



## Medical Education Unit

No:SMVMCH/MEU/45/2021

Date: 30.09.2021

### Patrons

Thiru. M. Dhanasekaran  
Chairman & Managing Trustee

Thiru. S.V. Sugumaran  
Vice-Chairman

Dr. Narayanasamy Kesavan  
Secretary

### Ex-Officio

Dr. D.Rajagovindan  
Director

### Chairperson

Dr.R.N. Kagne  
Deputy Director/ Dean

### Advisors

Dr.K. Karthikeyan  
Dean (Academic)

Dr.G.Kalaiselvan  
Dean (Research)

### Coordinator

Dr.K.Soundariya

### Co-coordinator

Dr.G.K.Poomalar

### Members

Dr. S. Girija  
(DMS Medical)  
Dr.M.Jayasree  
(DMS Surgical)  
Dr. Shivayogappa. S. Teli  
Dr.M.Vimal  
Dr.G.Ramya  
Dr.K.Vinoth  
Dr.N. Suresh  
Dr.M.Rajalakshmi  
Dr.R.Udhayasankar

### Circular

The Medical Education Unit is pleased to announce the conduct of workshop on "E-content and E-course Development" for the faculty of SMVMCH. It will be a 2-day workshop, in which intensive hands-on training will be given for the different ICT tools that can be used for creating interactive e-content in teaching, learning & assessment. The program also includes sessions on Instructional design models that aid in E-course development.

**Topic:** E-Content & E-Course Development

**Nature of the Program:** Workshop with intensive hands-on training

**Date:** 25.10.2021 & 26.10.2021

**Venue:** Digital Lab

**Number of Participants:** 20

**TNMC Credit hours:** To be applied

#### Registration Details:

Free registration

Only 20 seats available (First-cum first serve basis)

Kindly register with Dr.N.Suresh, Coordinator, ICT team (Ph no: 9944401347) to book your slot.

E- Certificates will be provided

Kindly find attached the schedule of the 2-day workshop for your reference.

*K. Soundariya*  
**Coordinator, MEU**

#### Copy to:

The Director  
The Dean  
The Dean (Academic)  
The Dean (Research)  
Medical Superintendent  
All faculty  
File

**Chairperson, MEU**

*30.9.21*  
**Dr. KAGNE, R.N.**  
DEAN

SRI MANAKULA VINAYAGAR  
MEDICAL COLLEGE & HOSPITAL  
KALITHEERTHALKUPPAM,  
PUDUCHERRY-605107

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*[Signature]*  
DEAN  
SRI MANAKULA VINAYAGAR  
MEDICAL COLLEGE & HOSPITAL  
KALITHEERTHALKUPPAM,  
MADAGADIPET, PUDUCHERRY-605 107.

## Program Schedule

### Day 1

S.No	Session	Resource Faculty	Time
1	Overview of the Program - Role of ICT tools in Teaching, Learning and Assessment - Ground rules	Dr.G.Kalaiselvan, Dean Research Dr.K.Soundariya, Professor in Physiology Dr.G.Ramya, Associate Professor, Department of Pathology	09.00 – 09.30 AM
2	Multimedia Principles	Dr.N.Suresh, Associate Professor, Department of Anatomy	09.30 – 10.00 AM
3	Exploring Free software tools and Copyright free images	Dr.S.Mangani Managalavalli, Assistant Professor, Department of Physiology	10.00 – 10.30 AM
4	Hands on training on “Creating Interactive images using “Thing link”	Dr.S.Nitya, Associate Professor, Department of Pharmacology	10.30 – 11.30 AM*
5	Hands on training on “Creating Animations”	Dr.V.Deepika, Associate Professor, Department of Physiology	11.30 – 12.30 PM
6	Hands on training on “Creating Interactive PowerPoint Presentation”	Dr.N.Suresh, Associate Professor, Department of Anatomy	12.30 – 01.30 PM
<b>Lunch</b>			
7	Hands on training on “Creating You Tube Channel & Uploading contents”	Mr.Balakrishna Pai, Assistant Professor, Department of Biochemistry  Dr.Probin Joseph, Assistant Professor, Department of Orthopaedics	02.30 – 04.00 PM

