

Date: 5th September, 2017

SFC Memorandum for continuation of the scheme for SWAYAM: the National Massive Open Online Courses (MOOCs) portal

1. Scheme Outline.

1.1 Title of the scheme.

Continuation of the scheme for 'SWAYAM' - the National MOOCs portal.

1.2 Sponsoring Agency (Ministry/ Department/Autonomous Body or Undertaking).

Ministry of Human Resource Development.

1.3 Total Cost of the proposed Scheme.

Rs. 489.32 Crores (Rupees Four Hundred Eighty Nine Crores and Thirty Two Lakhs only).

1.4 Proposed duration of the Scheme.

Thirty months: from 1st October 2017 to 31st March 2020.

1.5 Nature of the Scheme: Central Sector Scheme/ Centrally Sponsored Scheme.

Central Sector Scheme.

1.6 For Central Sector Schemes, sub-schemes/components, if any, may be mentioned. For Centrally Sponsored Schemes, central and state components, if any, may be mentioned.

No such programme exists in central, state or other sectors in the country.

1.7 Whether a New or a Continuing Scheme? In case of a Continuing Scheme, whether the old scheme was evaluated and what were the main findings?

The scheme for creation of SWAYAM (Study Webs of Active-learning for Young Aspiring Minds) was approved by the Competent Authority on 16th December 2015 for Rs. 439 Cr. Out of this, an amount of Rs.135 Crores was released/utilised. This is a proposal for continuation of the scheme since the validity of the earlier scheme would expire on 30th September 2017.

1.8 Whether in-principle approval is required? If yes, has it been obtained?

Not Applicable.

1.9 Whether a Concept Paper or a Detailed Paper has been prepared and

stakeholders consulted? In case of new Centrally Sponsored Schemes, whether the State Governments have been consulted?

The present proposal for continuation is based on the detailed 3rd party evaluation of the scheme done by NASSCOM. The NASSCOM complemented the project and recommended for its continuation. The recommendations of the 3rd party evaluation is given in **Annexure-I**

1.10 Which existing schemes/sub-schemes are being dropped, merged or rationalized?

Not Applicable.

1.11 Is there an overlap with an existing scheme/sub-scheme? If so, how duplication of effort and wastage of resources are being avoided?

Not Applicable.

1.12 In case of an umbrella scheme (program) give the details of schemes and sub schemes under it along with the proposed outlay component-wise.

Not Applicable.

2. Outcomes and Deliverables.

a) **Stated aims and objectives of the Scheme.**

The SWAYAM is an IT portal that enables delivery of Massive Open Online Courses (MOOCs) to large number of learners. This involves the following:

- A. An IT portal that works on a ERP mode.
- B. Development of courses by the best teachers in the Country and translation into 10 regional languages (sub-titles).
- C. Hosting of the courses on Cloud infrastructure and helping accessing the same by suitable deployment of the Content Delivery Networks (CDNs).
- D. Regulatory framework along with the model for assessment of the learners, awarding of marks/credits and transfer of the same to the academic record of the learners.

The SWAYAM portal would provide high quality education by the best teachers online to all on anyone, anytime and anywhere basis. The courses cover from secondary school subjects to undergraduation, post-graduation and skill-based courses.

The **deliverables from the project** are:

- i. Develop/maintain the National MOOCs portal named as SWAYAM (**S**tudy **W**ebs of **A**ctive-learning for **Y**oung **A**spiring **M**inds) consisting of a state-of-the art IT platform and IT infrastructure including the high-capacity cloud and Content Delivery Networks (CDNs) for running the portal.

