**PART A**

**Proposal**

1. **Investigators and project title**

1.1 Title of the project

Development of a Massive Open Online Course on Intellectual Disability Care (IDC-MOOC)

1.2 Name and affiliation of the principal investigator

Dr. Shijith Kumar C, Library & Information Officer, All India Institute of Speech and Hearing

1.3 Name and affiliation of the co-investigator(s)

a) Mr. Nanjunda Swamy, M., Sr. Library & Information Assistant, All India Institute of Speech and Hearing

b) Ms. Ramanakumari, P.V., Special Educator, All India Institute of Speech and Hearing

1.4 Collaborating institution

Nil

1.5 Total grants requested

Rs. 4,10,000/-

1.6 Duration of the project

One Year

1.7 Details of the last project grants received from AIISH Research Funds

Title: Design and Development of E-Learning Platform and Faculty Profile System (ARF Project Number: SH/CDN/ARF-Elect-3/2018-19 dated 09.10.18)

1.7.1 Utilization/use of the outcome this study

Development of Institutional Learning Management System for AIISH

1.8 How did you use / apply the outcome of the previous project from ARF?

An Institutional Learning Management System (ILMS) has been developed. Upon completion of the review, the system will be used at the Institute

**2.0 Abstract**

**2.1 Statement of the problem:** Massive Open Online Course or in short 'MOOC' is a course of study made available over the internet, usually free of cost, to many students. Renowned higher education institutions, commercial and non-profit organizations worldwide offer MOOCs in various disciplines. Intellectually disabled children constitute a significant clinical client population of the All India Institute of Speech and Hearing. The proposed project aims to develop a foundation-level course on caring for children with intellectual disability in MOOC format for the caregivers in a cost-effective manner using an open-source software framework and the existing I.T. infrastructure of the Institute.

**2.2 Justification for the study:** Today, MOOC is considered as an innovative and beneficial alternative for addressing educational needs in distant mode. The MOOC's learning flexibility perfectly fits caregivers who hardly have spare time. From a preliminary search on international and Indian MOOC platforms for courses related to mental health and related problems, it is found that specific courses for caregivers of children with intellectual disabilities are significantly less even on International MOOC platforms, and none are available on Indian platforms.

**2.3 Methods**: The study methods include a baseline analysis of the nature of educational requirements of the caregivers, creation of syllabus/course outline, deciding the content type and organization, content development, design and development of the course platform using moodle, deployment, and hosting, pilot study and final system development.

**2.4 Utilization**: The developed solution will be used for conducting a massive online course on disability at the Institute for the caregivers of intellectually disabled children across the country and abroad.

**3.0 Details of the Present Study**

**3.1 Introduction**

MOOC, which stands for the Massive Open Online Course, is a beneficial outcome of the ICT application in distance learning. Dave Cormier, University of Prince Edward Island, used the term 'MOOC' for the first time in 2008 to refer to an online course titled "Connectivism and Connective Knowledge," initiated at the University of Manitoba, Australia by George Siemens and Stephen Downes (Fasimpaur, 2013). The MOOC became popular and widely accepted as a disruptive technology with the success of a course titled 'Artificial Intelligence' at Stanford University by Sebastian Thrun in 2011. An overwhelming 1,60,000 students from 190 countries enrolled for the course, and 23,000 completed it (McGill Association of University Teachers, n.d.). Today, Higher Education Institutions (HEI) worldwide are offering MOOCs in various disciplines.

**3.2 Meaning and Definition**

The term 'Massive' of MOOCs represents the unlimited no. of enrolment to the course. While Stanford University's MOOC on Artificial Intelligence attracted lakhs of participants, there are MOOCs with a hundred and so participants. In other words, there is no hard and fast rule as to how many enrolments should be there to qualify an online course as MOOC. The term 'Open' typically means that the course is accessible free of cost to anyone irrespective of academic qualification and age. However, some MOOC platforms charge a fee from the participants, especially when they need a course certificate or earn credit as part of their study. It also refers to the freely available course content. The term 'Online' is unambiguous and unvarying to everyone and refers to the format of the course. However, it is worth noticing that some MOOCs have face-to-face components also. The 'Course' in 'MOOC'means a plan of study about a subject.