\* Including Tea Break

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**Day 2**

S.No	Session	Resource Faculty	Time
1	Hands on training on "Interactive Small group teaching" with NearPod	Mrs.Senthamil Selvi, Assistant Professor, Department of Physiology	09.00 – 10.00 AM
2	Hands on Training on "Tools for Concept Mapping"	Dr.R.Udhayasankar, Assistant Professor, Department of Microbiology	10.00 – 11.00 AM*
3	Podcasting & Screen recording - Essentials	Dr.G.Ramya, Associate Professor, Department of Pathology  Dr.K.Soundariya, Professor of Physiology, Coordinator – MEU	11.00 – 11.30 AM
4	Hands on training on "Creating Interactive assessment using Quizziz"	Dr.R.Udhayasankar, Assistant Professor, Department of Microbiology  Dr.Sripal, Assistant Professor, Department of Ophthalmology	11.30 – 12.15PM
5	Instructional Design Models for E-Course Development	Dr.K.Soundariya, Professor of Physiology, Coordinator – MEU	12.15 – 01.00 PM
<b>Lunch</b>			
6	Hands on "Developing a Model E-Course Template"	Dr.V.Deepika, Associate Professor, Department of Physiology  Dr.K.Soundariya, Professor of Physiology, Coordinator – MEU	02.00 – 03.30 PM
7	Feedback & Closure		03.30 – 04.00 PM

\* Including Tea Break

**SMVMCH - MEU**

*The Coordinator, Medical Education Unit*

Phone: 0413 – 2643000 (Ext-2038), Fax: 0413 – 2643014, Mobile: 9786895193

E mail: [meu@smvmch.ac.in](mailto:meu@smvmch.ac.in) / [drsoundariya@gmail.com](mailto:drsoundariya@gmail.com)

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\* Including Tea Break

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<b>Lunch</b>			
6	Hands on "Developing a Model E-Course Template"	Dr.V.Deepika, Associate Professor, Department of Physiology  Dr.K.Soundariya, Professor of Physiology, Coordinator – MEU	02.00 – 03.30 PM
7	Feedback & Closure		03.30 – 04.00 PM

\* Including Tea Break

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**SMVMCH - MEU**

*The Coordinator, Medical Education Unit*

Phone: 0413 – 2643000 (Ext-2038), Fax: 0413 – 2643014, Mobile: 9786895193

E mail: [meu@smvmch.ac.in](mailto:meu@smvmch.ac.in)/ [drsoundariya@gmail.com](mailto:drsoundariya@gmail.com)

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# Tamilnadu Medical Council

#914, Poonamallee High Road, Arumbakkam, Chennai, India - 600 106.

<https://tamilnadumedicalcouncil.org>

## Continuing Medical Education Certificate

### Workshop on E-Content and E-Course Development

(State/Regional Level)

From **25 Oct, 2021** to **26 Oct, 2021** (2 Days)

To be held at

SMVMCH, Kalitheerthalkuppam, Madagadipet, Pondicherry, India-605107

Conducted by

**Sri Manakula Vinayagar Medical College & Hospital, Pondicherry**

This institute activity has been reviewed, accredited, and it has been awarded



\* One additional credit hours will be awarded to the speakers per day

Dr. R. Shanmugam  
REGISTRAR

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or Scan the QR Code

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MEDICAL COLLEGE & HOSPITAL  
KALITHEERTHALKUPPAM,  
MADAGADIPET, PONDICHERRY-605107

Awarded on  
**21 Oct, 2021**

**Workshop on E-Content & E-Course Development**

Date: 25.10.2021

Venue: Digital Lab

**List of Faculty attended the workshop**

S.no	Faculty Name	Designation	Department	Signature
1	Dr. A. Umamageswari	Professor and HOD	Radiology	<i>[Signature]</i>
2	Dr. R. Janarthanan	Assistant Professor	Forensic Medicine	<i>[Signature]</i>
3	Dr. Deepa Somanath	Assistant Professor	Anatomy	<i>[Signature]</i>
4	Mrs. R. Sudha	Tutor	Anatomy	<i>[Signature]</i>
5	Dr. M. Rajalakshmi.	Assistant Professor	Community Medicine	<i>[Signature]</i>
6	Mrs R. Rajarajeswari.	Assistant Professor	Biochemistry	<i>[Signature]</i>
7	Dr. K. Vinoth	Professor	Psychiatry	<i>[Signature]</i>
8	Dr. P. Vijayasankar	Senior Resident Dermatologist	Dermatology	<i>[Signature]</i>
9	Dr. R. Mariappan	Professor & Head	ENT	<i>[Signature]</i>
10	Dr. A. K. Badrinath	Professor	General Medicine	<i>[Signature]</i>
11	Dr. V. Sriram	Assistant Professor Associate	Pathology	<i>[Signature]</i>
12	Dr. T. Mangaiyarkarasi	Professor	Microbiology	<i>[Signature]</i>
13	Dr. T. Preethi	Assistant Professor	Paediatrics	<i>[Signature]</i>
14	Dr. T. Kanimozhi	Associate Professor	Paediatrics	<i>[Signature]</i>
15	Dr. K. Revathy	Assistant Professor	Paediatrics	<i>[Signature]</i>
16	Dr. M. Gayathri	Assistant Professor	OBG	<i>[Signature]</i>
17	Dr. S. Pravin	Assistant Professor	Community Medicine	<i>[Signature]</i>
18	Dr. S. Girija	Professor & HOD	General Medicine	<i>[Signature]</i>
19	Dr. Reena Mohan	Assistant Professor	Community Medicine	<i>[Signature]</i>
20	Dr. J. Hemilda Periyanyaki	Assistant Professor	General Surgery	<i>[Signature]</i>

