Design Challenges for Developing Customised Massive Open Online Courses with Special Reference to India

Abstract

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We are moving into a deeper realm of learning technologies where we are not only exploring them but also trying to fit those in the changing scenarios of learning development. It is now a thing of past when Open Education Resources (OERs), online courses etc were quite a buzz. Now, Massive Open Online Courses (MOOCs) – one of the prime mechanisms of e-learning- have taken the front seat to guide the latest education delivery.

As the education system in India— be it primary, secondary or higher levels — is laden with quality and quantity challenges, has also a corresponding demand from industry for skilled human resource and now that MOOCs have found their presence, there is a probable need of highly customised MOOCs so that India is able to correspond to its variegated local needs to be on par with world learning mechanisms of effect.

In fact, after seeing the results of many MOOCs, it has now been felt necessary to design tailored courses for individualized learning. Recently, three MOOCs have been introduced by Indian Institute of Technology, Bombay in the field of higher education and several others are being introduced in the field of school education.

The pertinent issue according to the author is the design issue which the developer faces for developing customised MOOCs. After relevant literature survey and personal experience (as a developer and a drop out), it seems that developers often tend to ignore pedagogical and vital basic concepts involved for the making of MOOCs.

This paper attempts to report on some vital design challenges that come forth for/while developing MOOCs along with the author's experience in the development of the same with special reference to India. Also, implications on other upcoming MOOCs have also been discussed.

Keywords/Set of words: OERs, MOOCs, customised and design

INTRODUCTION

Information Technology is a great bonus to the 21st century education provided this is used effectively keeping the scenario of the teaching-learning process in mind. It should be kept in mind that we are moving into a deeper realm of learning technologies where we are not only exploring them but also trying to fit those in the changing scenarios of learning development. It is now a thing of past when Open Education Resources (OERs), online courses etc were quite a buzz.

Now, Massive Open Online Courses (MOOCs) have taken the front seat to guide the latest education delivery. Connectivist MOOCs (cMOOCs) focus on discussions, providing interactive learning environments, social network and blog engagement, peer evaluation, and sovereignty of educational objectives, and extended MOOCs (xMOOCs) concentrate more on content delivery and knowledge transfer through quizzes and lecture videos and multiple choice questions.

A few MOOCs of mention are:
Harvard, Berkeley and MIT (EdX)
EdX courses consist of weekly learning sequences. Each learning sequence is composed of short videos interspersed with interactive learning exercises, where learners can immediately practice the concepts from the videos. The courses often include tutorial videos that are similar to small on-campus discussion groups, an online textbook, and an online discussion forum where learners can post and review questions and comments to each other and teaching assistants.(Wikipedia)

Stanford University (Coursera, Udacity)
Coursera courses are "accessible for free" and some give the option to pay a fee to join the "Signature Track." Learners on the Signature Track receive verified certificates, appropriate for employment purposes. These learners authenticate their course submissions by sending webcam photos and having their typing pattern analyzed. There are still free courses, but majority are fee-based. (Wikipedia)

Udacity consists of several units comprising video lectures with closed captioning, in conjunction with integrated quizzes to help learners understand concepts and reinforce ideas, as well as follow-up homework which (specifically) promote a "learn by doing" model. (Wikipedia)

The Open University (Futurelearn) -Launched in September 2013, UK , Partners – 26 universities

Study Webs of Active –Learning for Young Aspiring Minds (SWAYAM) Platform- This has been covered under the section- Customised MOOCs in India.

As the education system in India— be it primary, secondary or higher levels — is laden with quality and quantity challenges, has also a corresponding demand from industry for skilled human resource and now that MOOCs have found their presence, there is a probable need of highly customised MOOCs so that India is able to correspond to its variegated local needs to be on par with world learning mechanisms of effect.

