automated TMA Generation and Assignment Banking System was itself an innovative scheme. However, the innovative features of the entire scheme are as follows :

- It has a provision of developing online database of the assignment items in various courses.
- Faculty is given a facility for instant generation of course wise assignment Tests whenever they require.
- It has a provision for online authoring, adding and editing of assignment items by the faculty.
- Students can download course wise individualized TMAs from anywhere anytime. They need not to wait for assignments to come from the university.

Achievements

The scheme of Automated TMA generation and Assignment Banking System was started as an internal project with one programmer to develop software and

one consultant to coordinate the development of assignment banks. First version of software was developed in 2013. It has Registration Module, Item Authoring Module, Test Paper Generation Module backed by a database of questions. For trial purpose, a sample Questions/Assignments Bank having around 1650 questions for 30 Courses covering 6 Programmes was developed as per the blueprint and design of the Test Papers.

Applications and Uses of the Innovation

The scheme of Automated TMA generation and Assignment Banking System could be highly useful in generating the TMAs as and when required by the faculty. If needed a multiple sets of TMAs could also be generated by the faculty. The database of different types of questions in digital form specifying different parameters of each questions, would help us in developing a digital repository of different types of question item for different courses. Once developed, it will be useful for future for a longer period.

Way Forward

Automated TMA Generation and Assignment Banking System has a potential to revolutionalize the assignment generation, submission and evaluation system in the university. Once it is implemented, university can do away with the present system of assignment preparation. Individualised assignments can be generated instantaneously leaving no scope for copying from each others' assignments. Possibility of getting solved assignments from market will also be minimised. The scheme could be extended for online submission of the assignments. To begin with, it could be tried in case of certificate and diploma level programmes. In future, an Online System for submission and tracking of assignment marks may also be added to this system. Thus, it could lead towards an Integrated Assignment Management System.

Coordinator and Innovator

Dr. Oum Prakash Sharma
Period : 2012-2013

24

Digital Research Repository

An Online Platform for Sharing Research Output

Background

With the adoption of new technologies, it has become easier to develop solutions to simplify data collection, organization and dissemination so as to make information use more widespread and effective. New technology and tools have made it easier for academic institutions to collect, preserve, and reuse content produced in teaching, learning and research. With the developments in ICT, the emphasis is more on research outputs and collaboration. The digital content being created by members of the academic community is now being recognized as an institutional asset with the emphasis being on research outputs and collaboration.

In this context, NCIDE created a Prototype Digital Research Repository for the faculty and student community to encourage interdisciplinary research, teaching and service. The digital research repository was aimed at fostering the creation and use of digitized resource collections and resources of interest to the university community, thus improving teaching and learning through pervasive access to information.

Need of the Innovation

A large number of research papers, journal articles and reports are being brought out by the academics and researchers at IGNOU. But presently, it is being noticed that there is no single platform where the author and/or the Research Unit could archive all such articles/papers to provide an easy access to other faculty members for reference/policy making, etc. Keeping this in view, NCIDE proposed to set up a digital repository of the research papers, articles and reports being brought out at the IGNOU through single platform.

The project was highly appreciated by the then Director of Research Unit and the work was proposed to be carried out in collaboration with the Research Unit. The research repository was to consist of digitized collection of research papers, documents and reports being brought out by the IGNOU community. The portal was to provide easy single point access to research material and resources, and was to be available for use at anytime, anywhere by its students, staff and faculty. It was also proposed by the Research Unit that the project should be extended to include other operational aspects of the Research Unit for stream lining and facilitating the easy availability of research related data and information.

Description of the Innovation

A digital archive containing the details of published research produced by university faculty, students and researchers was created. The repository was designed to provide easy access to various significant resources like: Research papers/articles and reports submitted by IGNOU faculty and students. The repository was created using open source software. The software software running on Linux consisted of (postgres/Oracle) Database. The Sendmail server was used for communication. The software has three main components :

i. **The Application Layer :** This layer consisted of the web interface, registration tools, media filter, the statistics tools, and protocols for search and retrieval. There are different interfaces : i) for submitters and others involved in the submission process, ii) for end-users looking for information, and iii) for system administrators.

ii. **The Business Layer :** This layer consisted of the application and tools for content management, workflow management, administration, and authorization. This layer served to accommodate the differing submission workflows needed for a multidisciplinary system and managing all types of content.

iii. **The Storage Layer :** This layer consisted of the databases, file systems and other storage resources.

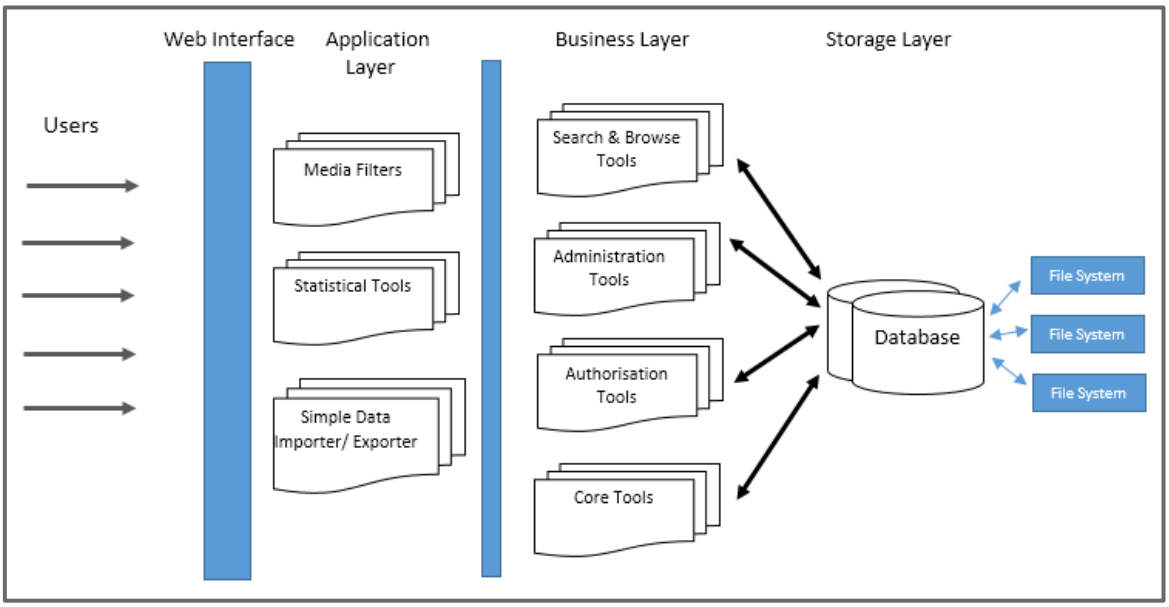


Figure 1 : System Architecture

The entire system has three modules :

- **User Module :** This will have facilities to search, browse and view the collection by the users.
- **Administrative Module :** This will have facilities to upload the digital documents into the repository and manage the content.
- **Researcher Module :** This will enable the authorized university academics and researchers to upload their research papers directly into the research repository.

The main components of the project were :

- **Design and Development of Research Repository :** A repository and database was developed using Open source software.
- **Collection of Data :** All the research materials and research papers were collected and digitized. The digital data thus collected was then archived in the form of an institutional repository.
- **Development of Operational Modules :** This was related to the development of various modules related to the management of research related data and administration.

The platform aimed to benefit all students, faculty, and researchers in a variety of ways because the digital format broadens and deepens access exponentially. The portal provides access to research material and resources, and will be available for use at anytime, anywhere by its students, staff and faculty.