21 Dr. N. A. PRIYADHARSHINI Associate Professor Anatomy

*[Signature]*  
D. O. J. [Signature]

22. Dr. JEWEL SETHAM

Asst. Prof Gen. Surgery

*[Signature]*

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MADAGADIPET, PUDUCHERRY-605 107.

List of Faculty attended the workshop

S.no	Faculty Name	Designation	Department	Signature
1	Dr. A. Umamageswari	Professor and HOD	Radiology	<i>Au</i>
2	Dr. R.Janarthanan	Assistant Professor	Forensic Medicine	
3	Dr. Deepa Somanath	Assistant Professor	Anatomy	<i>D. Somanath</i>
4	Mrs.R.Sudha	Tutor	Anatomy	<i>R.Sudha</i>
5	Dr.M.Rajalakshmi	Assistant Professor	Community Medicine	<i>M.Rajalakshmi</i>
6	Mrs.R.Rajarajeswari	Assistant Professor	Biochemistry	<i>R.Rajarajeswari</i>
7	Dr. K.Vinoth	Professor	Psychiatry	<i>K.Vinoth</i>
8	Dr.P.Vijayasankar	Assistant Professor	Dermatology	<i>P.Vijayasankar</i>
9	Dr. R.Mariappan	Professor & Head	ENT	<i>R.Mariappan</i>
10	Dr.V.Sriram	Associate Professor	Pathology	<i>V.Sriram</i>
11	Dr.T.Mangaiyarkarasi	Professor	Microbiology	<i>T.Mangaiyarkarasi</i>
12	Dr.T.Preethi	Assistant Professor	Paediatrics	<i>T.Preethi</i>
13	Dr.T.Kanimozhi	Associate Professor	Paediatrics	<i>T.Kanimozhi</i>
14	Dr.K. Revathy	Assistant Professor	Paediatrics	<i>K.Revathy</i>
15	Dr.M.Gayathri	Assistant Professor	OBG	<i>M.Gayathri</i>
16	Dr.S.Pravin	Assistant Professor	Community Medicine	<i>S.Pravin</i>
17	Dr.S.Girija	Professor & HOD	General Medicine	<i>S.Girija</i>
18	Dr.Reena Mohan	Assistant Professor	Community Medicine	<i>Reena Mohan</i>
19	Dr.J.Hemilda Periyanyaki	Assistant Professor	General Surgery	<i>J.Hemilda Periyanyaki</i>
20	Dr.N.A.Priyadharshini	Associate Professor	Anatomy	<i>N.A.Priyadharshini</i>
21	Dr.A. Arulselvan	Assistant Professor	General surgery	<i>A.Arulselvan</i>

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## Medical Education Unit

No:SMVMCH/MEU/ 60/2022

Date: 10.01.2022

### Patrons

Thiru. M. Dhanasekaran  
Chairman & Managing Trustee

Thiru. S.V. Sugumaran  
Vice-Chairman

Dr. Narayanasamy Kesavan  
Secretary

### Ex-Officio

Dr. D.Rajagovindan  
Director

### Chairperson

Dr.R.N. Kagne  
Deputy Director/ Dean

### Advisors

Dr.K. Karthikeyan  
Dean (Academic)

Dr.G.Kalaiselvan  
Dean (Research)

### Coordinator

Dr.K.Soundariya

### Co-coordinator

Dr.G.K.Poomalar

### Members

Dr. S. Girija  
(DMS Medical)  
Dr.M.Jayasree  
(DMS Surgical)  
Dr. Shivayogappa. S. Teli  
Dr.M.Vimal  
Dr.G.Ramya  
Dr.K.Vinoth  
Dr.N. Suresh  
Dr.M.Rajalakshmi  
Dr.R.Udhayasankar

### Circular

It is proposed to conduct a workshop on "Orientation to Learning Management System" by Medical Education Unit for the faculty of SMVMCH, for demonstrating the key functions and uploading of the contents in the LMS.

