



Carving Knowledge Ecosystem for Farmers using MOOCs

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Abstract: Though late than never, Information and Communication Technology (ICT) is poised to transform the lives of Indian farmers. Almost a decade ago, the farmer community was deprived of the benefits of the ICT and the much discussed hype of the moment was 'digital divide'.

Keywords: MOOCs, ICT, Agriculture, Farmers, online courses

I. INTRODUCTION

Easier said than done, putting ICT for use in the Indian agriculture sector and thus ensuring their inclusiveness in the mainstream of technology is really a defying task.

structured on the following lines. At the outset, it depicts the ICT ecosystem that reveals applications of the existing tools for farming community.

II. ICT FOR AGRICULTURE: PLENTY OF ROOM AT THE BOTTOM

The ICT so far has been regarded as the means and end for the elite class. None the less there are many assenting trends confirming its usefulness for the agriculture sector.

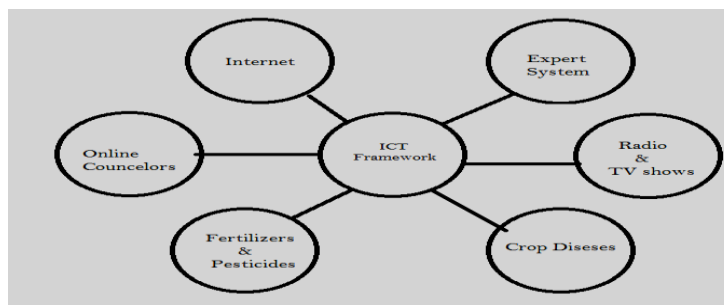


Fig.1. ICT based Framework revealing tools and techniques applied for the Agriculture

The ICT Framework shown in fig. 1 can be designed especially for agriculturist which will surely inculcate all the ICT tools on the same platform. This framework can possibly comprise of tools like internet, expert system, toll free call numbers for assistance, Interactive Voice Response System (IVRS) guiding the usage of fertilizers and pesticides, early warning for disease along with pictures of the crops showing the symptoms of the disease and remedy for the same, online radio stations specially meant for farmers, TV shows, Internet based software radio so on and so forth. With the infrastructure being laid down under the projects such as National Knowledge Network can surely be used for the above mentioned bandwidth hungry applications. Thus applying the ICT for the agriculture sector will not only pave the benefits for the farmers, but will also open new avenues for the software developers in the dwindling economy in the backdrop of global slowdown. In this context there seems to be plenty of space for development, testing and deploying innovative ICT applications which was so far considered as the bottom of the business pyramid.

III. TRIUMPHING THE BOTTLENECK AT THE TOP OF THE BOTTLE

Even though there is convincing actuality that the ICT business model for the agriculture has a greater scope for accomplishments, few basic issues regarding the digital infrastructure need to be addressed. Customization of recently developed ICT appliances will definitely help in this regard. For instance, IIT Mumbai has come up with the low cost tablets AKASH which can be used by farmers instead of computers to access ICT tools. These tablets can be distributed among farmers with subsidized rates. Farmers can be trained by students to use these tablets as part of their National Service Scheme (NSS) camp or project work. Interface provided by the tablet can be possibly customized with more picture (Graphics) based instead of text based so that language will not be a quandary for farmers. For example if a farmer wants to search some data related to sugarcane then they just have to click on an icon having sugarcane picture and all the information related to sugarcane will appear in the regional language. This user friendly interface will definitely enhance use of technology and make it popular among farmers. There may be cases where some farmers are still reluctant to use this technology as it requires some keys to be pressed and few mouse clicks and also reading of output of search carried out. In such cases a voice based interface can be provided to the tablets. So the farmers who are not comfortable with graphics and text based interface they can use them easily. For example as above if a farmer wants to search some information related to sugarcane crop then the search can be recorded by the search engine in a wav file. So when farmer clicks on any of the wav file generated as output of the search process it simply can be played so as to hear the result of the search.

IV. SURMOUNTING THE RESOURCE CRUNCH OF EXPERTS

The main hurdle the farmers facing today is the experts who can really guide them in their difficulties. The shortfall of enough number of experts can be possibly overcome by increasing the use of ICT tools mainly the internet. These days there exists many government and commercial websites available for farmers. Access to these websites can be made free by waving off internet usage charges in the community centers wherein the farmers can avail the services. There are many expert systems developed for farmers in regional languages and they are really doing well. Few are still not popular. A voice based expert system can be designed with the help of few experts. Expert opinions can be recorded as thereby leading to a knowledge repository. Whenever a query is raised by the farmer it can match the answer with the repository and if not found, help of expert can be taken and opinion can be added to the repository. Such type of knowledge repositories can serve as an important database for Agriculture universities to carry out their research work.