- ii. Develop 1350 new courses and run 6500 Courses during the project period with highest quality standards; translation of 275 MOOCs in video Transcription & text files, to best of 10 Indian languages with Video Subtitle.
- iii. Provide robust Internet Cloud (with CDN) and sufficient bandwidth for concurrent viewings of 1 Million users.
- iv. Conduct of examination and award of certificates to participants having successfully completed the course.
- v. Popularise the courses on SWAYAM so that most number of people benefit from the courses offered on the portal.

b) **Indicate year-wise outputs/deliverables in a tabular form.**

Components	1.10.17- 31.3.18		1.4.18 - 31.3.19		1.4.19 - 31.3.20		Total	
	Physical	Financial (Rs Cr)	Physical	Financial (Rs Cr)	Physical	Financial (Rs Cr)	Physical	Financial (Rs Cr)
MOOCs Development	250	35.7	700	99.96	400	57.12	1350	192.42
MOOCs Delivery	500	6.0	2500	30.0	3500	42.0	6500	78.0
MOOCs Translation	25	3.8	100.0	15.0	150.0	22.5	275	41.3
Platform Maintenance	-	20.0	-	15.0	-	15.0		50.0
Cloud infrastructure, call centre and CDNs		20.0		30.0		40.0		90.0
Reimbursement Examination Fee	-	2.1	-	3.1	-			5.2
SWAYAM Board Secretariat (PMU) for monitoring the scheme @3%	-	2.8	-	5.9	-	5.2		13.9
Advertisement and publicity @ 3 %		2.8		5.9		5.2		13.9
SWAYAM local chapter @1%		0.9		2.0		1.7		4.6
TOTAL								489.32

c) **Indicate Outcomes of the Scheme in the form of measurable indicators, which can be used to evaluate the proposal periodically. Baseline data or survey against which such outcomes should be benchmarked should also be mentioned.**

The anticipated outcomes of SWAYAM are:

- i. To enroll atleast 22 lakh learners into the 6,500 courses run on the SWAYAM Portal.

- ii. To ensure that atleast 1/3rd of the learners takes the examinations and earn credits on successful completion of the courses.
 - iii. Create SWAYAM local chapters in 10,000 institutions in the Country for training the faculty in adopting the SWAYAM courses in their curriculum.
 - iv. Advertise the courses using the social media and other economic modes in order to ensure that the message reaches to all the students in the Country.
- d) **Indicate other schemes/sub-schemes being undertaken by Ministries/Departments, which have significant outcome overlap with the proposed scheme. What convergence frameworks have been evolved to consolidate outcomes and save public resources?**

No such programme exists in central, state or other sectors in the country.

3. Target Beneficiaries

More than 20 lakh students across the country shall benefit from the scheme in most cost effective way. This includes students and lifelong learners of school level (9th to 12th), Under Graduate and Post Graduate level.

- a) **If the scheme is specific to any location, area and segment of population, please give the details and basis for selection.**
No specific area and location, catering Pan India and all learners.
- b) **Please bring out specific interventions directed in favour of social groups, namely SC, ST, differently abled, minorities and other vulnerable groups.**
The programme is intended to reach best quality education to the remote areas where there is no chance to access such quality. Therefore the focus of the scheme is the backward areas and the backward classes of the society.
- c) **If the scheme has any gender balance aspects or components specifically directed at welfare of women, please bring them out clearly?**

The proposal is beneficial to women learners as well, more to those women student who are deprived of quality education, because of reach to good institutions, which may be away from their place of stay.

3.3 Please bring out special interventions, if any, in North East, Himalayan, LWE, Island territories and other backward areas.

The focus of the scheme is all educationally backward areas, incl northeast and LWE areas.

3.4 In case of beneficiary oriented schemes, indicate the mechanism for identification of target beneficiaries and the linkage with Aadhaar/UID numbers.

Not included.