There are two variant forms of MOOC: cMOOC and xMOOC. In cMOOCs, the participant learners are the center of the learning process, and the learning process takes place in an environment of distributed and networked learning. The first MOOC, Connectivism and Connective Knowledge, was developed as cMOOC. xMOOC stands for **eXtended** MOOC and is an online version of the traditional University courses (Bradshaw et al., 2017).

The Oxford Advanced Learner's Dictionary( Oxford University Press, n.d.) defined MOOC as a course of study that is made available over the internet, usually without charge, to a very large number of people. The Cambridge Dictionary (Cambridge University Press, n.d.) defined it as a [course](https://dictionary.cambridge.org/dictionary/english/course) of [study](https://dictionary.cambridge.org/dictionary/english/study) that is made [available](https://dictionary.cambridge.org/dictionary/english/available) over the [internet](https://dictionary.cambridge.org/dictionary/english/internet) and that can be [followed](https://dictionary.cambridge.org/dictionary/english/follow) by a [large](https://dictionary.cambridge.org/dictionary/english/large)   of [people](https://dictionary.cambridge.org/dictionary/english/people).

**3.3 Major MOOC Initiatives**

As already mentioned, renowned HEIs, especially universities in different parts of the world, offer MOOCs on their official web platforms. In addition, there are commercial and non-profit MOOC providers. The major commercial MOOC players are Coursera, FutureLearn, Udacity, Udemy, etc. The non-commercial ones are Alison, edX, Edraak, and Iversity. OpenWHO is a MOOC platform offering health science-related courses launched by the World Health Organization. Many national governments also established MOOCs for the educational requirements of their citizen.

Being the world's youngest nation in terms of the number of working-age citizens, India is always in the front for taking advantage of all the latest technologies to educate youth. MOOCs provide vast opportunities for the Indian generations for professional development and education.The global MOOC platforms like Coursera hosts many courses offered by Indian academics and HEIs. The second-largest enrolment on Coursera is from India, following the USA (Ghosh, 2021). In addition, several MOOCs are operating from the country. The government of India is actively involvedin and supporting the MOOC initiativesin the country. The prominent MOOCs running from the country include the Study Webs of Active-learning for Young Aspiring Minds (SWAYAM), the National Programme on Technology Enhanced Learning (NPTEL), MooKIT, IITBombayX , IIMBx, and agMOOCs.

**3.4 The Present Study**

The All-India Institute of Speech and Hearing is a premier organization on disability related to speech and hearing. The Institute conducts long-term educational programs, carries out clinical and applied research, provides patient care, and offers public education on various facets of communication disorders.

Intellectual disability and communication disorders typically occur together, and the intellectually disabled children constitute a major clinical client population of the Institute. Depending on the severity of their illness, children with mental retardation are dependent on their caregivers. In India, amore significant part of people with intellectual disabilities has generally been cared forby their family members(Thiyam& Vishal, 2008). The Institute carries out several activities and programs to create public awareness and support for the caregivers of persons suffering from communication disorders and related ailments,including intellectual disability. These includesensitization programs, workshops, seminars, radio and television programs, social media interactions, and publishing and distributing self-help educational materials and pamphlets. In addition, the Department of Special Education of the Institute has been carrying out many impactful initiatives, such as the Parent Empowerment Program (PEP) for the caregivers of disabled children attending the Institute pre-school.

Nevertheless, it is felt that a few hours ofawareness and empowerment programs are inadequate for meeting the information requirements of the caregivers. They need instruction and guidance in a more structured way in the form of short-term courses to provide quality care for disabled children. The AIISH offered a short-term course for the mothers of the intellectual disabled children titled *Certificate Course for Caregivers of Children with Disabilities* (C4D2) during 2008-2016. The program had the approval of the Rehabilitation Council of India (RCI), New Delhi. However, the coursewas discontinued in 2017 due to various reasons. Similarly, organizations like the National Institute of Mental Health Rehabilitation (NIMHR), Madhya Pradesh, and the National Institute for Empowerment of Persons with Multiple Disabilities (NIEPMD) offered RCI approved Certificate Course in Care Giving (CCCG).The National Trust, Department of Empowerment of Persons with Disabilities, Ministry of Social Justice and Empowerment, Govt. of India, under its Sahyogi Caregiver training scheme, has been offering Care Giving Course (Basic) and Care Giving Course (Advanced).