Innovative Features

The project was a unique innovative attempt endeavoured to develop a digital research repository for the academic and research community and provide a single platform for research related information. The innovative features of the project were as follows :

- The designed system is information centric, with enhanced capabilities for information asset management in the web infrastructure, and it follows uses appropriate standards for information for creating and accessing information.
- The application has UTF-8 Support and facilitates granular group based access control, allowing setting permissions down to the level of individual files.
- The institutional repository has facility for self-archiving. This enables the researchers to submit their research papers directly to the repository.
- Provides an innovative mechanism for collection, storage, and preservation of all relevant research materials for faculty, academics, students and researchers.
- Optimize the efforts of researchers in the university to create, manage, discover, access, and disseminate knowledge. The repository will accept all scholarly works from faculty and researchers.
- The platform makes the university research work openly accessible through a single platform.

Achievements

The need for a digital research archive was assessed and the idea was further developed on the basis of proper background research. The proposal was put up to the Hon'ble Vice Chancellor and after his approval the work was undertaken on individual basis to develop and design a platform. A prototype of the platform was designed and developed.

Applications and Uses of Innovation

The platform brings together significant resources for education and research on a single platform for easy access to emerging research activities. It not only facilitates easy availability of research material to the faculty and student research community encouraging interdisciplinary learning and research, but also enables both the student and teacher community to share scholarly information and stimulates collaboration and participation within the student and teacher community. The repository provides a means to bring together the research output on a single platform, thus providing a showcase for research. Storing and making available our research outputs via the Research Repository is crucial for enabling the worldwide scholarly research community to discover and retrieve the University research. The research repository will lead to increased visibility of the research at the university and also increase the impact. The administrators/policy makers of the university and other institutes may also utilize the findings/recommendations for policy making, etc. The students engaged in research in different areas may also use it as a single point reference platform.

Way Forward

At present a prototype of the platform is ready and may be implemented by the university for the benefit of all the stakeholders of the university.

Coordinator and Innovator

Dr. Sujata Santosh

25

Navdharna

An Innovation Management System

Background

New and useful ideas, and innovative products and services are critical components that increase the level of performance of any organization, and the education system (both ODL and conventional) is no exception to it. However, at present, the awareness about innovations in education is minimal among the stakeholders of the education system (i.e., teachers, educational administrators, policy makers, learners, and other people linked with the education system). Such awareness is required for not only enhancing the efficiency of the present education system, but also developing solutions for the future.

The IGNOU is a pioneer in distance education, and many new ideas have come up and many innovations have taken place in the University. Recognizing the need for innovations, it established the National Centre for Innovation in Distance Education (NCIDE), whose mandate is to facilitate and nurture innovations in distance education.

Need of the Innovation

Innovations in education exist in isolation and are scattered in many Universities, educational institutions, companies and individuals. Also, situations exist when the stakeholders, who understand the system, often come up with new ideas to increase the performance of the system, but their ideas do not get translated into innovations. In this scenario, there is a need to bring these ideas and innovations on to a common platform and manage them so that the ideas could serve as benchmarks and also could be developed into useful products and services. Till date there is no mechanism to manage new ideas and innovations in education system in India.

The NCIDE is aware of the need to develop a system for managing and fostering new ideas and innovations in education. Taking cognizance of this need, it has developed an Innovation Management System (IMS). It has been given the name *Navdharana*. The IMS is essentially a virtual environment for fostering innovations. Through IMS, new ideas are being collected and evaluated, not only from IGNOU, but also from other stakeholders, which is expected to lead to the development of innovative products and services for the use of the stakeholders to enhance their performance.

Description of the Innovation

The idea of developing an Innovation Management System came to Dr. Moumita Das when she was managing the documentation and dissemination

Unit at NCIDE in 2008. She discussed this with Dr. Jyotsana Dikshit and together they developed the concept and the technology further. At that time there was no such platform which enabled to develop a database of innovations and also interactivity among the innovators and ideators.

The framework of IMS is discussed below.

Design Philosophy of IMS

The design and development of IMS is guided by a particular philosophy of fostering innovation, a way of collaborating and interacting with fellow innovators. The people in the virtual environment participate actively and construct new ideas through interaction with their peer groups or innovators. The ideas created in this environment are tested for successful use in a wider environment. For example, anyone might read about an innovative product or scheme or software developed by a participant of the IMS today and still forget it by tomorrow, but if the other users are given an opportunity to collaborate with the person who developed the prototype, and give new ideas for its further development, it makes working in a virtual environment successful.

The IMS provides a basic organizational structure, and offers a variety of simple tools for collaboration and dissemination of innovations. It comprises a front-end system to capture, develop, assess and implement ideas, and a back-end system to store and retrieve ideas and resources.

Architecture

The IMS is platform independent software implemented through an open source with apache server for providing web services and the IMS runs on Unix, Linux, Windows, Mac OS X, Netware and any other system that supports PHP. Data of the IMS is stored in a single database : MySQL which can be used with Oracle, Access, Interbase, ODBC and others. The end users of IMS need only a browser (e.g. IE, Firefox, Safari) to participate in the Virtual Environment for managing ideas and innovation. It can be accessed by two ways: through the IGNOU website or directly through the IMS server. As you can see in Figure 1, the IMS runs on a three tier system consisting of apache server, database server and a mail server. The IMS is implemented through the lower tier the three servers. The middle tier of the IMS is supported by various applications on the upper level as shown in Figure 1.

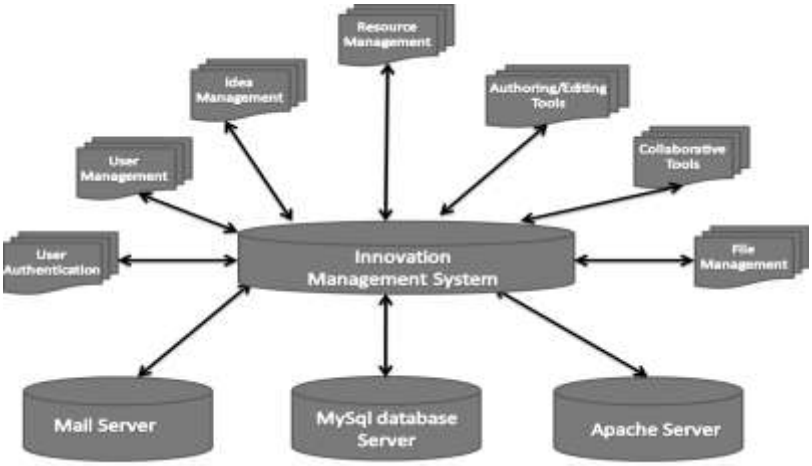


Figure 1 : Architecture of IMS

User Authentication

The IMS can be accessed by authenticated users by logging on to the system, however for certain cases it has the facility of guest login where anonymous users can also login and view the resources of the IMS.

User Management

The IMS has the following types of users :

- **Guests :** Can only explore limited reports, prototypes of innovative products, etc.
- **Budding Innovators/Participants :** Can interact in a virtual environment on their or other ideas and prototypes, give suggestions, upload the presentations and product prototypes developed by them.
- **Master Innovators :** Screen the ideas, provide feedback on the presentations, ideas and prototypes uploaded by budding innovators or participants.
- Innovators without editing permissions can only provide feedback to the budding innovators/participants.
- **Administrator :** Manage users, content, deployment, maintenance of the IMS.

