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## **THE JOURNEY OF SWAYAM: INDIA MOOCS INITIATIVE**

### **ABSTRACT**

Under the 'Digital India' Initiative of Government of India, one of the thrust area is 'Massive Online Open Courses (MOOCs)'. Ministry of Human Resource Development, Government of India has embarked on a major initiative called 'Study Webs of Active Learning for Young Aspiring Minds' (SWAYAM), to provide an integrated platform and portal for online courses, covering all higher education, High School and skill sector courses. SWAYAM is an indigenous (Made in India) IT Platform for hosting the Massive Open Online Courses (MOOCs). To improve Gross Enrollment Ratio (GER), from 20% at present to 30% by 2020 SWAYAM promises to be a possible solution with a capacity to revolutionise the education system in India. The journey of SWAYAM can be traced back to 2003 with the initiation of the NPTEL (National Programme on Technology Enhanced Learning), a joint programme of IITs and IISc. This was the first major attempt in E-learning in the country through online Web and Video courses in Engineering, Science and humanities streams. The launch of the National Mission on Education through ICT (NMEICT) in February 2009 further broadened the scope catering to all disciplines in the Higher Education sector. As on date under the NMEICT huge amount of e-content have been generated which are available under the CC-BY-SA license. NPTEL has developed e-content for 933 Courses, Consortium of Educational Communication (CEC) for Undergraduate subjects in 67 Subjects, University Grants Commission (UGC) in 77 Post Graduate subjects. Similarly, many other institutions have developed e-content in different disciplines at different level. Under the SWAYAM initiative all the contents developed under NMEICT are being repurposed and being made MOOCs compliant. The Beta version of SWAYAM was made live on August 15, 2016. The paper provides an insight into the SWAYAM initiative and reflects on the issues and challenges in its implementation the Indian context.

### **INTRODUCTION**

We are witnessing unprecedented developments in information and communication technologies with dramatic reductions in the size, cost and affordability of computers on one hand and enhanced speed, storage capacity and reliability of hardware components on the other. The growth of the Internet and the rapid spread of fast broadband connectivity and the increased usage of tablets and smart-phones have also altered the concept of space and time

in communication. These exciting ICT developments can play a significant role in facilitating the increase in enrolment ratios, addressing the problem of teacher shortages and provide access to educational facilities to learners located in remote corners of the country. In educational context, these ICT developments have triggered large-scale creation and access of online educational content and virtualisation of the higher education institutions and systems.

Massive Open Online Courses (MOOCs) has brought about a major change in the higher education scenario world over, by providing learning opportunity to anyone, anytime, anywhere having access to Internet. MOOCs are in fact seen as Internet equivalent of open and distance learning wherein, thousands of participants can enrol in a course from anywhere in the world.

MOOCs are considered as a disruptive technology and a turning point for the business model of higher education. It is affecting not only the revenue stream from students, but also the role of faculty, the need for brick and mortar, and the way degrees are constructed.

MOOCs saw a “massive” boom in the higher education world in 2012 and became a new buzzword. In India where we are grappling with the problem of low Gross Enrolment Ratio (GER) in higher education, lack of basic educational infrastructure and quality educational opportunities for the masses, MOOCs catering to the Indian requirements seems to be the need of the hour.

Ministry of Human Resource Development (MHRD), Government of India has embarked on a major initiative called ‘Study Webs of Active Learning for Young Aspiring Minds’ (SWAYAM), to provide an integrated platform for online courses, covering all higher education, High School and skill sector courses.

As one of the pillars of the ‘Digital India’ Initiative of Government of India, SWAYAM seeks to bridge the digital divide for learners who have hitherto remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy.

## **A CASE FOR SWAYAM - INDIA MOOCS INITIATIVE**

Higher education scenario at present is marked by considerable transformations with changing characteristics and circumstances of learners; new demands in terms of the knowledge, skills, and competencies; greater diversity in relationships between learners and educational providers; and increased opportunities for interpersonal communication and access to digital resources in the ‘networked society’.

As per the All India Survey on Higher Education 2014-15 (Provisional) [1] conducted by the Ministry of Human Resource Development there are 757 Universities, 38056 Colleges and 11922 Stand Alone Institutions. Total Enrolment in Higher Education has been estimated to be 33.3 million and the total number of teachers is 1418389. The Gross Enrolment Ratio (GER) in higher education is above 40 percent in developed countries whereas; in India it is 23.6, which is calculated for 18-23 years of age group. The government proposes to enhance

it to 30 percent by 2020. But, this presents a huge challenge. Another 40000 to 50000 higher education institutions are anticipated to be needed to boost the GER as envisioned.