However, attending such offline programs is highly inconvenient for a typical caregiver who provides almost round-the-clock attention to the child. In other words, they cannot take time out from their direct care commitments to address the training needs. The present project proposes the design and development of a Massive Open Online Course on Intellectual Disability Care.

**3.5Objectives** The project aims to develop a foundation-level course on Caring for Children with Intellectual Disability in MOOC format for the caregivers, including parents. The specific objectives are:

* To reach out and address the information needs of caregivers of children with intellectual disabilities in India irrespective of their educational qualification, age, and geographical location.
* To impart life-long qualitative and cost-effective learning experience and skills among the caregivers
* To provide a platform for the caregivers for sharing their experiences and perspectives on caring for children with intellectual disabilities
* To serve as a pilot study for developing a series of MOOCs on prevention and management of various communication disorders

**3.6 Justification**

Equipping the caregivers with the skills and resources on disability management is crucial for ensuring the quality of life of children suffering from mental disabilities.Whereas the educational opportunity for the caregivers in our country is minimal, access to quality information on care is challenging. Identifying valuable and relevant information from scattered and varied web sources requires significant time and effort. As already mentioned, MOOC facilitates an innovative and cost-effective alternative for addressing educational needs in distant mode. The potential of MOOCs in providing caring instructions for people in the area of mental disability needs has already been recognized (King, 2019). The MOOCs' learning flexibility perfectly fits caregivers who hardly have 'spare time'. We conducted a preliminary search on international and Indian MOOC platforms for the courses related to mental health and related problems. It is found that specific courses for caregivers of children with intellectual disabilities are significantly less even on International MOOC platforms, and none are available on Indian platforms.

**3.7 Related Works**

George Siemens and Stephen Downes developed the first known MOOC, *Connecivism and Connective Knowledge,* at the University of Manitoba, Canada. The course had 25 students as direct attendees. In addition, 2,300 students enrolled for it online free of charge. Online synchronous meetings, blog posts, online discussions on Moodle platform, etc., were held as a part of the course (Downes, 2008). Buhl, Andreasen, & Mondrup (2015) discussed their plan to develop a Danish-based MOOC for professional caregivers in Indonesia on the edX platform. The '*Understanding dementia*' is a MOOC developed by the Wicking Dementia Research and Education Centre, University of Tasmania, Australia. Based on a study among its participants, Goldberg et al. (2015) found no relationship between the level of education and successful completion of a MOOC. Robertshaw and Cross (2016) shared their experience running a MOOC on dementia titled 'Bridging the digital divide,' which attracted more than 3,000 students. Unlike many other MOOCs, the platform claimed a high retention rate of 35%. The study established the effectiveness of MOOCs in improving the understanding of real-world healthcare and social care issues. Swinnerton et al. (2017) reported the design and development of an anatomy MOOC at the School of Medicine and Digital Learning Team, the University of Leeds, U.K. Alongside the internal anatomy students of the host University, the MOOC targeted a range of external learners. The three-week course delivered on the FutureLearn platform consisted of topic introduction, core and advanced lectures, and discussion each week. Al-Khanjari and Al-Kindi (2018) presented a new e-learning model at the Sultan Qaboos University, OMAN,by developing a MOOC in integration with the Institutional Learning Management System on Moodle software. The objective of the MOOC was to support the blended learning activities of the University. Poole (2019) reported the development of a MOOC for the caregivers of dementia at Newcastle University, U.K. The course covered every aspect of dementia needed for the caregivers and health professionals in the field. The dementia-related information in the form of vidoes, articles etc. were shared among the participants, and they were provided with a platform for discussion. In an end-of-the-course survey, the majority of the course participants revealed that they quired new skills and knowledge through the dementia MOOC. To improve the informed consent of the patients preparing to undergo obesity surgery (bariatric surgery), the Toulouse University, France, developed a MOOC. The course participants were provided with educational materials and preoperative educational sessions on the bariatric surgery. A survey conducted among the participants who completed the 5-week course revealed that the level of knowledge and soft silks skill (Potter et al, 2020).