**Dates:** 18.01.2022 to 21.01.2022 (Batch wise)

**Time:** 10.00 AM – 01.00 PM

**Venue:** Digital lab

**TNMC Credit Hours:** Applied

The program schedule and the list of participants are attached with this circular. The enlisted participants (as nominated by their respective HODs) are requested to attend the program in their allotted slots without fail.

**Note:** The HODs are requested to relieve the participants and resource faculty of the program in the prescribed dates. The HODs can also send interested faculty (in addition to nominated faculty) to attend the workshop in their departmental slots.

*K. Soundariya*  
Coordinator, MEU

*[Signature]*  
Chairperson, MEU  
10/1/22

Copy to

1. The Director/Dean
2. The Dean (Academic)
3. The Dean Research
4. The Medical Superintendent
5. All HODs
6. Mr.Raja, EDP
7. File

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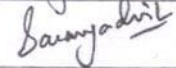
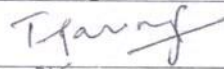

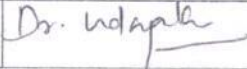
**Medical Education Unit**

**Workshop on "Learning Management System -1"**

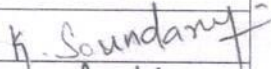
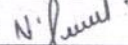
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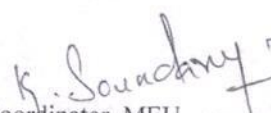
TIME: 10.00AM-1.00PM

**List of participants**

S.No	Name	Designation	Department	Signature
1.	Dr.Yuvaraj.V	Assistant Professor	General Surgery	
2.	Dr.Saranya Devi.L	Assistant Professor	Obstetrics & Gynaecology	
3.	Dr.Kanimozhi.T	Associate Professor	Paediatrics	
4.	Dr.Preethi.T	Assistant Professor	Paediatrics	
5.	Dr.Udayakumar.D	Senior Resident	Orthopaedics	

**List of Resource Faculty**

S.No	Name	Designation	Department	Signature
1.	Dr.K.Soundariya	Professor	Physiology	
2.	Dr.N.Suresh	Associate Professor	Anatomy	

  
Coordinator, MEU  
**Dr. K. SOUNDARIYA**  
MEU Coordinator,  
Sri Manakula Vinayagar Medical College and Hospital  
Kalitheerthalkuppam, Puducherry-605 107.

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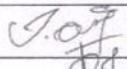

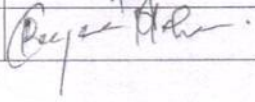
**Medical Education Unit**

Workshop on "Learning Management System -2"

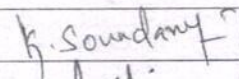
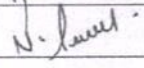
Date: 19.01.2022

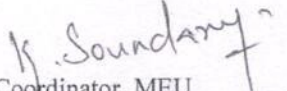
TIME: 10.00AM-1.00PM

**List of participants**

S.No	Name	Designation	Department	Signature
1.	Dr. Sathiyarayanan. J	Assistant Professor	General Medicine	
2.	Dr. R. Janarthanan	Assistant Professor	Forensic Medicine	
3.	Dr.Reena Mohan	Assistant Professor	Community Medicine	

**List of Resource Faculty**

S.No	Name	Designation	Department	Signature
1.	Dr.K.Soundariya	Professor	Physiology	
2.	Dr.N.Suresh	Associate Professor	Anatomy	

  
Coordinator, MEU  
**Dr. K.SOUNDARIYA**  
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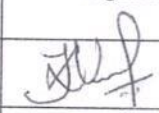

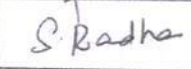
**Medical Education Unit**

**Workshop on "Learning Management System -3"**

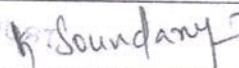
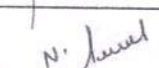
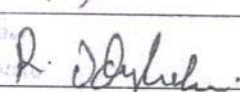
Date: 20.01.2022