Idea Management

This module manages the ideas collected in the IMS. The managerial aspects are discussed in detail in a section below.

Resource Management

This module manages the various resources like reports, blogs, wikis, activities.

Authoring and Editing Tools

The IMS has a built in HTML editor which can be used by the participants of the IMS when responding to forum posts, making journal entries, creating a dialogue response and when they use a Wiki. It is a useful tool for enriching the content of an idea or innovation. The HTML editor is not as feature rich as a commercial application like Dreamweaver or FrontPage, but you can do almost anything these tools can. A button on the tool bar allows you to expand the editor to full screen and you can also work directly with code. Images stored in the course “Files” area can be easily inserted and you can create links to resources stored on another server. Hyperlinks and anchor points can also be easily inserted into a document. It has built in media filters, that allow users to embed Flash, QuickTime, MP3 and Windows Media files into the HTML editor so they play directly within the page you create.

The key features of the IMS are the following :

- It contains a repository of ideas and innovations/best practices for reference.
- It provides resources related to innovations.

- It allows sharing of experiences through ICT enabled collaborative environment such as Discussion Forum, Chat, etc.
- It provides virtual space for uploading files, presentations, documents, product prototypes etc. for the users.

Innovative Features

The IMS is a common interactive platform for budding innovators who can share their ideas and can collaborate on the World Wide Web with other innovators. The overall aim of the IMS is to create solutions for high organizational performance using idea/innovation management. It has been developed to provide an easily accessible and cost-effective online platform for interaction. Through this platform, the innovators can interact with each other, with NCIDE and other stakeholders, and share their ideas and work towards developing innovative solutions for the ODL system.

Achievements

NCIDE has designed and developed an Innovation Management System called as Navdharna, which is a platform independent application implemented through open source softwares. A prototype has been implemented and tested. Besides facility of adding and uploading the idea on IMS, it has provision of creating and managing the ideas and innovation banks online.

Applications and Uses of the Innovation

a. Repository of Ideas and Innovations

The ideas are kept in a repository in the IMS database. The ideas have been categorized into the various areas pertaining to the ODL system, such as admission, learner support, etc. The details pertaining to the idea or innovation are fed into the database through consultations with the innovator. The database can be made available online on request.

b. Resources Related to Innovations

The IMS also has a provision for resources related to the various aspects of innovation such as R&D methods, latest technologies, etc. Resources such as articles, reports, papers, etc. can be made available if required.

c. ICT Applications

The ICT applications used in IMS are the following :

i. **Discussion Forum :** This is the most important tool and central to all the components of the IMS. An idea is selected by IMS administrator and the topic is put up in the forum for discussion. The users can log in and participate in the discussion, thus enriching the idea. It is very flexible and master innovators can link lots of different contents into their forum messages. The Forum works like any bulletin board in that it allows users to post messages and to respond to each other's contributions. Some Forums are used to provide information from the master innovators to which participants cannot respond to in the Forum. Other forums are created as communication platforms

between budding innovators and the other participants in specific group.

ii. **Chat :** The chat facility is provided through which the users can interact with each other and chat on the various aspects of an idea. An online conference can also be called by the administrator where many users can chat simultaneously on a particular idea. This is a useful way to get a different understanding of each other and the idea being discussed. The mode of using a chat room is quite different from the asynchronous Forums. The chat module contains a number of features for managing and reviewing chat discussions. Setup properties include the ability to establish a chat session date/time (displayed on site calendar), schedule of repeating chat sessions, a period for saving past chat sessions for the participants to review and whether or not these past sessions can be viewed.

iii. **Dialogues (Non-standard) :** This module provides a simple communication method between pairs of users. An innovator can open a dialogue with a participant, a participant can also open a dialogue with an innovator, and (optionally) a participant can open a dialogue with another participant.

iv. **Surveys and Studies :** The administrator or any interested user can carry out a study or survey in an idea in the IMS and submit the results for common use.

v. **Submission of Resource Materials :** The user may submit relevant and interesting resources on innovations to the IMS.

vi. **Idea Bank :** The users can submit their ideas and innovations in the idea bank. A proforma for submission purpose is provided in the IMS.

Figure 2 : Home Page of IMS

Way Forward

In the emerging knowledge society, it is becoming important to manage ideas and innovations in the ODL system. The IMS is tailored to meet the needs of innovation management in not only the ODL system but of the educational system as a whole. The IMS, through a virtual environment, supports the basic tenets of innovation, such as collaboration and diffusion of innovation. It facilitates the inclusion of the stakeholders in a collaborative environment to discuss and develop their ideas. It also is a repository of new ideas which can be taken up for further development. The IMS can help the stakeholders in education to tap their innovative capacity and enlarge the scope of their creativity to devise effective solutions for the ODL system.

The feedback of the participants of the training programmes using the **VTL** indicates that the **VTL** needs to be made more accessible and navigable. For enabling navigation, the design of the **VTL** needs to be worked upon. For the accessibility part, a more robust IT support is needed from the University so that this training tool can be used by all Schools/Divisions/Centres/Units of the University intending to offer training and capacity development programmes.

References

Moumita Das and Jyotsna Dikshit, 2010. *Innovation Management System : An online platform for managing innovations in the Open and Distance Learning System*. Paper presented at the International Conference on Digital Libraries held at India Habitat Centre, New Delhi, February 23-26, 2010.

Innovators

Dr. Moumita Das
Dr. Jyotsna Dikshit
Period : 2008 onwards

26

Ennovate

An e-Newsletter on Innovation

Background

NCIDE has been striving towards developing innovative solutions in the field of open and distance learning and one of the major objectives of NCIDE is to share and disseminate innovative ideas and best practices in the field of distance education. In this direction, NCIDE brings out an eNewsletter Ennovate. The eNewsletter carries news and events relevant to innovations and developments in the field of distance education. The purpose is to provide a mechanism for sharing and dissemination of innovative ideas and best practices in the field of distance education thus creating a network of innovators. It facilitates contact and communication among the educators and innovators. The newsletter enables sharing of information, analysis and reflection on new developments in the field of distance education. The eNewsletter is published in electronic format and is sent through emails.

Need of the Innovation

An effective channel of communication is imperative to build a community of innovators and to share and disseminate innovative ideas, experiences and initiatives within the ODL fraternity. A newsletter provides an easy and effective medium to serve this purpose. It helps in keeping the subscribers, in this case distance educators, informed of the innovative initiatives in the ODL system. It helps in strengthening the relationship with the stakeholders, and also creating and building relationship with the budding innovators in the ODL community. It facilitates open communication at all levels and can be easily delivered to all the stakeholders.

Description of the Innovation

The popular talk series was conceptualized in a meeting in 2009 with Dr. O. P. Sharma, Deputy Director, NCIDE. The idea was developed and a newsletter was designed. The design and the content of the newsletter was refined and finalized in consultation with the faculty members of NCIDE. In the present era of ICT it was pertinent to bring out this type of Newsletter in electronic format. The eNewsletter to be brought out by NCIDE was named Ennovate.