V. LIBERATING THE FARMERS USING KNOWLEDGE ECOSYSTEM THROUGH MOOCS

MOOCs have marked their entries as one of the most influential outcome of the internet era and are creating waves in all spheres of higher education. Agriculture as an area of research and study has taken a center stage recently owing to worldwide concern for food security. Most of the countries in the world are worried about growing demand for food and its possible shortage in the years to come due to increase in the size of population and less availability of cultivable land. In this knowledge economy, transfer of knowledge in agriculture methods of cultivation, type of crops to be grown in different climatic conditions, use of machinery etc from different regions of the world would certainly help in adopting better methods to grow more food required for masses. MOOCs can enable transfer of knowledge to regions where it is needed and open up new opportunities for global engagement and development [1]. They can be effectively used to educate people associated with farming - researchers, agricultural extension workers and farmers.

A momentum in this direction has already been done by iversity, which is offering a MOOC on 'International Agricultural Management' in order to teach how to plan and develop land environmentally and economically in the areas of Eastern Europe and Central Asia, which is plagued by outdated land management methods [2]. According to developers this course could transform and improve the decisions of agricultural managers and workers, improving the efficiency and sustainability of land use [3]. The content of the course may be used elsewhere in order to teach on the same subject with certain local modifications in a local language, if required in order ensure maximum reach. This will not only enable sharing of resources between organizations of different parts of the world and help to learn from others experience. Another course on 'Mobiles

for Development' has been initiated by IIT Kanpur in association Commonwealth of Learning [4]. It aims to teach advantages and benefits of mobile technologies in other key sectors such as agriculture and food production and rural credit and finance. Innovations in open learning from the AgShare project, as well as mobiles, quality assurance for Open Educational Resources (OER), 'Massively Open Online Courses' (MOOCs) etc has been discussed by [5]. A review carried out by [6] has classified the moocs literature to provide quantitative analysis of publications according to publication type, year of publication, and contributors. MOOC format developed by connectivist researchers and enthusiasts can help analyze the complexity at work in the field of education [7]. Success of online programs is determined using factors like planning, marketing and recruitment, financial management, quality assurance, student retention, faculty development, and online course design and pedagogy [8]. Learning via online peer assessment (PA) using a phenomenographic approach has been introduced by [9]. A survey carried out showed that decreases in anxiety and increases in attitudes by online students offer encouragement to faculty to reduce students anxiety and increase their learning by using new techniques[10].

VI. FOLLOWING SUIT AND DEMYSTIFYING MOOCS FOR FARMERS

The MOOCs can be exploited for farmers surely not with much difficulty. A sample course designed by the authors by using coursesites.com (<http://www.coursesites.com>) confirms the ease with which the awareness can be spread amongst the farmers. The conceptual framework which is in

its early trials, debates and deliberations in the author's laboratories goes on the following lines:

An online course is proposed under MOOCs for young farmers who are computer literate. A basic course for novice farmers is proposed and uploaded on www.coursesites.com. Syllabus is designed for five weeks and the structure is as follows:

Week-1

Introduction to e-learning and use of MOOCs, How to start Farming: Basic skills, frequently asked questions, identifying resources for farming, identifying human resources and skills.

Week-2

Video clips showing Real-life example of starting a new Farm, awareness of Government policies for farmers, subsidies given by government, loan details, seed banks etc. Introduction to websites and blogs related to farming.

Week-3

Knowing your soil: type of soils, instruments and laboratories existing for soil testing, fertilizers: basic knowledge, homemade fertilizers and precautions to be taken

Week-4

Irrigation system: types and sources of irrigation, irrigation depending on type of crops to be cultivated and type of soil as well as climate.

Week -5

After getting all the basic knowledge now one can decide what to cultivate, factors to be considered are discussed with real life examples.

This course is free of cost. Following are the screen shots from Cousesites.com.