TIME: 10.00AM-1.00PM

**List of participants**

S.No	Name	Designation	Department	Signature
1.	Dr. K. Vinoth ✓	Professor	Psychiatry	
2.	Dr. Nishanthi. A ✓	Associate Professor	Pharmacology	
3.	Dr. Dilip Chandar D	Associate Professor	Anaesthesiology	
4.	Dr. Jayalakshmi. G ✓	Senior Resident	Ophthalmology	
5.	Dr. Radha. S	Assistant Professor	Microbiology	
6.	Dr. Revathi. G ✓	Assistant Professor	Pathology	

**List of Resource Faculty**

S.No	Name	Designation	Department	Signature
1.	Dr. K. Soundariya	Professor	Physiology	
2.	Dr. N. Suresh	Associate Professor	Anatomy	
3.	Dr. Udhayasankar. R	Assistant Professor	Microbiology	

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 MADAGADIPET, PUDUCHERRY-605 107.

  
 Coordinator, MEU  
**Dr. K. SOUNDARIYA**  
 MEU Coordinator.

Sri Manakula Vinayagar Medical College & Hospital  
 Kalithoorthalkuppam, Puducherry-605 107.

### Medical Education Unit

The following list of participants attended "Workshop on Learning Management System - 4" held on 21.01.2022

S.No	Name	S.No	Name
1	Mr. Balakrishna Pai.R	5	Dr.Poonguzhalai.S
2	Dr.Antonious Maria Selvam	6	Mrs. Senthamilselvi.K.
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4	Dr.R.Geetha	8	Mrs. Sudha. R.
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# Effect of Self-Directed Learning Module and Assessment on Learning of National Health Programme by Medical Undergraduates – A Mixed Methods Evaluation

M Rajalakshmi, Kalaiselvan Ganapathy

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## Abstract

**Background:** Competency-based medical education (CBME) curriculum in India has introduced many new concepts like a foundation course, early clinical exposure, and self-directed learning (SDL). Sometimes SDL simply means self-study. Self-directed learning as defined by Knowles is a process in which individuals take the initiative with or without the help of others in diagnosing their learning needs, setting their own learning goals, identifying appropriate learning resources, and selecting appropriate learning strategies. SDL is seen as a prerequisite for life-long learners, especially medical graduates. We found poor uptake of SDL sessions in terms of learning and attendance by students. To develop and assess the effect of the SDL module in Community Medicine for Phase -3 MBBS students. **Materials and Methods:** The study design was a program development and evaluation design. The program development consists of free listing and Nominal Group Technique (NGT). The evaluation design consists of a formative assessment, an end-of-module assessment, and feedback from undergraduate students, postgraduates, and faculties. Data collection procedure: SDL module was developed, agreed and implemented among undergraduates of Phase – 3 MBBS students. **Results:** Free listing was conducted among undergraduate students who had completed the phase 3 MBBS examination and Nominal Group Technique was conducted among the faculties (n = 7) and Postgraduates of the Department of Community Medicine (n = 2) to explore the appropriate topics for SDL in Community Medicine. The topic with the highest ranking and which was finalized for preparation of the SDL module was “National Health Programme”. Three fourth 118 (75%) of the students scored  $\geq 50\%$  at the end of the module assessment. Manual content analysis for the feedback was categorized into three themes such as facilitating factors, challenges, and solutions. **Conclusions:** Effective implementation and assessment of SDL sessions are one of the new concepts in the CBME curriculum.

**Keywords:** Community medicine, feedback, module, nominal group technique, perception

## INTRODUCTION

Competency-based medical education (CBME) curriculum in India has introduced many new concepts like a foundation course, early clinical exposure, and self-directed learning. Sometimes SDL simply means self-study. Self-directed learning as defined by Knowles is a process in which individuals take the initiative with or without the help of others in diagnosing their learning needs, setting their own learning goals, identifying appropriate learning resources, and selecting appropriate learning strategies.<sup>[1]</sup>

Although there are several definitions and interpretations, the essence of SDL remains in its words, i.e., self (learner-oriented), directed (facilitated and monitored), and learning (applicable to lifelong learning).<sup>[2]</sup> Some of the examples currently

being used to cultivate skills of self-directed learning and reflection are problem-based learning, small group learning, self, and peer evaluation, self-study materials, library works, projects, and computer-assisted learning. Now we could see a movement from pedagogy to andragogy in this transformational learning model of SDL in medical education.<sup>[3]</sup>

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SDL adds variety to teaching-learning methods and provides an option for curriculum makers to choose this method in alignment with some learning objectives. The conduct of SDL is quite variable at different places.<sup>[2,4,5]</sup> In several instances, it is confused with self-learning or just asking students to read from books but remaining unobserved. Students and teachers have shown apprehension about the freedom of learning in countries where teacher-oriented learning has been there for a long time.