Innovative Features

Though bringing out an e-Newsletter on innovation itself an innovative initiative, this newsletter has certain innovative features, as described below :

- The newsletter is digital, graphical and in HTML format. It is accessible from any computer using a browser. The newsletter is formatted in standard design in terms of the fonts, colours and embedded pictures.
- The eNewsletter is sent in the body of an e-mail. Recipients receive their own copy through their email. The advantage of using the body of an e-mail is that the subscribers are able to read it without having to install special software or plug-ins on their computers.
- The subscribers receive an email requiring them to confirm before they are added to the mailing list. This is useful as it helped to prevent cases where a person's email is used to subscribe to a list without his/her permission.
- The Software used for delivering software allowed uploading HTML files. It also allowed formatting with fonts and colours.
- There is built-in Newsletter archives facility and the old issues of the newsletter will be archived automatically.
- Things like bounced mail, subscriptions and unsubscriptions are handled by the software.
- The software has built in reporting module. The software's reporting features provide real-time information on the impact of the e-mail newsletter.

Figure 1 : NCIDE eNewsletter *Ennovate*

The newsletter carries articles/contributions from the NCIDE faculty, IGNOU faculty and eminent experts. The articles are on varied topics related to innovations in the field of distance education. These include various innovative initiatives taken up by the faculty members in programme design, delivery, student support and ICT applications. It also carries articles on analysis of latest innovative applications worldwide or on ICT applications in the area of education, or on use of some latest software application being developed.

Achievements

The first issue of the newsletter Ennovate was published in 2010. Since then it is being published monthly except in few cases. A number of good articles on creativity and innovation have been published in different issues of Ennovate some case studies on innovation practices in the field of open and distance education system have been published. It has worked as a bridge between the innovations and would be innovators by way of sharing their experiences in the form of articles.

Applications and Uses of the Innovation

The NCIDE e-Newsletter thus aimed to provide the readership with useful information and an important means of communications for all educators and teachers. The eNewsletter is brought out on monthly basis. At present the newsletter is being provided in pdf format through email to the distance educators within and outside IGNOU, and also to the staff members in IGNOU regional centres across the country.

The newsletter acts as a platform for sharing and exchange of innovative ideas, however to ensure this it is extremely important that the innovators and also faculty members share their ideas and experiences with the academic fraternity. This was facilitated by inviting contributions from the distance educators on any topic of interest in keeping with the area and scope of the newsletter, which could be useful for the distance educators. This helped in keeping it relevant to the needs of the academic fraternity and also ensuring their participation.

Way Forward

An eNewsletter enables effective communication and relationship building among the distance educators and innovators. The ease of delivering information and the ability to reach a wider audience help in creating awareness and nurturing innovative culture within the open and distance learning community. The enewsletter was appreciated for its content by the distance educators. Such initiatives play a vital role in creating a well-connected community of educators working together through innovative initiatives, thus enriching the ODL system by working towards the goal of providing quality education to all.

Coordinator and Innovator

Dr. Sujata Santosh

27

Innovations by IGNOU Students

An Innovative Scheme of Recognizing and Nurturing Innovator Students of IGNOU

Background

Every year lakhs of students take admission in different programmes at IGNOU. They have varied backgrounds. Many of them might have entrepreneurial mind and developed something different, innovative and useful for the society.

Few years back in 2013, a student of IGNOU had forwarded a letter to the Vice Chancellor, IGNOU stating about one of his innovations and requesting the VC to support him in promoting his innovation and providing him a platform for showcasing his product. This was one case which had come to our notice. There may be many more such innovators among the students of IGNOU. But there was no mechanism to identify and recognize such innovators.

Need of the Innovation

Keeping in view the possibility of having innovators among our students, it was felt to start a pilot scheme to identify, document, recognize and promote such creative and innovative initiatives by the IGNOU students as being done by many other universities and IITs. The basic objectives of the scheme are

- to identify grassroots innovations and technical ideas of IGNOU students and
- to provide them a national level platform to showcase their innovations.
- to catalyse and promote development of creative and innovative ideas and products by the students,
- to inculcate an innovation driven culture of entrepreneurship among the students of IGNOU,
- to promote employment opportunities for the students in the innovative areas,
- to build linkages between the grassroots level innovations by the IGNOU students with the R&D framework existing in the country,
- to document such grassroots innovations and create a web based database of the same, and
- to make wider publicity of such innovations through all possible ways and means to motivate the other students.

Description of the Innovation

The first step was to identify the innovations and innovators from among the IGNOU's students. For this purpose, wide publicity is required to be made through newspapers, Study Centres and the Regional Centres of IGNOU. In order to identify the innovation by the IGNOU students, a notification is issued to all the RCs to inform the students through study centres and other media. It may also be advertised through newspapers and other media.

As per the original plan entries from innovators are to be received by post or online in the prescribed proforma up to a certain last date. The received entries by the students up to a certain cut-off date, are to be evaluated first at RC level and the best three entries from each RC may be further evaluated at the National level to select the best three innovations by group of experts. The selected innovations will be physically verified by a group of experts drawn from the local institutes in consultation with the Regional Director concerned. The best three innovations at each RC, and then the best three innovations at the National Level may be given cash prizes and medal in the programme on foundation day of the University, i.e. 19th November each year. This activity of identifying and recognising students' innovation will be an Annual Activity of the IGNOU to be coordinated by the NCIDE. It will not only encourage and motivate the IGNOU students to think differently and do some innovations, but it will also add on the image of the University as promoting the culture of innovation.

The scheme was implemented first time during 2018 and the entries for the Student Innovation Award were invited directly at the Headquarters level and the best four innovators were awarded.

Innovative Features of the Scheme

The most innovative feature of the scheme is to recognize the hidden talent of the distance learners who would have acquired knowledge based on their grassroots level experience. Unlike the students of conventional system, most of the distance learners hardly get an opportunity to show case or present their ideas and innovations. To give incentive to the innovators the best three innovators of this scheme are to be awarded with the Student Innovation Award.

Achievements

The scheme was first time launched in 2018. In order to give incentive to the innovator students, it was decided to award the best three innovators with the Student Innovation Award. A notification inviting entries from the IGNOU students was issued in July 2018 and Press Release was also given in the media. All the Regional Centres of IGNOU were requested to publicise the scheme and encourage students to submit their entries for the Student Innovation Award.

Total 41 entries were received for 2018 award and after evaluation by a team of experts the best four entries were awarded first, second, third and consolation awards. A brief description of each awardees is given below :

Mr. Mukesh Chand Meena, a student of Post BSc. Nursing Programme was awarded the first prize for developing a bouquet of seven innovative apps on

medical awareness. These apps are available on a variety of topics ranging from maternal and child health care to immunization to reproductive health to depression. His apps are currently being used by 80 thousand users. He was awarded a trophy, a certificate and a cheque of Rs. 10,000.

The second prize was presented to Mr. Jaivardhan Singh Rathore, a PhD student of Foreign Language. He has developed an innovative French Song Book “Chantons en Francais” Learning French through Songs. His innovation is based on the Musical Intelligence Theory and teaches French to beginners to master the language competencies. He was awarded a trophy, a certificate and a cheque of Rs. 7,000.

The third prize was awarded to Mr. Ajay Kumar Sharma, a student of B.Sc. for his innovative Farmer-friendly Biogas Bottling Machine. This portable machine is very useful in rural areas. It is extremely cost effective and related to the national priorities such as energy conservation and protection of the environment. He was awarded a trophy, a certificate and a cheque of Rs. 3,000.

A consolation prize was awarded to Mr. Deepak Sharma, a student of MCA Programme of IGNOU. Deepak has developed an innovative android app for facilitating the university information for IGNOU students. His app, named IGNOU Space App, is a one-stop platform for learner support services and provides vital information on Courses, Question Papers, Examination and various updates. It contains innovative features, such as a voice assistant, and is currently used by 33 thousand students.