Components	1.10.17- 31.3.18		1.4.18 - 31.3.19		1.4.19 - 31.3.20		Total	
	Physical	Financial (Rs Cr)	Physical	Financial (Rs Cr)	Physical	Financial (Rs Cr)	Physical	Financial (Rs Cr)
MOOCs Development	250	35.7	700	99.96	400	57.12	1350	192.42
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MOOCs Translation	25	3.8	100.0	15.0	150.0	22.5	275	41.3
Platform Maintenance	-	20.0	-	15.0	-	15.0		50.0
Cloud infrastructure, call centre and CDNs		20.0		30.0		40.0		90.0
Reimbursement Examination Fee	-	2.1	-	3.1	-			5.2
SWAYAM Board Secretariat (PMU) for monitoring the scheme @3%	-	2.8	-	5.9	-	5.2		13.9
Advertisement and publicity @ 3 %		2.8		5.9		5.2		13.9
SWAYAM local chapter @1%		0.9		2.0		1.7		4.6
TOTAL								489.32

3.5 Wherever possible, the mode of delivery should involve the Panchayati Raj Institutions and Urban Local Bodies. Where this is intended, the preparedness and ability of the local bodies for executing the proposal may also be examined.

Not Applicable.

4. Cost Analysis

4.1 Cost estimates for the scheme duration: both year-wise, component-wise segregated into non-recurring and recurring expenses.

The cost estimates, year-wise break wise, component-wise segregation in to non-recurring and recurring expenditure is as given as under:

	1.10.17- 31.3.18		1.4.18 - 31.3.19		1.4.19 - 31.3.20		Total	
	Recurring Expenses	Non Recurring Expenses	Recurring Expenses	Non Recurring Expenses	Recurring Expenses	Non Recurring Expenses	Recurring Expenses	Non Recurring Expenses
MOOCs Development	35.7		99.6		57.12		192.42	
MOOCs Delivery	6.0		30.0		42.0		78.0	
MOOCs Translation	3.8		15.0		22.5		41.3	
Platform Maintenance		20.0		15.0		15.0		50.0
Cloud infrastructure, call centre and CDNs		20.0		30.0		40.0		90.0
Reimbursement Examination Fee	2.1		3.1				5.2	
SWAYAM Board Secretariat (PMU) for monitoring the scheme @3%		2.8		5.9		5.2		13.9
Advertisement and publicity @ 3 %		2.8		5.9		5.2		13.9
SWAYAM local chapter @1%		0.9		2.0		1.7		4.6
TOTAL	47.6	46.5	147.7	58.8	121.62	67.1	316.92	172.4
Grand Total	94.1		206.5		188.72		489.32	

4.1.2 Overall Budget Requirement (Rs. in Crores)

The overall budget requirement is Rs. 489.32 Cr for 30 months period from 1st October 2017 till 31st March 2020.

4.2 The basis of these cost estimates along with the reference dates for normative costing.

The following cost estimates have been used in this Note, which are based on the previous guidelines, suitably amended based on the experience gained in the implementation of the last 2 years.

A. Development of new MOOCs:

Based on the guidelines issued for maintaining quality parameters, the following is the financing pattern for creation, delivery and administering of new MOOCs for SWAYAM:

Assumptions:

1. Each course will be of 40 hours duration: 20 hours video and 20 hours eText.
2. For courses which are having more (or less) than 40 hours, the payment would be proportionate.
3. The video/multimedia produced for the Online Course shall conform to the Technical standards laid down in the Online Course Guidelines, 2017.

Cost norms

TLM & On-Camera Presentation

S.No.	Details	Rs Lakh
1	Preparation of the TLM-core reading material, assessment, presentations, online reference material etc. including transcript - for 40 hours course material.	1.50
2	On Camera presentation by SME @ Rs. 5000 per module.	2.00
3	Academic Review with two subject matter experts (for all four quadrant material) @ Rs. 1000 per module.	0.80
4	Technical review by one technical expert @ Rs. 500 per half an hour video.	0.20
	Sub-Total payment to SMEs and Reviewers	4.50

Video Production:

S.No.	Details	Rs lakh
1.	Production cost (including cost of studio, set, crew and instructional designer).	5.25
2.	Multimedia or outdoor shooting inputs.	1.75
3.	Post production (40 hours @ Rs. 5,000 per hour)	2.00
	Sub-Total Video Production Cost	9.00

Support to the National Coordinators per year.