To talk of MOOCs and its discussions, the need of the day is a customized MOOC for actual learning to occur so that learners become skilled and employable. The pertinent issue according to the author is the design issue which the developer faces for developing personalised MOOCs. After relevant literature survey and personal experience (as a developer and a drop out), it seems that developers often tend to ignore pedagogical and vital basic concepts involved for the making of MOOCs.

The primary objective of the paper is to report on some vital design challenges that come forth for/while developing MOOCs along with the author's experience in the development of the same with special reference to India. Also, implications on other upcoming MOOCs have also been discussed.

According to author's view and keeping the vast literature of MOOCs in mind, tailored courses for individualized learning have come into picture. However, just like any other MOOC, personalized MOOCs also show up some vital design challenges which need to be addressed so that this kind which can act as a savior of teaching-learning does not act as garbage.

The corpus related to online courses is vast, and comprehensive coverage would extend beyond the scope of this endeavor. World trends and their underlying assumptions explicitly or implicitly guide different MOOC design models. As suggested by Weber (2001), adaptivity in online learning increases learning reflection than any standalone traditional educational application. According to Calonge (2015), the customisation of the learner learning path/experience with continuous diagnostic approaches to identify and underpin interventions would constitute the three main pillars of a better, more optimised and more engaging pedagogical framework. Friedman (2014) suggested that online is about taking what we already know works offline and combining it with what you can only do online to create the most engaging experience. According to Jarche (2014), Personal Knowledge Mastery (PKM) is a framework for individuals to take control of their professional development through a continuous process of seeking, sensing-making, and sharing. This can be used for personalizing learning to enable learners to seek resources from the world around them. This thereby produces a model of interactive and personalized model. Henning et al. (2014) recommended personal learning pathways for each learner for decreasing dropout rates.

Being a qualitative and theoretical paper, observations of some Udacity, EdX, Coursera MOOCs and Indian MOOCs and its trends were made. Relevant MOOC literature from 2001 to 2016 was assessed, however; only vital ones find mention here.

What is Customised Learning?

As we see that blended pedagogies in vogue, personalized online learning has become a revolution now after observing a few MOOCs on Coursera , Future Learn and EdX. According to Rosenbloom (2013), the real revolution is personalized learning. However, to provide MOOC participants with efficient learning resources according to the unique needs of each learner is really a big challenge. Learners are not only different in their behaviors and learning approaches, but also different in their personality, intelligence, emotion, and abilities. This opens the door for the next major milestone in personalization of MOOC experience.

According to the author's experience (as a developer and drop out of Coursera MOOC), learning mostly takes place with social and personalized learning, individual preferences: content, context and familiarity, challenges to reach a mental state of accomplishment and in built DNA leading to inspiration for the same. Therefore, HarvardX is examining personalized MOOC experience- how customized MOOCs can work and how learning can be more personalized and how courses could be tailored to suit wider variety of learners.

Positives of Customised MOOCs

- **Key skill sets and subject matter**
  Rather than using a pre-built online course that covers a wide range of skills and topics, customized course content caters to the key skill sets of learners which can be one of the motivators of e-learning.

- **Access to information anytime, anywhere**
  With customized MOOC, learners can have their choice of location and learning can occur anytime, anywhere. They can personalise their online training resources to provide employees with scenarios, tutorials and audio/video elements for quick accession of information.

- **Ties into real world benefits and applications**
  Customised MOOC offers exposure to learners for real world situations. Learners can also participate in custom tailored activities that pertain to course related tasks and processes, which enable them to fine tune

their skills and expand their knowledge base. Developing customized eLearning courses allows MOOC providers to integrate fiction, real life and other elements. These thereby evoke emotional connect in both learners and developers. Being emotionally driven by personalized learning, learners are more likely to remember emotionally-centered experiences which they find relevant and relatable. Thus, they will be able to recall information while at work, and perform their job responsibilities to the best of their ability.

- **Cuts down on time**
  The customized content includes only what the learners need to know, thanks to learner analytics. These are based upon the learners' particular learning needs and the desired results as suggested in the course objectives.