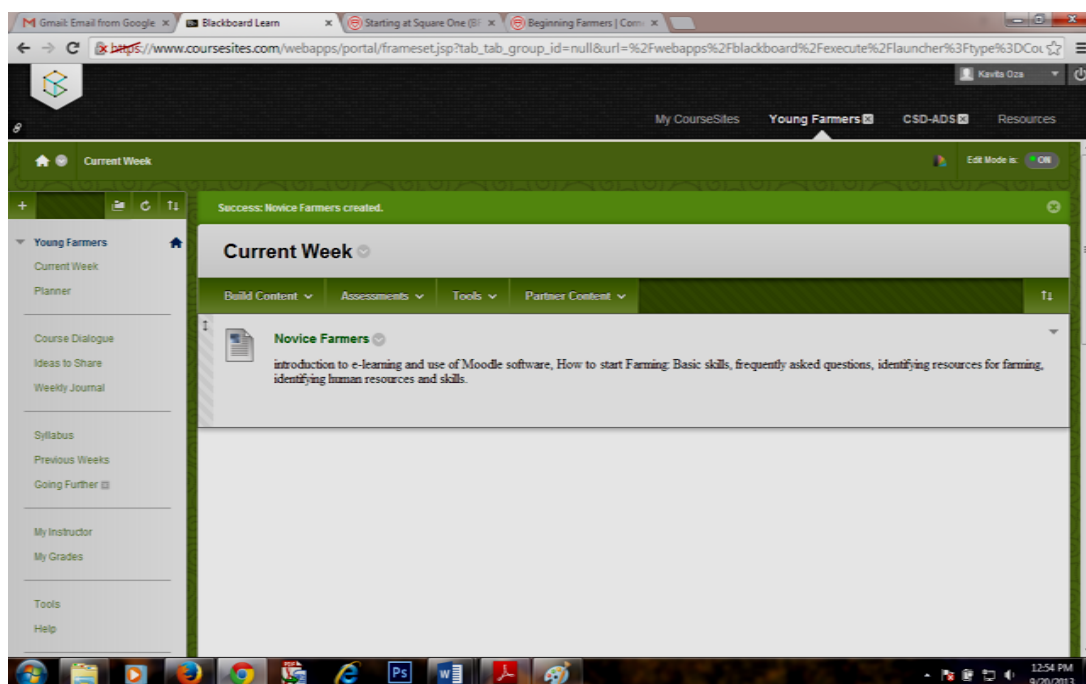


Fig.2. Screen showing syllabus for the current week

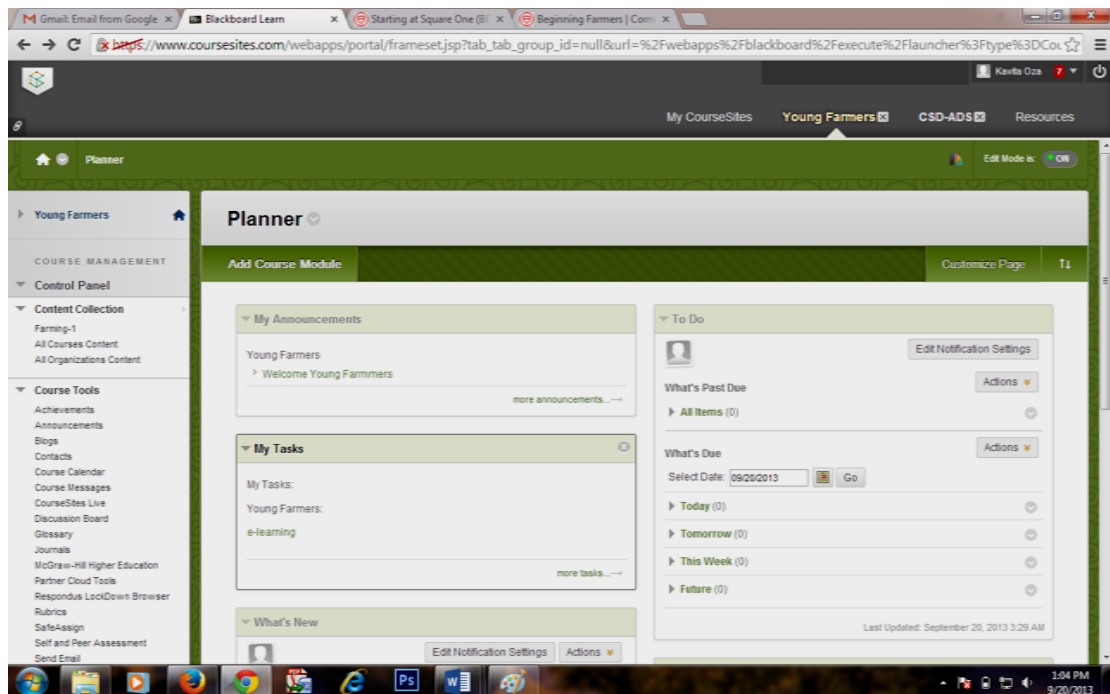


Fig.3. showing Planner which gives all the details like announcements, tasks, what is due etc.