The limitations of 'brick and mortar' campuses in ensuring accessibility for different kinds of learners profiles is pushing ICT enabled education into the limelight. ICT enabled education attracts students of all ages for offering low cost learning, flexible "anytime, anywhere" learning, individualised learning, just in time teaching, and overcoming the barriers of physical distance, time and socio-economic circumstances.

The open and distance learning system with its potential for flexible education delivery, self and life-long learning and cost effectiveness is instrumental in meeting the needs of individual and communities for sustained development of a knowledge society. Open and distance learning system enabled and delivered through information and communication technology (ICT), holds the promise to address questions of access and provide new, alternative forms of capacity building. ICTs can play enormous role in improving access and equity in education sector in general and higher education sector in particular.

In India where there is shortage of qualified faculty and resource crunch in setting up physical infrastructure to reach out the learners at mass scale, MOOCs seems to be a viable solution. However instead of emulating the western world we need to design a solution that suits best with the country's pressing need to impart quality mass education.

## **JOURNEY OF SWAYAM- EVOLVING PHASES**

ICT enabled education is rapidly changing the face of higher education as it attracts students of all ages and provides training and learning opportunities just-in-time. It has the potential to overcome barriers of physical distance and time, lower institutional or organizational costs and increase student enrolment.

The National Mission on Education through ICT (NMEICT) launched in 2009 as a Centrally Sponsored Scheme of the Ministry of Human Resource Development (MHRD) to leverage the potential of ICT in teaching and learning process was seen as a major intervention in enhancing the Gross Enrolment Ratio (GER) in Higher Education. NMEICT is a landmark initiative to address all the education and learning related needs of students, teachers and lifelong learners. [2]

Through NMEICT, the three cardinal principles of Education Policy viz., access, equity and quality are expected to be well served by providing connectivity to all colleges and universities, providing low cost and affordable access-cum-computing devices to learners and teachers and providing high quality e-content free of cost.

The Mission provides an opportunity for all the teachers and experts in the country to pool their collective wisdom for the benefit of every Indian learner and, thereby, reducing the digital divide and reaching out hitherto deprived sections of the society in rural/ under-developed areas of the country.

Under NMEICT, e-content creation has been undertaken in a massive scale by many institutions and universities. NPTEL, a joint initiative of IITs and IISc funded by the Mission provides e-learning through online Web and Video based courses in engineering, science and humanities streams. The project is now in the second phase of development where more than 990 courses in 23 disciplines in engineering and science are getting generated [3]. Other major initiatives of e-content generation have been taken up by CEC for 68 subjects for UG level courses [4] and UGC for PG level courses in 77 subjects under the banner ePGPathsala [5]. Apart from that many other institutions are generating e-content in specialised subject areas. The overall goal is to create high quality, curriculum-based interactive content for all subjects and host them on an integrated platform for the benefit of universities, colleges and the world-wide academic community. All these courses are made available as Open Educational Resources (OER) under the Creative Commons CC-BY-SA license for the benefit of the learner and teacher community in the country [6].

To complement the NPTEL e-Content a joint project of twelve participating institutes nationally coordinated by IIT Delhi has developed over hundred Virtual Labs. [7]

In Indian scenario where there is a vast disparity of educational facilities available in various regions across the country, the India MOOCs seems to be the need of the hour to bridge the gap by providing just- in- time quality educational resources and teachers 24×7 to learners irrespective of their social, economic and educational status.

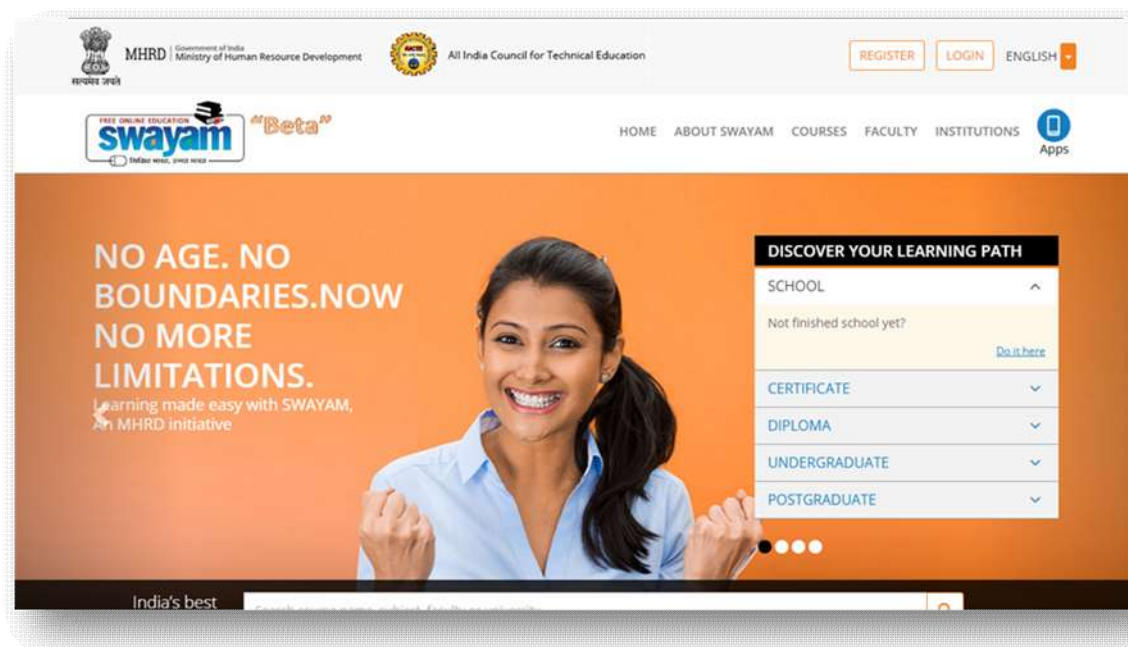
Realising the urgent need for MOOCs, some initiatives were supported by NMEICT in the mid of 2013. IIT Madras launched three MOOCs courses in March 2014 using the CourseBuilder platform. So far around 157 courses have been offered on NPTEL Online Course Portal [8]. In some courses the registration is sometimes more than 25 thousand. Besides course delivery, IIT Madras also carried out proctored examination with the active participation of TCS and NASSCOM. While the courses were free, the Certificates were chargeable.