All the awardees were given trophy, cash money and certificate by the Chief Guest of the programme Prof. Ram G. Takwale and the Vice Chancellor of the University, Prof. Nageswhar Rao. This year entries were invited directly from the students through Regional Centres.

Applications and Uses of the Innovation

Most importantly this type of support to the innovative and creative students of IGNOU will boost the morale of distance learners and will motivate them in doing something innovative.

Secondly, they will feel encouraged and proud to be the students of IGNOU as they would be getting similar opportunities in ODL also as in the formal Universities.

Thirdly, the IGNOU will also be recognized as an university encouraging and promoting the culture of innovations among the distance learners who have certain different skills than their counterparts in the formal system as many of them are working class or employed.

Way Forward

After identification of the innovations, the innovators can be invited to exhibit their innovations in a national level summit on innovation, where some other organizations, industries, concern ministry, etc. may also be invited.

As per the recommendation of the group of experts, the finally selected innovations may be taken to the National/International platforms organized by other agencies such as DST, NIF and National Innovation Council, etc. IGNOU may contact the

relevant industry or other agencies for commercialization of the innovations by the students, for financial and technical supports.

NCIDE may develop a web based database of such innovations and technical ideas for the purpose of documentation. We may also help the innovator to get his/her innovation patented.

Coordinator and Innovator

Dr. Oum Prakash Sharma
Period : 2013-2018

28

Innovation Club@IGNOU

A Platform for Promoting the Culture of Innovation

Background

In order to be at the frontier of scientific discovery and invention, the students as well as the faculty in the technical institutes and universities should be encouraged to think anti-conventional and develop ability to look beyond their discipline. In fact, colleges and universities can play a key role in providing a fertile ground for cultivation of world-changing, innovative and entrepreneurial ideas. For this purpose, there is a need for creating a culture of creativity, innovation and entrepreneurship in the higher education institutes and universities across the country.

This kind of organizational culture will not only stimulate the creativity and innovation among the students and faculty, but it will accelerate the transition of research and innovation from the lab to the field and market place. It will also encourage closure interaction and cooperation between industry, field and academia for overall growth and development of the nation.

Need of Innovation Clubs

In view of the above and the present initiatives of Government of India like Make in India, Startup India, Digital India etc, the role of higher education system becomes more important to harness the creative potential of the large young population of the country. Moreover, the inclusion of large number of manufacturing industry and IT industry has generated a huge demand for quality and skilled manpower in the country. As a matter of fact, in the present age of competitions and technologically fast growing society, our youth particularly the students need to be futuristic and innovative. For that purpose besides technological empowerment of the students, they need to be encouraged to be entrepreneurs and innovators.

With reference to the observations made by Hon'ble President of India a visiting of Central Universities and Hon'ble HRM during the Vice Chancellor's meeting held in Rashtrapati Bhavan on February 4-5, 2015, all Central Universities were directed to constitute Innovation Clubs in the Universities. In view of this the NCIDE formulated an InnovationClub@IGNOU. Though the NCIDE was already promoting innovation in the university, the formation of InnovationClub@IGNOU will helped in creating the culture of innovation and innovate the faculty and students to do innovations.

Description of the Innovation

As per the direction of the Hon'ble President of India, NCIDE prepared a concept paper on InnovationClub@IGNOU, highlighting the purpose and objectives of the club and listed out the possible activities to be undertaken by the Club. The basic objectives of the InnovationClub@IGNOU included the following :

- to contribute creatively and actively in the innovation related activities of NCIDE,
- to generate awareness about creativity and innovations in the ODL system,
- to identify the grassroots level innovations by the faculty and the students of IGNOU as well as the ODL system, and
- to create a network of innovators and create a culture of innovation.

In order to meet the objectives of the InnovationClub@IGNOU, a verity of activities were suggested to be organized on regular basis. Some of such important activities to be initiated by the Club were as follows :

1. Organizing periodic brainstorming meetings of the club members to generate new ideas and explore and identify innovations by students, faculty, and staff of IGNOU and the ODL system.
2. Invite students, teachers and staff members to share their innovative ideas and skills and showcase their innovative products and processes.
3. Organizing awareness campaign on Creativity and Innovations within IGNOU and across the ODL system in the country.
4. Organizing various competitions like Quiz, Debates, Posters, etc. on innovation and creativity.
5. Provide a platform to the students, faculty and staff to be engaged in the activities and programmes related to NCIDE.
6. Contribution to the E-newsletter/Journal on innovation published by NCIDE.
7. To set up and coordinate the innovation clubs at Regional Centres/Study Centres of IGNOU.

Initially there were 17 founder members of the Club which included teachers and academics from different schools and divisions of IGNOU. However, the membership rose to more than 50 members at the time of writing this document. The club aims at engaging as many students, faculty and staff as possible in the innovative activities of the University. Club meeting was organized regularly on monthly basis. The first brainstorming meeting of the Club was held on April 15, 2015. In every meeting of the Club one or two issues related to the ODL system was discussed and new ideas were evolved.

Innovation clubs (InnovationClub@RCs) were established in 18 Regional Centres from 2015 to 2018. These are in the Regional Centres at Aligarh, Bangalore, Bijapur, Chennai, Cochin, Darbhanga, Hyderabad, Khanna, Lucknow, Nagpur, Madurai, Patna, Pune, Ranchi, Shimla, Trivandrum, Vatakara, and Vijayavada. The InnovationClub@RCs have been constituted with members from IGNOU students. InnovationClub@RCPune has the highest number of student members. The other members comprise the academics and staff of the Regional Centres, the Academic Counsellors and Programme Coordinators from the Study Centres, thus truly connecting with the grassroots. The InnovationClub@RCs organize periodic brainstorming meetings and other creative activities as given below :

1. *Brainstorming Sessions to Generate Ideas* : Innovation Clubs at Bijapur, Vatakara, Ranchi and Patna have organized brainstorming sessions in which many innovative ideas have been generated.
2. *Presentation of Innovative Concepts* : InnovationClub@RCHyderabad organized a presentation and discussion where the core aspects of

innovation, such as thought process, creativity, innovation, discovery and invention have been discussed. The use of technological innovations in learner support has been highlighted.

3. *Social Innovation* : Innovation Clubs at Khanna and Lucknow are involved in activities concerning social innovations, especially interventions for the elderly, *Swacchata* and reaching out to the deprived sections of the society.

Innovation Club Meeting at RC Bijapur Innovation Club Meeting at RC Hyderabad

Innovative Features

Though formation of InnovationClub@IGNOU was itself an innovative initiative towards promoting the culture of innovation in the University, the activities undertaken by the Club were quite innovative. Some of the innovative features of the Club are as follows :

1. There was open discussion on different topics allowing every member to share his/her ideas.
2. It provided an opportunity to the members for sharing their experiences, innovative practices and innovative solutions to different problems pertaining t the ODL system.
3. It is an interactive platform to brainstorm on different aspects and generate new ideas for better and effective solutions.
4. It helped in creating a pool of ideas on different aspects of the ODL System.

Achievements

After setting up of the Innovation Club@IGNOU more than 25 brainstorming meetings have been conducted over the last three years. A number of half day seminars and few full day seminars have been organized under Innovation Club@IGNOU. Some of them are listed below :

- **Seminar :** A number of Seminar were also held on different topics like sharing creative technological interventions in ODL, sharing innovative interventions in ODL innovative ways of offering lab based, skill development and technical programmes in context with UGC Regulation on ODL-2017, on **Developing a Mobile App for IGNOU students**.