S.No	Details	Rs. lakh
1	Support equipment for preview and consumables.	5.00
2	Human Resource (only contractual). - Coordinator @ Rs. 70,000 per month (1) - One Project Associates upto 50 Courses- @ Rs. 35,000 per month - One Data Entry Operator-@ Rs.20,000 and one Account Assist.-@ Rs.30,000 ≥ 50 Courses handled by NC.	8.40 As per number of Courses
3	Academic Advisory Board meetings @ Rs.2.00 Lakhs per Annum.	As per number of Courses
4	Subject Matter Expert Groups (SMEGs) Meeting @ Rs.2.00 Lakhs per Annum.	
5	Workshops/Subject (1 workshops/50 persons each/Rs. 4000 per person) = 2.0 Lakhs/5 Course.	

The financials for repurposing of existing e-content courseware shall be the same as notified in earlier MOOCs guidelines issued by the MHRD dated March 11, 2016.

B. Cost norms for MOOCs delivery:

Cost of running Online Courses (**assuming 500 students 40 hours of TLM**).

S. No.	Details	Rs lakh
1	Honorarium to the teacher for a 40 hour course (approx. 12 weeks duration).	1.00
2	One Teaching Assistant for every 500 registration (approx. 12 weeks duration)	0.20
	Sub-Total Cost of running Online Courses.	1.20

C. Translation:

Based on the discussions with C-DAC and NPTEL, which are having experience in translating material in regional languages, the following cost norms have been developed per course having 40 hours of video/reading content:

	Pages	Cost per page	Number of languages	Total (Rs lakh)
Transcript	500	50		0.25
Translation	500	275	10	13.75
Sub-titling	500	20	10	1.00
				15.00

This is only an indication based on the estimation of work and current costs of C-DAC. However, the actual cost will be based on the procurement process as per GFR.

- D. IT Platform: currently, the development of the IT platform is in Phase-II and with one more Phase to be completed, the cost estimates were based on the existing contract with the Agency currently developing the platform. The cost of technical support services has also been built into this to be engaged by AICTE.
- E. Cloud infrastructure: AICTE has procured the services through a competitive bidding process and the cost of hosting the SWAYAM content on the cloud has been estimated based on the cost of the lowest bidder. This involves high-end cloud and multiple data centres which would be maintained by the service provider.
- F. Exam fee: With a view to encouraging the students and others to take to SWAYAM courses, it is proposed NOT to charge the cost of exam for the 1st year. The cost of conducting exam with a maximum estimated cost of @ Rs. 250 per student would be reimbursed to the university/Institutions conducting the exam. It is assumed that 1/3rd of the students would take the exam for each course, totalling 0.8 lakh students in the first year.
- G. SWAYAM Board: Is the body for managing SWAYAM & Swayam Prabha, that would coordinate the activities of all the National Coordinators, course coordinators, resolving difficulties and providing technical help on the IT platform. The Swayam Board shall

have a Secretariat located in AICTE/MHRD for servicing the Board, for which, AICTE would be paid 7% of the project cost on yearly basis. Under this, the following activities would be carried out:

- a. Servicing SWAYAM Board through SWAYAM Secretariat & its PMU
- b. Monitoring the Schemes through Swayam Board.
- c. Advertisement and publicity using the social media for the courses.
- d. Setting up 10,000 Local Chapters consisting of the faculty in the user institutions – training and equipping them so that they will be able to use the SWAYAM courses as a part of their own teaching process.

4.3 In case pre-investment activities or pilot studies are being carried out, how much has been spent on these?

Not applicable.

4.4 In case the scheme involves payout of subsidy, the year wise and component wise expected outgo may be indicated.

Not Applicable.

4.5 In case the land is to be acquired, the details of cost of land and cost of rehabilitation/ resettlement, if any.

Not applicable.

4.4 In case committed liabilities are created, who will or has agreed to bear the legacy burden? In case assets are created, arrangements for their maintenance and upkeep?