IIT Kanpur developed a home grown platform based on open source software, mooKIT – a MOOC management system. mooKIT developed by IIT Kanpur in collaboration with Commonwealth of Learning (COL) was targeted specifically for developing nations and has already been used in 12 courses in India and abroad. mooKIT has also been adopted to run courses in the blended mode (Flipped classes) at IIT Kanpur.[9]

During July to December 2013, IIT Bombay initiated activities for global offering of courses, and for adopting the platform for their T10KT (Ten thousand Teacher Training) project and blended MOOCs. Following this IIT Bombay launched 6 MOOCs on edX Platform. [10]. Keeping in view the urgent requirement to roll out MOOCs nationally, MHRD advised IIT Bombay to work on the platform development, using funds available from other projects already approved and running,. IIT Bombay proposed the name SWAYAM (Smart Webs of Active Learning for Young Aspiring Minds) identified through a student competition. This was later modified as Study Webs of Active Learning for Young Aspiring Minds. On advice of the Ministry, IIT Bombay initiated activity on building SWAYAM version based on open-edX, and for training teachers to design and run MOOCs.

From the beginning of 2015, government felt that the need of the hour was to plan for a unified platform integrating several MOOCs offered by the higher education institutions in the country, pooling educational resources and subject experts to reach out to large number of learners who are otherwise deprived of higher education opportunities.

With the objective of developing indigenous platform for SWAYAM (India MOOCs) ministry floated a global tender. After several rounds of tendering and failing to identify a qualified bidder, the Ministry finally entrusted the task to All India Council for Technical Education (AICTE). AICTE in collaboration with Microsoft and its software partner WizIQ developed and made live the Beta version of the site on August 15, 2016. [11] This was done in a record time of merely four months. The indigenously developed SWAYAM platform is expected to host 2000 courses and 80000 hours of learning: covering school, under-graduate, post-graduate, engineering, law and other professional courses.



SWAYAM Main Page (<https://swayam.gov.in/Home>)

## FEATURES OF SWAYAM

SWAYAM is envisaged as a one-stop web and mobile based interactive platform hosting courses from High School to University level. The platform is to provide high quality learning experience using multimedia on anytime, anywhere basis. The state-of-the-art system allows easy access, monitoring and certification. Peer group interaction through discussion forum and web conferencing system is integrated in the system to help learners in clarifying doubts. Hybrid model of delivery with synchronous and asynchronous interactions adds to the quality of teaching learning process.

The course content developed on the portal follows a four quadrant approach with the following coverage of media and learning resources [12]:

**Quadrant I- e-Tutorial:** Video and Audio Content in an organized form, Animation, Simulations, video demonstrations, Virtual Labs, etc.

**Quadrant II- e-Content:** PDF, Text, e-Books, illustrations, video demonstrations, documents and Interactive simulations wherever required.

**Quadrant III- Web Resources:** Related Links, Wikipedia Development of Course, Open source Content on Internet, Case Studies, books including e-books, research papers & journals, Anecdotal information, Historical development of the subject, Articles, etc.

**Quadrant IV- Self-Assessment:** Problems and Solutions, which could be in the form of Multiple Choice Questions, Fill in the blanks, Matching Questions, Short Answer Questions, Long Answer Questions, Quizzes, Assignments and solutions, Discussion forum topics and setting up the FAQs, Clarifications on general misconceptions.