Design Challenges

Milligan (2015) talks about personalization as to how one can ensure learners get what they want from a MOOC. This is the biggest challenge in front of us and IT seems to be its probable solution.

Adult learners (different from usual takers of the course) come with different levels of starting knowledge and different expectations and goals. Milligan suggests that imposing goals on learners uninspires them to continue the course and which is why it would be better for MOOCs to unfold self-directed, individual and collaborative learning within a flexible structure. Personalization of learning will make the MOOCs serve specific aspirations of learners. This gathers importance in both professional and non-professional contexts, where experts come together in MOOCs and learn more from contexts than the course content and bring in their additional knowledge to make way for a more personalized study.

We cannot be sure of MOOCs whether they are beneficial to learners or not. Therefore, course designs should encourage learners to articulate and share action plans for using their new knowledge as a way of helping learners think about the value of what they are learning and to get them to engage deeply with the course content that is being delivered. MOOCs should also be designed so that learner can know what he/she has learned while passing through the course by way specific learning exercises that give a view of his understanding level.

As MOOCs attract varied learners and even though the course is customised, learnes cannot remain motivated and engaged within a fixed content. Instead, course designs should encourage learners to determine how they interact with others, supporting learners who need support while affording self-regulated learners the freedom and flexibility to interact as they wish. Here, flexible design is wanted for certification, with achievement being linked to personal goals and progress wherever possible.

Since lakhs of learners are benefitting from MOOCs, the tutors and offered support are still to be optimized. The author dropped out of the Coursera International Relations and Creative Writing courses due to lack of support and sense of non belongingness. Lack of reinforcement in instructional design and activities still persist in customized courses too. The challenge here is how to support MOOC participants with immediate and constrictive feedback to increase retention.

It seems that assessment criteria and expertise level of learners are still botherations as they do not consider individual needs and are framed according to the same traditional style of teaching-learning. National Institute of Open Schooling (NIOS) MOOCs of India are a big concern in the changing time of customized learning for diverse needs.

Customised MOOCs In India

To impart education to all and to fulfill Digital India vision, the government of India has recently launched an Indian-focused MOOC platform for all. This MOOC platform is termed as 'SWAYAM'- Study Webs of Active-learning for Young Aspiring Minds.

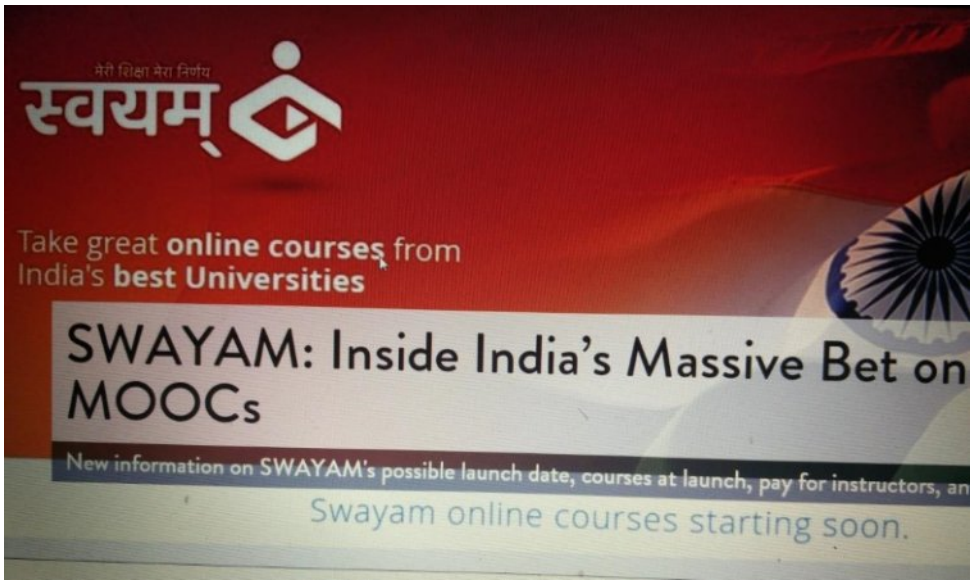

Figure 1. SWAYAM Page

SWAYAM facilitates hosting of all the courses, taught in classrooms from 9th class till post-graduation for accession of by anyone, anywhere at any time. SWAYAM deserves recognition but before that demands extensive and intensive study of the effectiveness and efficacy of each online course for making it useful, competence enabled and workable in totality in Indian context.