Not applicable.

5. Scheme Financing

5.1 Indicate the sources of finance for the Scheme: budgetary support, extra-budgetary sources, external aid, state share, etc.

Funding to be provided under Govt., of India.

5.2 If external sources are intended, the sponsoring agency may indicate, as also whether such funds have been tied up?

Not Applicable.

5.3 Indicate the component of the costs that will be shared by the State Governments, local bodies, user beneficiaries or private parties?

Not Applicable.

6. Approvals and Clearances:

Requirement of mandatory approvals and clearances from various local, state and national bodies and their availability may be indicated in a tabular form (land acquisition, environment, forestry, wildlife etc.)

No clearances and approvals are required.

7. Human Resources

7.1 Indicate the administrative structure for implementing the Scheme. Usually creation of new structures, entities etc. should be avoided.

SWAYAM Board under the Chairmanship, Secretary, HE, MHRD, and other Members as indicated in the MOOC Guidelines 2017, shall administer/oversee the SWAYAM and the SWAYAM Prabha platforms, it would further be responsible for laying down the policy regarding the technical aspects of both SWAYAM and the SWAYAM Prabha including quality of content and its translation into regional languages etc.

The SWAYAM programme shall be implemented & monitored by **Academic Advisory Board (AAB)** consisting of academicians for assisting the NC to consider and take decisions on every MOOC proposal and **Subject Matter Expert Groups (SMEGs)** for each subject consisting of academicians for evaluating the Proposals for Online Courses and make recommendations for its acceptance, improvement or rejection.

7.2 Manpower requirement, if any. In case posts, permanent or temporary, are intended to be created, a separate proposal may be sent on file to Pers. Division of Department of Expenditure (such proposals may be sent only after the main proposal is recommended by the appraisal body).

No permanent or temporary posts shall be created during the two & half years.

7.3 In case outsourcing of services or hiring of consultants is intended, brief details of the same may be provided.

MHRD has assigned development of SWAYAM Platform to AICTE and it or the agency developing the SWAYAM platform shall maintain it for a period of five years after Go Live date. It is to certify that relevant GFR provisions have been followed while engaging any external agency/ consultant.

8. Monitoring and Evaluation.

8.1 Please indicate the monitoring framework for the Scheme and the arrangements for statutory and social audit (if any).

The SWAYAM Board would have the (i) Overall responsibility of SWAYAM Scheme, including monitoring, quality, policy etc., shall be the responsibility of SWAYAM Board, (ii) Monitoring of content and course delivery shall be the responsibility of SWAYAM Secretariat (iii) Monitoring of SWAYAM platform & Maintenance and (iv) Monitoring of Cloud servers, bandwidth & its maintenance.

8.2 Please indicate the arrangement for 3rd party/independent evaluation? Please note that evaluation is necessary for extension of scheme from one period to another.

3rd party evaluation shall be undertaken in April 2020.

9. Comments of the Financial Advisor, NITI Aayog, Department of Expenditure and other Ministries/Departments may be summarized in tabular form along with how they are being internalized and used to improve this proposal.

(Comments/Concurrence of FA would be incorporated)

10. Approval Sought:

Approval of SFC is sought for incurring a total Expenditure of Rs.489.32 Crores (Rupees Four Hundred Eighty Nine Crores and Thirty Two Lakhs only) for continuation of the SWAYAM scheme as contained in Para 2(b) above. All disbursements and monitoring shall be done through EAT modules of PFMS.


(R Subrahmanyam)

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Observations of IFD, MHRD

Based on IFD observations, the SFC note has been modified incorporating the suggestions made therein.