- Workshops and discussions were also organized in the Innovation Club meetings for example, a Workshop on **Leadership in** Innovation and discussions on parameters of innovation, science and innovation were held.

Several presentations and brainstorming sessions were held on different topics like innovations in self learning material development, understanding innovation, innovative virtual set technology and its relevance in ODL, looking in intellectual property era, difference between invention and innovation, innovative pedagogy in teaching English, commercialization of innovation.

Very important these based issues are discussed in the meetings of the club and a number of ideas are generated. Many of these ideas are useful for the University as well as the society.

Applications and Uses of the Innovation

The most important application of the InnovationClub@IGNOU was to bring the like minded people on one platform and give them an opportunity to share their innovative ideas and experiences. It encouraged faculty and staff to recognize their potential and abilities to do innovations in their field of work to find innovative solutions to the day to day problems.

Way Forward

In future, the InnovationClub@IGNOU would be extended to other willing faculty and staff of the university including the students. In order to involve more number of students and the faculty of Regional Centres of IGNOU, innovation clubs should be set up at more Regional Centres of IGNOU. Students and faculty should be encouraged to do innovations by organizing different types of activities at the innovation clubs at Regional Centres. As a number of ideas are generated in the meetings of the Innovation Club@IGNOU, a dynamic database of the same could be generated in the form of Data Bank and it may be called as IdeaBank@IGNOU.

Coordinators

Dr. Oum Prakash Sharma
Dr. Moumita Das
Dr. Sujata Santosh

Facilitators : Dr. Jyotsna Dikshit, April 2015-Octpber 2016, Prof. Manoj Kulshreshtha (November 2016-October 2018), Dr. Oum Prakash Sharma, November 2018 onwards.
Period : April 2015 onwards

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Gold Medal for Innovation

A Scheme for Recognizing and Promoting Innovations in ODL System among Faculty

Background

IGNOU, with international recognition and presence, has achieved the distinction of becoming the largest University in the world with 3 million students on its rolls. The University provides seamless access to sustainable and learner-centric quality education, skill upgradation and training by using innovative technologies and methodologies. The mandate of the University is to reach large numbers and the unreached sections of the society with quality education, and this calls for innovative mechanisms that need to be implemented for increasing system efficiency and quality.

The National Centre for Innovations in Distance Education (NCIDE) at IGNOU is mandated to promote and develop innovative mechanisms for the Open and Distance Learning (ODL) system. NCIDE encourages innovations through collaborations within IGNOU and with other institutes in India and abroad. Recognizing this initiative of NCIDE, IGNOU has instituted a Gold Medal for the best innovation in Distance Education, to be awarded at the Annual Convocation every year, to encourage ODL fraternity to explore new innovations for educational interventions.

Need of the Innovation

Today almost half of the students enrolled in higher education are receiving education through the distance mode, i.e. through the open universities or though the correspondence courses of traditional universities. However, the problems of efficiency, equity, quality and benchmarking of the ODL system still persist. To devise a way out for these impediments and gap areas in the efficiency of the ODL system, efforts are needed to bring out innovative solutions. An environment of innovation and creativity needs to be fostered in the Universities. Is becomes important to foster innovation and creativity among the teachers, the academics and the administrative functionaries of the University. It becomes important to identify and recognise the innovations made by them. The Gold Medal for Innovation in ODL is awarded to recognise such innovators in the University.

Description of the Innovation

For awarding the Gold Medal, every year, nominations are invited from different ODL institutes of India in a prescribed format. The nominations are invited in different areas of the ODL system, such as the following :

a. Programme Development (including curriculum related Contemporary Development Issues).
b. Instructional Design and Delivery (including Print, E-content, Audio, Video Counseling, etc.).
c. ICT Integrated Teaching-Learning (including MOOCs, OER, Online Learning Virtual Learning and ICT in Counseling, etc.).
d. Learner Support, Monitoring and Feedback.
e. Examination and Evaluation.
f. Administrative Facilitation.
g. Skill Development and Vocational Training.
h. Inclusive Education (including Education for Differently Abled and Disadvantaged, etc.).
i. Idustry-Institute Collaboration.
j. Any other relevant area.

The invited entries are evaluated by the Committee of Experts. On the recommendation of the Committee, the best innovator is awarded Gold Medal for innovation. The medal (Figure 1) is awarded to the winner on the day of the convocation of the University.

Figure 1 : The Gold Medal for Innovations in ODL

Innovative Features

This endeavour for recognition for “innovation in ODL” is the only one of its kind in India. The innovativeness of the award lies in its concept. It is an endeavour to nurture an environment of innovations in the ODL system by the way of acknowledging the innovators.

The nominations are placed before a committee constituted for the purpose, which carefully deliberates and selects the winner of the medal. The nominations are subjected to different parameters, including elements of innovation, technological features of the innovation, creative breakthrough, implementation, cost effectiveness, scalability of innovation, sustainability, repetitiveness, spread, adoptability, operational viability relevance with the concept to ODL system and overall impact. There are marks allotted to each parameter for a given nomination.

Achievements

Starting in 2006, the NCIDE has awarded total nine Gold Medals for innovations in ODL till 2016. A list of the same is given below :

1. The Gold Medal for 2006 was awarded to an Innovation in Educational Technology on the use of EDUSAT.
2. The Gold Medal for 2007 was awarded to an innovative instructional design for Certificate Programme in Craft and Design (Pottery).
3. The Gold Medal for 2008 was awarded to an innovative instructional design for Certificate Programme in Motor Cycle Service and Repair of the IGNOU-HHML Project.
4. The Gold Medal for 2009 was jointly awarded to the Coordinators of two innovative programmes, Certificate in Competency in Power Distribution (For Technicians) and Certificate in Early Childhood Special Education Enabling Inclusion (Cerebral Palsy).
5. The Gold Medal for 2011 was awarded jointly to the Coordinators of an innovative programme for Angan Wari Workers Training Programme, and to the Coordinator of a technology enabled innovative solution for Post Graduate Diploma in Analytical Chemistry (PGDAC) using Vedyadhara Technology Enhanced Open Learning System.
6. The Gold Medal for 2013 was awarded jointly to the Coordinators of an innovative e-learning programme for developing human resource capabilities in planning, designing, developing, implementing, and evaluating e-learning programmes in the country.
7. The Gold Medal for 2014 was awarded to the innovator for an innovative scheme for attaining 100% Job Placement for IGNOU Tribal Students of Gadchiroli.
8. The Gold Medal for 2015 was awarded to the Coordinators of an innovative programme of Master of Arts in Women's and Gender Studies which is a pioneer academic programme that addresses the concerns raised by the proponents of both Women's Studies and Gender Studies.
9. The Gold Medal for 2016 was awarded to the innovator for developing a Mobile Application as a Learner Support Services.

Applications and Uses of the Innovation

The Gold Medal provides recognition to the innovators. It helps them to become renowned in their field and this enables them to influence others' thoughts to

bring about a positive change in the system through innovations. It also motivates others to innovate. The increasing numbers of applicants over the years indicate the importance of the scheme motivating the ODL faculty to do innovation.