SWAYAM courses will be available free of cost to the learners, however learners wanting certifications shall be registered with fee, shall be offered a certificate on successful completion of the course. There will be an assessment of the learner through proctored examination and the marks/grades secured in this exam could be transferred to the academic record of the learners at the end of each course.

As per MHRD Guidelines for Development and Implementation of Massive Open Online Courses, there will be a Course Outline comprising structure of topics and sub-topics with appropriate sequence in hierarchical manner. Instructional Strategies will include specific learning activities for effective training (e.g. case-studies, scenarios, cartoon-strips, analogies, individual or group activities, concept-mapping, in-text learning quizzes, interactive exercises within learning modules, discussion forum topics, blog-postings, etc.) . Instructional Material will comprise instructor's videos supported with slides, interactive multimedia consisting of graphics, animations, documentaries, recorded demonstrations, dramatized scenarios etc.

The SWAYAM platform is specifically designed benefit learners from remote area, working professionals as well as college dropouts. Learners will get 'Verified Certificate' after successfully completion of courses. However, it is not clear if these certificates will be accepted for employment purposes.

- **Courses under SWAYAM**

At launch, SWAYAM is expected to have over 2,000 courses and 250,000 hours of content. With 2,000 courses expected to be available at launch, SWAYAM will have the largest course catalog amongst all MOOC providers from its very first day.
IIT Bombay opting Open EdX has launched a customised version called IITBX. It is an extended online educational service for the benefit of Indian learners with training workshops for teachers. Similarly, IIT Madras had a Google-based Course Builder platform while IIT Kanpur had a homegrown platform called MOOKIT based again on open source software.

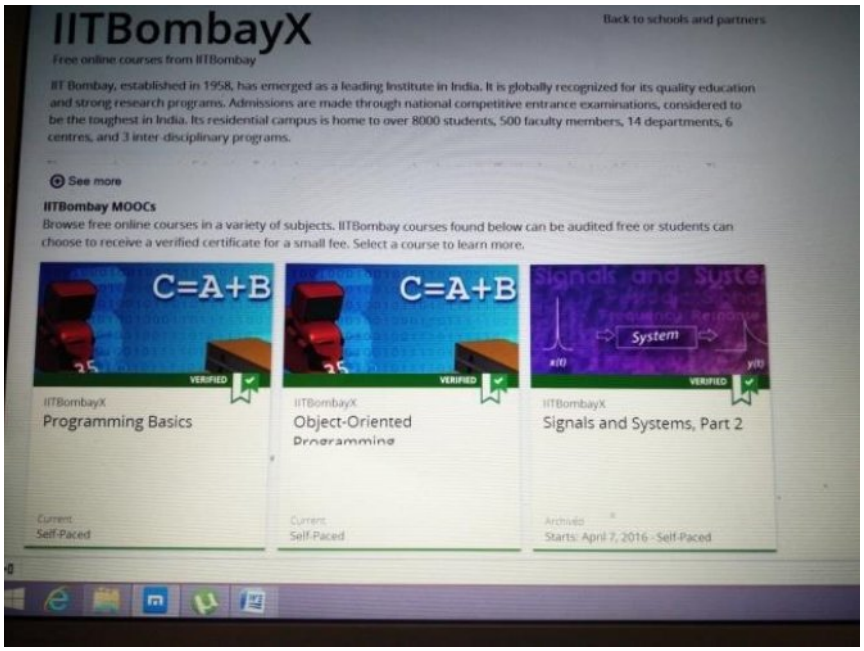

Figure 2. IIT Bombay MOOC Page

- **Online Digital Library**

Along with SWAYAM, another project is to create online digital library that will have resources from nation's top universities and institutes; it is termed as 'National E-Library'. The library can be accessible to every leaner with Internet access.