Elements for the overall SWAYAM courses are expected to include:

- **Syllabus Template** (including a course description with key learning outcomes, descriptions of faculty, a detailed course content outline, expectations for participation, certification, and faculty communication, netiquette guidelines, and academic integrity).
- **Pre- and post-course surveys**
- **Course overview** to orient on: What is the course about? What does the course include? What will I learn in the course? How do I use the course features?
- **Course timeline** for scheduling learning activities (week-wise detailed plans)
- **List of Announcements** to deliver reminders for due dates and course transitions.
- **Instructions on synchronous and asynchronous engagements** (prompts for students to post in the Discussion Forum, polling questions throughout the course, interaction with faculty/ TA (eTutor) as per instruction)

While planning for the SWAYAM it was felt that just emulating the prevalent practices in the developed countries will not help. Technology may be an enabler but we need to work out a solution that is best suited for the masses as we have to address the need of disparate groups spread at length and breadth of the country reaching out to the remotest corners.

MOOCs are generally seen as a tool for self learning in an informal environment. Since SWAYAM has been envisaged to address the issue of GER, a solution that is integrated with the formal education system with due recognition to courses offered through it is

essential. The ultimate outcome has to be oriented towards certification with offer of courses for degrees and diplomas. To address this requirement the University Grants Commission (UGC) has notified “Credit Framework for Online Learning Courses through SWAYAM” Regulations, 2016 in the Gazette of India on July 19, 2016 [13] wherein credit transfer for online courses under SWAYAM platform of Government of India has been defined. The UGC Regulation requires the Universities/ Institutions to make amendments in their Ordinances, Rules, Regulations etc. to incorporate provisions for credit mobility and recognition for Seamless Integrations of Massive Open Online Courses (MOOCs) offered through the SWAYAM Platform. The present regulation of UGC limits only 20 percent of the courses for a degree level programme. Similar regulation is awaited from AICTE for the technical education.

### **ISSUES AND CHALLENGES OF SWAYAM**

Though the beta version of the site is live with around 200 courses hosted on it, the actual delivery of the courses are expected to start from January 2017 when the new semester starts so as to align it with the formal system of education. Once the delivery of courses starts the actual challenges can be determined.

However, there are certain issues that need immediate attention and the government has to come out with a viable solution. Following issues need to be addressed immediately:

1. Government has yet to work out a policy for recognition of the online examination and other modes of evaluation. In initial phases only pen and paper based proctored exams are planned. Till the policy is in place it will be difficult to implement the online examination and alternate models of evaluation.
2. There still remains confusion as to who will be certifying the MOOCs course. The institution running the course or there will be a central body to certify? If institutions are certifying, then the equivalence mechanism has to be put in place for credit transfer.
3. It would be important to see that there is a process in place for accreditation of credits earned through SWAYAM to facilitate credit transfer. Government has yet take steps in this direction.
4. It is not yet clear whether it would be possible for a student to earn credits from MOOCs and combining credits from different institutions to get a degree if prerequisites of the degree programme are fulfilled (Meta University concept). As per the UGC notification the selection of courses to be considered for credit transfer is left to the institutions to decide rather than giving the option to the learner.
5. Unless and until courses are made available in the regional languages the enrolment will be very restrictive. In the first phase of launch it is proposed to at least have bilingual content in English and Hindi. There are plans to convert them into other regional languages in near future.
6. Access to Internet is still limited in rural areas in India, so the SWAYAM courses may have restrictive reach. Mobile App based delivery is being considered as an alternative to extend the reach. Government subsidized data charges will go a long way in the support of the SWAYAM. MHRD is already working out the possibilities for necessary support.
7. Preparing the faculty for MOOCs delivery is going to be a major challenge requiring



massive capacity building programmes. Training and re-training of faculty in content development and course delivery is going to be one of the core areas where the government needs to focus on to make SWAYAM successful.

SWAYAM has a great potential to revolutionise the educational processes and extending the reach to remote corners of the country. With tactful handling of the issues and challenges envisaged in the SWAYAM initiative, it will go a long way in ensuring education for all motto of the government.

## CONCLUSION

SWAYAM is being seen as an instrument for self-actualization providing opportunities for a life-long learning.

Instead of reinventing the wheel government has taken an appropriate step to build the India MOOCs around the existing facilities and resources developed under the NMEICT. SWAYAM Project gets further extended with the SWAYAM PRABHA initiative, an ambitious 32 educational DTH Channels of the MHRD providing 24×7 curriculum based educational programmes.

SWAYAM and SWAYAM PRABHA initiatives are proposed do go hand in hand supplementing and complementing each other.

Mainstreaming the SWAYAM initiative with the formal education system will go a long way in realizing the dream of the nation in universal access of education. With appropriate planning and implementation, SWAYAM can play a pivotal role in Digital India and Skill India missions of the government of India.

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