Sl. No.	Observations of IFD	Response of Bureau
1.	According to the Item No. 1.7 of the prescribed proforma for SFC Memo, main findings of the Evaluation Report are required to be furnished. However, the required information has not been furnished.	The final evaluation report has been received which is enclosed.
2.	At the time of initial approval of the SWAYAM Scheme in December, 2015, the rate approved for a new Course was @Rs.11.25 lakh per Course (p.1/c). However, against Item No.2(b) of the draft SFC Memo, proposed rate for development of a new Course is 16.84 lakh per Course thus proposing an increase of about 50%. This steep increase in the rate for MOOCs Development needs to be justified.	The enhancement of the cost of producing a course has emerged after a detailed interaction of HRM with all the Course Coordinators in Vigyan Bhawan held on 02.3.2017. In this meeting, the quality parameters have been clearly defined to include pre-production, production and post-production activities. An amount had to be also provided for using multi-media and other techniques. The cost that has been arrived after extensive consultation is based on the actual experience and the expectation of the Ministry on improving the quality of content. The financial for development, delivery and Management of MOOCs is part of SWAYAM SFC memorandum.
3.	At the time of initial approval of the SWAYAM Scheme in December, 2015, Rs. 50.00 crore had been estimated (p.11/c for creation of IT Platform. Against that 22 crore has already been released. However, against Item No.2 (b) of the draft SFC Memo, again Rs. 50 crore has been proposed for the IT Platform. Enough justification needs to be given for steep increase in cost against this component.	3 & 4 - The amount provided for cloud storage is based on the tender that has been concluded and therefore, the requirement of funds is based on actual numbers and not projections. Since bulk of SWAYAM content is in the shape of video, the Content Delivery Networks (CDNs) had to be separately constructed. Therefore, the cost of cloud infrastructure is not only as per what has been projected in the SFC note, but is also required in order to ensure that the content is delivered in an efficient manner to the learner.

4.	Similarly, while provision (p.11/c) was for Rs. 50 crore as cost for hosting the content on NIC Cloud storage and CDN charges to NIC at the time of initial approval of the SWAYAM Scheme in December, 2015, now provision has been steeply enhanced to Rs. 90 crore for Cloud infrastructure, call centre and CDNs as indicated in Item No. 2(b) of the draft SFC Memo.	-do-
5.	According to Item No. 4.1 of the draft SFC Memo, both year-wise and component-wise cost estimates are to be given with segregation into non-recurring and recurring expenses. However, segregated information has not been given.	This has been provided in para 4.1 of the revised SFC note.
6.	As the students will be able to earn credits on successful completion of the SWAYAM MOOCs, projection on corresponding reduction in the staff strength in the institutes and savings in expenditure may also be incorporated in the draft SFC Memo.	We are not contemplating any reduction of staff strength. Already more than 40% of the teacher posts in Universities and other technical institutions are vacant. The SWAYAM will provide an option for the students to take courses which are offered by better institutions and thereby improve their academic credentials.
7.	There does not seem to be any explicit recommendation to extend the scheme, through many modifications are suggested as per the evaluation report submitted by the NASSCOM for improvement of the scheme.	The final evaluation report has been received which is enclosed and the scheme has been recommended for continuation.

3.3 RECOMMENDATIONS

Based on the evaluation, an exhaustive recommendation is placed under a separate chapter. The gist of the recommendations are as hereunder:

1. Post analysis and evaluation of the concerned 146 projects, 45 projects are proposed for continuation in consideration of the recommendations articulated in the 'Way Forward' section in the projects concerned. The recommendations made are in consideration of the relevance of the projects concerned in the context of the requirements of the present and future skilling imperative in this era of digital disruption.
2. It is recommended that NMEICT, SWAYAM & E-Shodh Sindhu continue in consideration of its significance w.r.t. the anticipated impact in the higher education ecosystem system, with the modifications and recommendations articulated in the following chapters on the same.