- **Customised Features of the Open School Model Of India**

1. xMOOCs and cMOOCs- The NIOS model is based on a blend of x and c MOOCs which comprise peer learning, interaction, quizzes, puzzles, multiple choice questions and higher order thinking skills to deliver the content. Portions of unnecessary details, repetitions, boredom provoking monotonous exercises etc. are done away in the material.
2. Customized content suited to individual learning- Applications will enable Indian learners to be served more engaging material based on their individual profiles. Here, a plan to provide adaptive learning by regular interventions is being considered.
3. Flexibility- Anywhere-anytime access so that learners can enrich their skills in learning a new subject or taking up a course.
4. Credit Accumulation: Learners can choose to appear in anyone or more subjects in any examination and earn credit which will be accumulated till all five subjects required for certification are successfully completed within a period of registration.

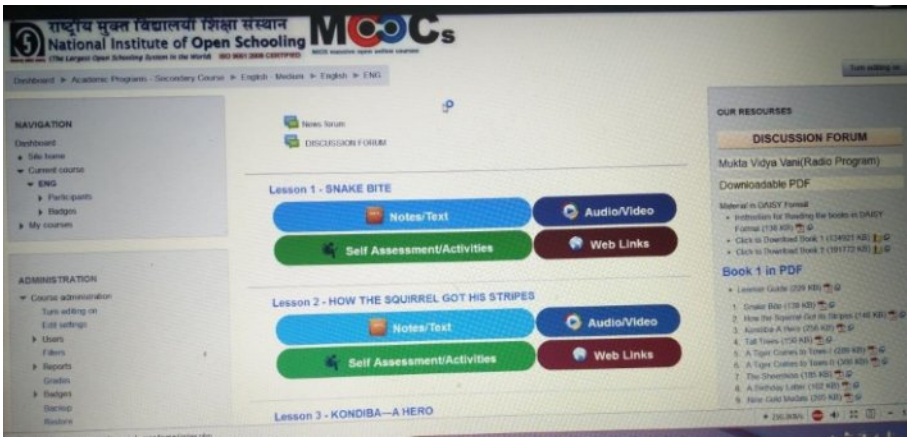

Figure 3. NIOS Secondary level MOOC page

5. Part Admission: Under this provision, if learners are studying in a regular school, or have already passed Secondary/Senior Secondary examination or any other higher course from any recognised Board/University, they may opt for up to four subjects of their choice, to update knowledge and educational qualifications. However, on passing, only the Marksheet will be issued and no other certificate will be issued.
6. Access to high quality education, to quality teachers and peers- This is kept to increase collaboration in learning, auditing and feedback for better delivery and comprehension of knowledge and learning achievement.
7. Communication and Collaboration- Academic, administration, evaluation, technical and student support staff will ensure over-all cooperation and participation of all learners for continuous online/offline support so that there are low dropout rates and education reaches out to one and all.
8. Counselling within 24 hours by the NIOS head quarters and feedback facility
9. Assessment- The learners will undergo a series of assessments-formative and summative. This can be exercises/ tasks of multiple choices, gap filling, matching and higher order thinking skills
10. Certification- After successful completion of the courses learners will obtain a free certificate of attendance that will certify that the participant has successfully completed the course. A certificate with verified identity will be provided by paying a certain fee (awaiting policy decision)
11. Download Ability- The educational material is downloadable and can be read offline.

The learning technology used here is effectively infused in the learning material and highly customized so that it appeals to the Indian learners and does not fade away after its launch like some other online courses (eUniversity of UK, Alllearn, Fathom etc.) of the world.