**3.8 Target Audience**

The target audience of the study are the following:

* Caregivers of the children with intellectual disabilities who are currently availing clinical services at AIISH.
* Care givers across the country who wish to access quality information and awareness on intellectual disability management.
* General public interested in enhancing basic level knowledge of intellectual disability management
* Healthcare personnel and professionals

**3.9 Materials and Methods**

The present study intends to develop a 4-week MOOC to address the educational requirements of the caregivers of children with intellectual disabilities. The study materials and methods are described below.

1. **Baseline analysis**

A baseline analysis of the educational requirements of the caregivers of children with intellectual disabilities through a questionnaire survey among the identified stakeholders availing clinical and special education services at AIISH.

1. **Creation of Syllabus / Course Outline**

A syllabus for the course will be created and learning objectives listed based on the baseline analysis and by reviewing the syllabi of the following certificate courses related to the intellectual disabilities approved by the Rehabilitation Council of India.

* Certificate Course for Caregivers of Children with Disabilities (C4D2)
* Certificate Course in Care Giving (CCCG)
* Care Giving Course (*Basic*)
* Care Giving Course (*Advanced*)

1. **Course Organization and Structure**

The total duration of the course will be 16 hours, divided into four modules over four weeks. The content of each module will be organized as per the four-quadrant approach outlined in the Guidelines for Development and Implementation of MOOCs/ Guidelines for developing Online Courses for SWAYAM by the Ministry of Humar Resource Development, Govt. of India (Ministry of Human Resource Development, 2017). The following are the components of the course in the four-quadrant system.

1. e-Tutorial (Quadrant-I): Each module with start with an introductory video. Also, there will be additional video and audio tutorial/ demonstration, animation andsimulations related to the module content.
2. e-Content (Quadrant-II):The course will include self-instructional materials, books, case studies, web-based open educational resources (OER), etc., along with references for further reading and enrichment.
3. Discussion forum (Quadrant-III):This component serves as a platform for raising questions and clearing doubts from the course instructor(s).
4. Assessment (Quadrant-IV): Here, the participants will be assessed using multiple-choice, fill-in-the-blanks, matching, short answer, and long answer questions, quizzes, and assignments.
5. **Content Development**

The content for the course will be developed in the following ways:

* By referring to the related books and other materials
* From the self-study materials of the C4D2 course published by the Institute
* By remixing and reusing open-licensed content
* By creating new content using open-source digital content creation tools

The developed content will be uploaded and disseminated over the course platform under the Creative Commons CC BY-NC-SA license. Others will be permitted to use the content non-commercially, giving appropriate credit to the Institute and distributing the new content developed in similar terms.

1. **Design and Development of Course Platform**

The course platform will be developed using the Moodle open-source e-learning software which is available free of cost. Moodle is the world’s leading opne-source learning management software , updated at regula intervals. An online educational platform developed on Moodle facilitates the integration of additional instructional tools and functionalities like live videoconferencing system.

1. **Deployment and Hosting**

The existing I.T. infrastructure of the Institute as detailed below will be used for deploying the final system developed for conducting the MOOC, and the course will be hosted on our web server with the domain name [www.aiish.ac.in](http://www.aiish.ac.in)

i) Dell Power Edge Server Computer with

* Dell PowerEdge R940 Rack Server
* Operating System: Windows Server 2016 standard
* Processor : Intel(R)Xeon(R) Gold 6152 CPU @2.10GHz
* RAM: 64 G.B.
* System Type: 64 bit, x64-based processor
* Hard Disc: 12 T.B.