Out of the 43 NMEICT projects suggested for continuation, a few are mentioned below addressing the three key themes regarding 'Connectivity', 'Educational Technology' & 'E-content and Course ware'. Enhancements and modifications as recommended with reference to these projects concerned are detailed in this report. Some of these projects are as follows:

- Connectivity: SWAYAM Prabha (DTH Channels) (pg.322); Connectivity- as wired or wireless (Wi-Fi) as applicable (pg.318), to universities and colleges with regular enhancements to the infrastructure. NKN (National Knowledge Network) (pg.318 &pg.77) should be part of the whole theme.
- Educational Technology: e-Yantra,(pg. 313); Virtual Labs(pg. 316); Robotics (pg. 313,pg.42); National Digital Library(pg.316);Open Source Software in Science and Engineering Education(FOSSEE) (pg.318) including software simulation; Bulk Storage (BAADAL) (pg.320); A-View (pg.323).
- E-Content & courseware: NPTEL (pg.321); e-Kalpa (pg.317); Development of suitable pedagogical methods for various classes, intellectual calibers and research in e-Learning (pg.314);Talk-to-a-Teacher (pg.314); E-content and courseware development projects. (pg.328); these projects should form a part of the SWAYAM framework in consideration of the detailed recommendations enunciated.

3. Formation of a National Educational Technology Foundation (NETF). This key body should contain an amalgam of educational as well as technological administrators. The evaluation study recommends that NETF need not be entirely dependent on the Government. In future phases of the programme, the day-to-day workings of NMEICT can be more autonomous, under the aegis of NETF with MHRD continuing to focus on policy, approval mechanism, funding and evaluation.
4. The National Educational Technology Foundation is to comprise of the Project Screening Committee (PSC) and a Project Monitoring Unit (PMU). Together, these two units will form the nucleus of the system. The Project Screening Committee will play a particularly important part in screening proposals of a similar nature, ensuring that they are clubbed together seamlessly and do not operate independent of one another. It should be permissible for the NETF to raise funds for its projects not just from the Government but from external sources as well. Depending on the type of projects being considered, the composition of the respective PSCs may vary.
5. The evaluation has found that for many turnkey projects, the system is functional but not operational, particularly on a large scale. It is, therefore, recommended that the monetization and operationalization of such ventures be taken out of the purview of the respective institutes. Here, a Special Purpose Vehicle model (SPV) may be introduced as a public private partnership model, with the Government owning up to 49% shares and private players having minimum of 51% shares. The SPV may have constituent groups: 1. Tech Group, 2. Education Group, and 3. e-Commerce Group.
6. With regard to initiatives such as SWAYAM, it is envisaged that in the future, this may serve as a comprehensive, indigenous aggregator that houses the Cloud-based solutions from multiple agencies; in this scenario, there may be private and public agency collaboration on a SPV basis as indicated in point 3 above. It may thus be possible to deploy SWAYAM to the end-user (learner), on a model where some of the content/courses are free, while others are subscription-based. SWAYAM should offer MOOCs based content with a substantial increase in the number of courses, across geographies, as against the existing 600 courses.
7. The need of the hour is for programmes that are high in quality and also big on scale. Across other projects in NMEICT, it is recommended that in the future MHRD may wish to explore working on a PPP model as indicated in point 3 above, such that while the outreach is on a large scale, there will

also be a commercial aspect to it. The aim here is to create a viable ecosystem, with a focus on both quality and scale. It is believed that an increasing proportion of private sector participation and industry association will help to achieve the required quality and scalability.