Implications On Other Upcoming MOOCs and Conclusions

1. Need to preserve human touch
Learning and understanding is about relationships. One can no longer continue with a mechanical model of MOOCs and thrust learners to adopt it. Online and blended-learning tutors need to continue building relationships with learners to truly personalize learning. Personalization cannot happen with crowd of thousands and a few supporters.

2. Need to provide ongoing feedback
Timely formative assessment feedback can make learning more personalized and attentive. Self, peer, expert and tutor assessments need to be fixed into MOOCs to ensure its success.

3. Need to cultivate collaboration
While MOOCs have had a lot of tools for open collaboration, engagement in these spaces may be hit or miss. Collaboration with external networks increases participation from varied communities. Participation in discussion boards can be effective in measuring MOOC's efficacy.

4. Need of blended customisation
When a customized course is blended, feedback and evaluation, emotional connect and collaboration can happen frequently to meet learner needs. Lot many course providers such as Coursera, Udacity etc are seeing this as important and are building "learning hubs" for weekly in-person instruction.

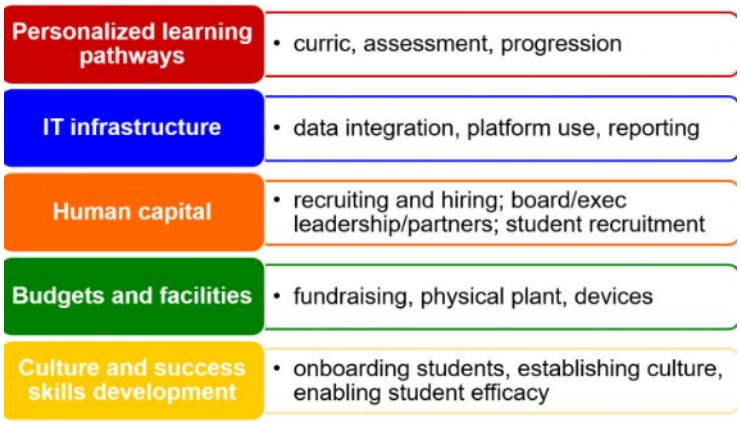

Figure 4. Freeman (2016)

Customised courses will have to definitely involve exploratory, adopting and embracing qualities in order to justify itself as a light in the darkness of failing MOOCs.

5. Four Cs
According to Davenport (2013), four Cs- Comparison of information, consequences of information, connections of information and conversation of information- are required to get customized courses going. The Cs demand learners to share facts with each other for greater learning and personalization.

6. Marketing
Marketing is one of the important aspects of education now esp. retention marketing. In author's view, education providers should use this marketing to keep the course drop outs low in number.
Sharples et al. (2014) studied personal inquiry-based learning toolkit to know personal inquiries of the learners before, during and after opting a course. In this way, the course could be made more customized and would be easy on both developer and learner.

It is hoped that addressing the issues coming in way of customized course designing will enable improved personalization of our learners' learning experiences. For Vassileva (2005), incorporating incentive mechanism in online community is sustainable to stimulate user participation and contribution. Tag-based recommender system Sunar (2015) plus collaborative content-based filtering Sarwar et al. (2001) can improve learning experience in personalized MOOCs and provide more accurate recommendations for course participants.

There will always be subjects where hands-on experience is necessary, for instance, many science subjects involve practical experimentation in the laboratory for full understanding. This is the reason why major education providers are going beyond customization with regular human touch, assessment, feedback and peer interaction to learn, research and innovate. The relevant customization will depend on a new type of physical campus that offers more than just traditional learning opportunities.

According to Friedman (2014), the future of online learning isn't about accessibility: it's about taking what we already know works offline and combining it with what we can only do online to create the most engaging experience.

All emergent MOOCs esp. Indian MOOCs which are being massively supported by the government, will have to mind and include the above before entering the arena of online learning. It is important to identify how learners' goals are expressed through their activities on the any MOOC platform, and how they evolve over time. Learner is the key to all.

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