Once the course is floated the learners can be invited to join the course by sending them emails.

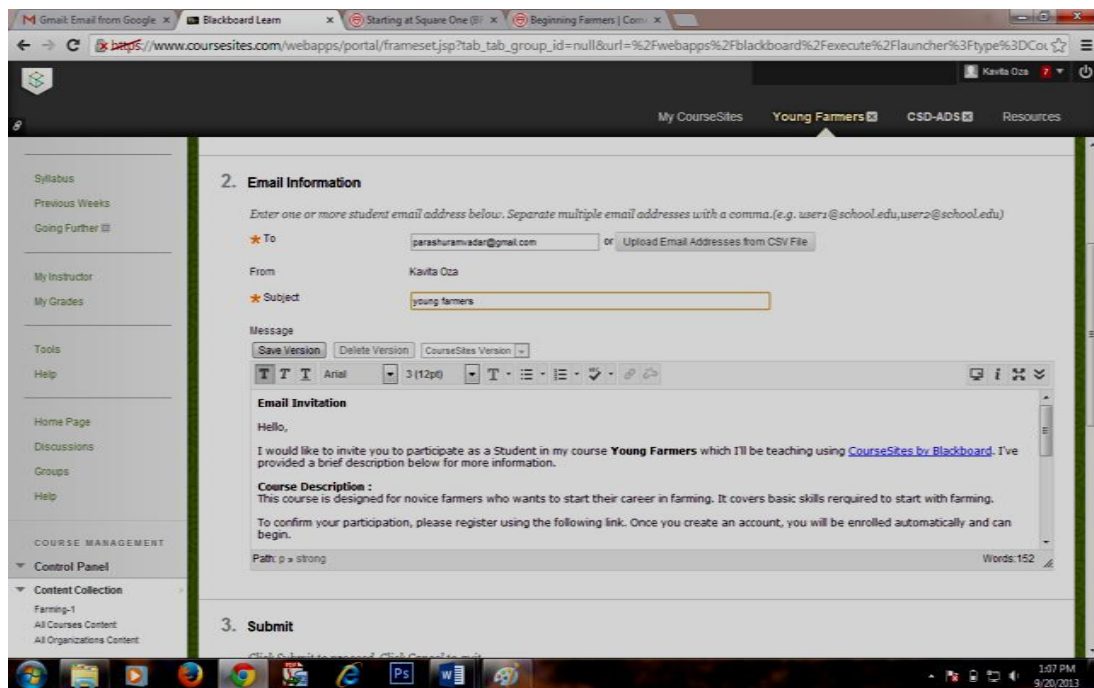


Fig. 4 Automatically generated email contents

VII. EPILOGUE AND WAY FORWARD

As presented by way of the article, in India MOOCs may create wonders in the agricultural sector. Since the majority of population till today is dependent on agriculture for their livelihood, this would be in the true sense the 'Technology for the People, by the People'. Thus MOOCs is almost on the cutting edge to befall a next big thing in agriculture after computers, Internet and Mobile technologies which have surely proved their essence for the rural masses at large.

India's premier agricultural research institutes and universities under ICAR (Indian Council for Agricultural Research) can take measures for wider dissemination of agricultural knowledge to researchers, agricultural extension workers and farmers through MOOCs. Following areas in which MOOCs may be adopted in order make it a viable medium of education in agriculture.

- Agricultural methods of cultivation and Harvesting
- Use of technology for agricultural development

- Agricultural management
- Agricultural marketing
- Food security

For a wider reach, pedagogy of these courses has to be more hands on oriented as field workers and farmers may find the theory intensive content difficult to follow. It is also the need of an hour to deliberate in local languages to attain better learning outcome. MOOCs definitely have the competence to make one to learn to farm from the computer, just by having the device connected to Internet.

Through more open knowledge in agriculture, the MOOCs are all set to ablaze yet another revolution in the Indian agriculture sector.

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