8. The evaluation also covered initiatives relating to workshops and outreach. It is felt that in the subsequent phase of NMEICT, workshops should be conducted in two stages – generic and specific. Generic workshops during the inception of the project will serve to raise awareness across the user groups, whereas specific workshops provide clarity on how to operationalize the offerings of the project.
9. As NMEICT incorporates course-ware of classes 9-12, the project may in future address the connectivity requirement of all the Higher Secondary Schools/Inter Colleges in the country. This could be done by expanding and complementing the existing 'Connecting Schools' initiative of Department of School Education of the MHRD as well as the distribution of devices by various State Governments. This will pave the way for a COUNTRY WIDE CLASSROOM on the strength of content and connectivity.
10. Each project needs to have a Co-PI to ensure continuity of knowledge transfer.
11. Project status and fund utilization needs to be managed through a composite portal (an empowered sakshat.in portal) which will perform as a project monitoring system as well as project status indicator.
12. In line of SWAYAM Prabha, aimed at beaming NMEICT content through DTH Channels, the un-utilised potential of several thousand cinema theaters spread across the Country could be tapped. NMEICT content be screened between 7am and 11am (or school timings of the concerned geography) on Sundays & other school holidays, in these cinema halls. Mass viewing of classes on giant screens by high school and higher secondary schools (Classes 9-12) students, can have a big impact on Secondary School education under the aegis of RMSA (Rashtriya Madhyamik Shiksha Abhiyan). With the government's aim make these channels available from 4 hours to 6 hours each day, it is recommend that 50% of the content be MOOCs based while the rest be produced afresh.
13. Synergize activities under Digital India, Skill India, Start-up India, Make in India, to facilitate higher off-take of NMEICT. Establish digital campuses which may provide free Wi-Fi and integrate all institutional processes and activities through an ERP.

14. Globally, the mode of education is increasingly focused on blended media for teaching -learning processes, using technology as an enabler and a platform, which includes experiential learning, case studies, used cases and immersive AVR. Self instructional e-learning practices which is also instructor led, on a collaborative learning platform can address future skills like Artificial Intelligence (AI) and Virtual Reality (VR), Machine Learning (ML), IOT, (Internet of Things), 3D Printing, Big Data Analytics, Social Media, RPA (Robotic Process Automation) is essential as it will change the way we learn, work and live. Going forward, there is strong need for the above stated facets in online education in India to enable our students to stay ahead of the curve. This would mean a reconfiguration of the major education platforms currently in vogue under the NMEICT programme. This is because Although the underlying technical platforms support AI, AVR, and ML etc., they are currently not configured to launch training using these advanced media. The evaluation shows that it is important for major initiatives in India to abreast international technological advances and best practices, and they are geared up to cope with 'Digital Disruption' already knocking on our doors. A framework that facilitates an expeditious process, from screening to funding of project proposals, will greatly help in this regard.
15. In today's world of relentless change, the projects undertaken under MHRD must address a new paradigm which enables an Indian ecosystem where it is not just the most qualified of our students/people who will survive, nor the most skilled, it is those who are the most adaptable to change. To keep up with the digital transformation, learning has to escape the gates of formal education and address the requirement of lifelong learning to be gainfully employed as the pace of change of technology is relentless, impacting all educational and employment related issues.
16. It is no longer restricted to teaching in a brick and mortar environment wherein India is still pursuing degrees and certificates entrenched in 20th-century systems but the requirement is for flexibility in existing and new models of teaching-learning. College graduates acquire a bachelor's degree that used to provide enough basic training to last a career today have an expected shelf life of only five years.
17. It is recommended that we nurture the demands of a learning environment in which knowledge and skills can constantly evolve through continuous learning. Qualifications are just an entry point in this new paradigm. Staying "up to speed" is the norm where knowledge is seen as fluid and evolving. To help navigate this unavoidable skilling and re-skilling process, it is recommended that MHRD's next phase of NMEICT take deep

cognizance of these requirements by restructuring the educational system in the country via digital classrooms and virtual universities.

18. In order to encourage students to make use of facilities provided under the NMEICT, it could be considered to provide assistance (partial or substantial) to students to acquire hand held devices. They can be linked to promote local production of such devices as an usher to Make-In-India programme. The cost of such devices can be brought down by providing storage space on the cloud and it would also prove to be cost-effective.
19. Limitations in connectivity can be addressed by setting up computer labs with partial or full financial assistance by the Government of India.
20. Access should be made feasible with NKN and possibilities for PPP model in Wi-Fi and Network be explored.
21. Projects like e-Yantra, FOSSEE, NDL needs to be extended upgrading them with the latest technology requirements and support coverage of a wider geography.

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