Way Forward

Efforts are on to put mechanisms in place for awarding Gold Medal for Innovations to the students of the ODL system. This will ensure the participation of all the stakeholders of the ODL system truly develop an environment of innovation in the ODL system. In future, IGNOU may plan to institute an International Award/Gold Medal for innovation in ODL inviting entries from all over the world. Besides, innovative ideas of ODL faculty may be incubated at IGNOU and the innovators may be supported for filling patents and commercializing their innovations.

Coordinators

Dr. Oum Prakash Sharma
Dr. Jyotsana Diskshit
Dr. Moumita Das
Dr. Sujata Santosh
Period : 2006 onwards

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Did You Know

Innovative Posters and Audio/Video Clips

Background

The National Centre for Innovations in Distance Education (NCIDE) at IGNOU is mandated to develop and promote an environment of innovations in the ODL system. To develop such an environment, the creativity and innovativeness of an individual needs to be nurtured. The curiosity within him or her needs to be ignited. Therefore, NCIDE prepared and disseminated innovative posters and short audio/video programmes titled "Did You Know?" These posters and audio/video programmes included interesting topics, which have lot of bearing on our real life situations but generally go unnoticed. Since April 2011, more than two hundred posters have been prepared and displayed. The facts are converted into 300 audio programmes in English titled "Did You Know?" and 300 in Hindi titled "*Kya Aap Jaantey Hain*?" These are being broadcast through *Gyan Vani*. About 30 Video programmes have been developed, which are being telecast through *Gyan Darshan*.

Need of the Innovation

Creativity is inherent in all of us. Creativity is the ability to generate ideas for products, services or processes that are new or those which never existed earlier. Creativity can be instrumental in devising innovative solutions for difficult problems. Therefore, creativity forms an integral part of any innovation process. It requires deviating from old methods and patterns of thinking and embracing new methods.

Creativity and innovativeness in an individual can be fostered through various methods, such as exploring creative interest, collecting inspiration, learning something new every day, and expanding the imagination, among others. Considering the above aspects, it was decided that such posters or audio/video programmes that can stretch the imagination and inspire an individual to create and innovate would be timely.

Description of the Innovation

Posters

The genesis of the innovation lies in a series of posters that NCIDE has been bringing out at the NCIDE at IGNOU, New Delhi. One rainy day in September 2010, Dr. C. K. Ghosh, the then Director of NCIDE and Dr. Moumita Das were discussing that Delhi would be flooded after the Haryana Government released 7.7 lakh cusecs of water into the Yamuna. Dr. C. K. Ghosh asked a staff

member if he knew what a cusec was, and on receiving a reply in the negative, he explained it to him. This was the starting point of a series of posters titled “Did You Know?” (Figure 1)

The posters covered many interesting topics in the areas of science, technology, mathematics, social sciences, arts etc. Some examples are :

1. Between evaporation and falling as precipitation, a droplet of water may travel thousands of miles! A raindrop attains a terminal velocity which is why umbrellas can withstand the force exerted by the shower.
2. The longest suspension bridge in the world is the Akashi Kaikyo Bridge in Kobe, Japan It spans an amazing 1991 metres (6529 feet)!
3. The only letter not appearing on the Periodic Table is the letter J!
4. A plastic container can resist decomposition for as long as 50,000 years!
5. The word Karate means, "empty hand."!
6. Sherlock Holmes's creator, Sir Arthur Conan Doyle, was an avid cricketer! He was part of the first team to tour the Netherlands in 1891. He only took one wicket in his career but it was memorable - dismissing W. G. Grace for 110.

Figure 1 : Few Posters of “Did You Know” Poster

Taking the effort further, short video programmes were developed with the help of EMPC. Thirty (15 English and 15 Hindi) such programmes of one minute duration were prepared and duly telecast through the official teleconferencing channel of IGNOU, *Gyan Darshan*.

Audios

After the success of the posters, it was decided that audio programmes may be prepared so that the idea reaches the learners of IGNOU and a much wider audience. With the help of the Electronic Media Production Centre (EMPC), IGNOU, three hundred short audio programmes of one minute duration each were prepared, wherein 150 were in English and 150 were in Hindi. These were broadcast through *Gyan Vani*, IGNOU's radio channel.

Videos

Taking the effort further, short video programmes were developed with the help of EMPC. Thirty (15 English and 15 Hindi) such programmes of one minute duration were prepared and duly telecast through the official teleconferencing channel of IGNOU, *Gyan Darshan*.

The interesting facts belong to a wide range of subject and topics, ranging from sciences, to sports, mathematics to music, environment to English. The selection of the topics for the posters, and the audio and video programmes required extensive research work, which involved referring to the authoritative texts, such as the encyclopedias, dictionaries, research articles, etc., for correct representation of the facts and figures.

Innovative Features

The posters and audio/video programmes helped sensitizing the general public about these interesting issues around us. These issues generally go unnoticed but they have a lot of bearing on our daily life. An awareness of the underlying reason for these issues or facts or phenomena could guide our everyday decisions and activities. For example, if a person is stung by a bee, and he or she knows that the sting of a bee is acidic, and therefore it can be neutralized with a compound of opposite nature, i.e., alkali, such as calcium hydroxide or slaked lime, which is easily available in a *paan* shop, it would be of enormous help to the person as a first aid. This is for the first time such types of programmes were produced at IGNOU. It is new to IGNOU, useful for all and feasible to develop and deliver,

Achievements

The scheme of Did You Know started in April 2011. Since then more than 200 posters have been prepared and displayed. The facts were covered into about 300 audio programmes in English and Hindi each separately. The programmes have been broadcasted through Gyan Vani. At the same time about 30 video programmes have also been developed and they have been telecast through Gyan Darshan as fillers between two video programmes.

Applications and Uses of the Innovation

The posters and audio/video programmes of the interesting facts of "Did You Know?" series have diverse applications. The posters could be put up at appropriate places, such as learner support centres to raise curiosity among the learners. These could be put up on the website also for everyone to read and

be informed. The posters could be put up on the notice boards of IGNOU offices for everyone to read and think.

The audio and video programmes could be used as fillers for the radio and teleconferencing programmes. Also, these could be put up on the IGNOU YouTube Channel.

Way Forward

Both old and new “Did You Know” posters and programmes should be presented through the IGNOU website or mobile phones to the learners of the University. The teachers, academics and the administrative staff will also be benefitted.

Coordinator and Innovator

Dr. Moumita Das
Dr. C. K. Gosh, Ex. Director, NCIDE, IGNOU, New Delhi
Mr. Manoj Kumar, Producer, EMPC, IGNOU, New Delhi

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Popular Talk Series

An Initiative to Generate New Ideas

Background

NCIDE has been taking initiatives to generate new ideas and convert them into the workable solutions. In this direction, a series of popular talk, on innovations and developments in open and distance education was organized by NCIDE as part of the silver jubilee celebrations. The talk series provided an opportunity to deliberate and reflect on the various aspects related to the innovations and developments in general, and emerging trends in the open and distance education in particular. The talk series was aimed at facilitating the exchange of innovative ideas and experiences in the field of distance education. The emphasis was on fostering a spirit of innovation among the faculty and students by sharing the experiences of technology leaders for development of innovative learning solutions for distance education.

Need of the Innovation

There is a need for developing a culture of continued search for new and innovative solutions to the issues and problems on the way of university's mission. The academic culture can be nurtured and strengthened with the exchange of new ideas and experiences. There are instances where the faculty and staff members come out with innovative applications or learning solutions in distance education which could be of benefit to ODL community at large. What was required was to have a mechanism for discussing and sharing it with others. The popular talks provided a platform for sharing of ideas, analysis and reflection on new developments in the field of distance education.