1. Ubuntu Linux version 18
2. Moodle version 3.11
3. BigBlueButton (BBB) open-source videoconferencing system on a dedicated

server set up through virtualization using HyperV

1. 255 Mbps one-to-one connectivity with 1Gbps backbone OFC link
2. **Pilot Study**

A pilot study of the course developed will be carried out with a few participants recruited from among the prospective beneficiaries who area availing the clinical and pre-school service at AIISH. Based on the feedback obtained from the pilot, specific changes will be made in the course and platform.

1. **Formal Launching of the Course**

With the approval of the competent authority, admission to the course will be formally announced. Advertising campaigns will be conducted through social media, print media, WhatsApp groups, telephone calls and e-mails to the prospective candidates.

* 1. **Plan for utilization/use of the results of the study**

The study's outcome will be the development of a Massive Open Online Course on Disability Care (IDC MOOC). The Institute will be able to host the course and enroll an unlimited number of participants from across the country and the world within a month of completion of the project. It will enhance the skills of caregivers and the quality of life of intellectually disabled children. Additionally, the IDC MOOC will increase the brand awareness of the Institute. It is adaptable to prepare a wider MOOC covering the entire domain of communication disorders, facilitating efficient and cost-effective reaching out of public education activities of the Institute.

**3.11 Timeframe of the Study**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.No** | **Task Name** | **1st Month** | **2nd Month** | **3rd Month** | **4th Month** | **5th Month** | **6th Month** | **7th Month** | **8th Month** | **9th Month** | **10th Month** | **11th Month** | **12th Month** |
| 1 | **Baseline Analysis** |  |  |  |  |  |  |  |  |  |  |  |  |
| Tool development |  |  |  |  |  |  |  |  |  |  |  |  |
| Selection of participants |  |  |  |  |  |  |  |  |  |  |  |  |
| Data collection & analysis |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | **Preparation of course syllabus** |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | **Content Development** |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | **Design & Development of Course Platform** |  |  |  |  |  |  |  |  |  |  |  |  |
| Software installation & customization |  |  |  |  |  |  |  |  |  |  |  |  |
| Selection & conf. of open-source tools |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | **Deployment & hosting** |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | **Pilot study** |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | **System finalization** |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | **Report writing** |  |  |  |  |  |  |  |  |  |  |  |  |

**3.11. Budget**

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| --- | --- | --- |
| **Sl. No.** | **Item** | **Expenditure** |
| **1** | Salary (Rs.30,000 p.m. x 12 months)  Designation: Research Officer (One Post)  Qualifications: 1. MCA/ B.E. (Computer Science) /M.Sc. (Computer Science)/ Diploma in Computer Science 2. Experience in customization of open-source tools  Justification for the Post: Research Officer with computer science background and experience in open-source software tools is required to customize the open source software to build the MOOC platform and create digital content. | Rs. 3.6 lakhs  (Rs.30,000 p.m. x 12 months) |
| **2.** | Software | Rs. 50,000 |
|  | Total | Rs.4.10 lakhs |

* 1. **Roles and Responsibilities**

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| --- | --- | --- | --- |
| **Sl.No.** | **Name** | **Role** | **Responsibilities** |
| 1 | Dr. Shijith Kumar C | Principal Investigator | * Overall coordination * Report writing * Setting up of course platform |
| 2 | Mr. Nanjunda Swami, M | Co-Investigator | * Setting up of open-source video   conferencing tool   * Network configuration and   setup |
| 3 | Ms. Ramana Kumari,  P.V. | Co-Investigator | * Course syllabus preparation * Course content creation * Survey |
| 4 | ---- | Research Officer | * Installation of software tools * System configuration &   customization   * Assistance in content creation * Software programming   wherever necessary |

* 1. **Conclusion**

The Massive Open Online Courses have been widely accepted as a cost-effective mechanism for addressing today's educational deficit. The proposed project on developing a MOOC on Intellectual Disability Care (IDC MOOC) based on Moodle LMS, is one of its first kind in the country. Hopefully, it will positively impact the lives of our intellectually-disabled children. Also, it will pave the way for developing more MOOCs related to communication disorders and allied areas catering to the educational support requirements of the people suffering from such ailments.

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