Description of the Innovation

The popular talk series was conceptualized in a faculty meeting in 2009. The idea was developed and formulated by the faculty members of NCIDE including Dr. Jyotsna Dikshit, Dr. O. P. Sharma, and Dr. Moumita Das. The popular talk series was taken up as an ongoing activity of the centre. It was decided to organize a talk every month by inviting an expert in the area of open and distance education to deliver the talk. Various experts in the areas of ICT and distance education from within and outside IGNOU were invited in this talk series. The talks were so designed to facilitate an interactive discussion with the participants which included the faculty and the students of IGNOU.

Innovative Features

The topics of the talks included case studies, projects and programmes on innovations in the open and distance learning system, application of ICT for providing effective learning solutions in the ODL system. Information and Communication Technology (ICT) has provided tremendous opportunities to the educators to reach the unreached. Most of the talks highlighted the innovative use of technology while some reflect on innovation in programme design and delivery, the focus always being on Indian innovators.

The popular talk series were broad based and also held in teleconferencing mode to provide access to all the Regional Centres of IGNOU, spread across the country. The programme was made available through the Gyan Darshan and the EDUSAT network at all the RCs and other nodes wherever we have reception facility. The programme was also webcast.

Achievements

The popular talk series was initiated in 2009 and continued up to 2012 on monthly basis.

Various experts in the field of ICT, distance education, management from within IGNOU and varied organizations from all over the country were invited in this talk series. The talk series included talks by esteemed speakers such as Prof. Anil Gupta, IIM, Ahmedabad; Dr. Brij Kothari, IIM, Ahmedabad; Mr. Anuj Sinha, Former Head, National Council for Science and Technology Communication, Department of Science and Technology; Prof. A K Bakshi, Former Director of the Institute of Lifelong Learning (ILLL), University of Delhi; Dr. R. Sreedher, Director, CEMCA; Dr. Shankar Venkatagiri, IIM Bangalore; and Dr. Ashok Jain, Vice President, EMPI Business School and, Former Dir., NISTADS.

At the end of the year, a publication named “Creative Sparks of Innovation” was brought out on the basis of the various talks delivered by the experts for the benefit of the ODL fraternity.

Applications and Uses of the Innovation

Popular Talks were aimed at exploring the possible avenues to facilitate innovative ICT enabled solutions for the ODL system. The series was meant to pave the way for application of the innovative learning solutions in open and distance learning.

The benefits of such a popular talk series can be can be drawn optimally by ensuring wider participation of all the faculty members and also distance learners. The interactive nature can be exploited to gain maximum benefit out of it. These challenges were met by conducting the popular talk series in teleconferencing mode, thus ensuring reach to all the RCs and other nodes wherever reception facility is available. The programme was also webcast and thus made accessible to distance learners across the country through internet.

Way Forward

Such events and programs provide a useful medium of interaction and exchange of innovative ideas, experiences and initiatives taken up in the ODL

system. These interactions were widely appreciated by the faculty and the staff at Regional Centres. The wide reach and the interactive nature goes a long way in building a culture of exploration towards new and innovative solutions to issues and problems on the way of University's mission to offer seamless education across the various levels, achieve cost efficiency in its operations and provide borderless access to quality education and training.

Coordinator and Innovator

Dr. Sujata Santosh
Period : 2009-2012

Contributors and Innovators

Dr Oum Prakash Sharma is presently working as Director in the National Centre for Innovation in Distance Education in IGNOU, New Delhi In NCIDE he is working towards finding innovative and technology enabled learning and support solutions for the distance learners using the newer technologies. He is actively working towards promoting the culture of innovation among the students and faculty of the University. He has designed, developed and implemented several innovative schemes like On-Demand examination, Digital Question Bank, Science@Mobile, Shodhdhara, etc., in the university. His areas of interest are science popularization, technology enabled teaching-learning, research in open and distance education, examination reforms, innovative initiatives for effective and learner friendly support services for distance learners. He has rich experience of more than 24 years of working in open and distance education system at IGNOU and NIOS and about 4 years of experience of working in the formal system of education at NCERT. He has passion for science popularization in the society for which he has been awarded with several awards including three National Awards out of which two awards were conferred by the President of India.

Dr. Jyotsna Dikshit, M.Sc (Mathematics) & Ph.D. (Multimedia Education and Computational Mathematics), is Deputy Director in the National Centre for Innovation in Distance Education at IGNOU, New Delhi. She is working towards the development of new and innovative teaching-learning and student support solutions for the Open and Distance Learning System. As a trainer she has provided training to academic, non-academic staff and research scholars of IGNOU on various topics like emerging ICT enabled tools, creativity and innovation. She is also interested in the area of innovation management.

Dr. Moumita Das is working as Assistant Director at the National Centre for Innovation in Distance Education, Indira Gandhi National Open University (IGNOU), New Delhi. She is interested in identifying areas of intervention for devising effective solutions in the Open and Distance Learning System. She has been awarded for her research work by the University. She has published many books and research articles on subjects, such as innovation in the ODL system, intellectual property rights, sustainable development etc.

Dr. Sujata Santosh is working as Assistant Director, National Centre for Innovation in Distance Education, Indira Gandhi National Open University (IGNOU), New Delhi. Her areas of interest include : open education, e-learning applications, digital libraries, institutional repositories, technical and software documentation, knowledge management. She also has an interest in the latest developments and innovation education in general and distance education in particular.

ABOUT THE BOOK

One Decade of Innovations@NCIDE is a compilation of innovations and innovative practices carried out by the NCIDE during 2008 to 2018. During this one decade several of them have been successfully implemented and in some cases prototypes have been developed. Though, the project proposals and some write ups on these innovations and innovative practices were available at NCIDE, but their detailed description was not available. Therefore, it was felt that the details of the innovations and prototypes developed by the NCIDE should be documented in a properly structured format. The purpose behind bringing out this document included two aspects – firstly to document the story of innovations carried out by the NCIDE and secondly to disseminate the innovations and innovative practices among the stakeholders of ODL system aimed at inspiring them to carry out such innovations at their level. All the innovations included in this book have been designed and developed mainly by the NCIDE faculty including Dr. Oum Prakash Sharma, Dr. Jyotsna Dikshit, Dr. Moumita Das and Dr. Sujata Santosh.

ABOUT NCIDE

The National Centre for Innovation in Distance Education (NCIDE) established in 2005, at the Indira Gandhi National Open University (IGNOU). It is mandated to promote, support, re-engineer, document and disseminate innovations in the Open and Distance Learning (ODL) system. It is a ground for nurturing bright minds whose ideas would to lead to innovations the ODL system. The mission of the Centre is to create and nurture a culture of continued search for innovative solutions aligned to the University's mission to offer cost-effective, seamless and quality education to its learners.

The main objectives of NCIDE include :

- Providing intellectual, financial and technological support to innovators.
- Encouraging innovations in ODL through collaborations and networking in India and abroad.
- Working as resource centre for prototype development of innovative learning and support solutions.
- Conducting research studies in the areas of innovation in the ODL system, enabling research based framework and guidelines for standardization and total quality management of all facets of the ODL system.
- Documentation and dissemination of the innovations in the ODL system.
- Capacity building of the functionaries for innovations in ODL.

Development of innovative programmes, guidelines, mechanism for creating culture of innovation in the University.

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