SDL is an active learning approach with the teacher acting as a facilitator of learning. A medical graduate, being a lifelong learner, should instill the habit of SDL. SDL has been receiving increasing attention since the implementation of competency-based medical education (CBME) by the Medical Council of India (MCI).<sup>[4,5]</sup> Even though dedicated time has been allotted to SDL in the CBME curriculum in each specialty, implementation of SDL is challenging and has become mandatory. Hence in the present study, we developed, implemented, and assessed module-based SDL sessions in Community Medicine for the current batch of students. The challenges faced in implementing the SDL module were also explored by qualitative technique.

## METHODS

The study was carried out among medical undergraduates of Phase - 3, part 1 MBBS, postgraduates, and faculties of the Community Medicine Department in a private medical college located at Puducherry Union Territory. The college admits 150 undergraduate medical students per academic year and is affiliated with Pondicherry University. National Health Programme (NHP) is a part of the medical undergraduate's curriculum and only the must-know components mentioned in the syllabus are taught during lectures.

It was a program development and evaluation design. The program development consists of qualitative techniques like free listing and Nominal Group Technique (NGT). The evaluation design consists of a formative assessment, an end-of-module assessment, and feedback from undergraduate students, postgraduates, and faculties. The module was delivered to 158 Phase - 3, part 1 students of the academic year 2018, over a period of 2 months from November 2021 to December 2021.

### The steps for the conduct of the SDL session are as follows:

Step 1: Selection of topic and development of module

Step 2: Actual conduct of the session

Step 3: End-of-module assessment

Step 4: Feedback

#### Step 1: Selection of topic and Development of module:

Free listing was conducted among undergraduate students who had completed the phase 3 MBBS examination to explore the difficult topics for SDL in Community Medicine. [Table 1]

A Nominal Group Technique (NGT) was conducted among the faculties (n = 7) and Postgraduates of the Department

of Community Medicine (n = 3) to explore the appropriate topics for SDL in Community Medicine. The technique was conducted by a trained Principal investigator in a place and time convenient for the participants using a semi-structured interview guide with a broad open-ended question. The question in the Nominal Group Technique was "List the appropriate topics for SDL in Community Medicine for Phase -3 MBBS students".

Firstly, every participant in the study was asked to give their suggested list of topics for the SDL session. Secondly, all the participants were asked to proceed to rank the topics according to priority as 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, and so on. Thirdly participants were encouraged to share and discuss the reasons for their choices. It helped to identify common ground and plurality of ideas and approaches by each participant. Fourthly, the rank for each topic received was totalled, and the topic with the highest (i.e., most difficult) total ranking was selected as the final decision for the development of the module. The topic with the highest ranking and which was finalized for preparation of the SDL module was "National Health Programme". Then participants were again asked to rank all the National Health Programmes according to priority. Finally, among all the National Health Programmes, the top four National Health Programmes with the highest total ranking were selected for the preparation of the module. The top four National Health Programmes were National AIDS Control Program (NACP), National Tuberculosis Elimination Program (NTEP), the Reproductive and Child Health (RCH) program, and National Leprosy Eradication Program (NLEP) were included in the module. All the interviews were audio recorded and the transcripts were prepared verbatim in English [Table 2]. The module was drafted by the first author by following the competencies given by NMC. The draft module was shared with the faculties of community medicine for review and was approved by the curriculum committee. The module consists of subtopics under each National Health Programme with inbuilt self-assessments like Multiple choice questions, short answer questions, fill-in-the-blanks, and case-based or problem-based questions.

#### Step 2: Actual conduct of the session:

- **First contact session:** Orientation on the process of SDL like division of students into small batches, fixing of learning goals and the milestone by the students, sharing of resources during the intersession period, implementation of the self-directed module, and assessment at the end of each day of the SDL session was briefed to the students. The role of the facilitator was to help students find the resources, and the fixing of venue and timetable adjustments was also briefed. A Whatsapp group for coordination with the students was formed.

- **Intersession period:** During the intersession period documents and websites related to National Health Programme (NACO, NTEP, NHM, NPCDCS) were shared through the Whatsapp group and SMVMCH Learning Management System to engage them in learning.

• **Second contact session:** Before the start of the second contact session, an interactive workshop was held for the facilitators (n = 10) using faculty guide on the implementation of the module and assessment. Through the second contact session, module-based SDL sessions were implemented in Phase - 3, part 1 MBBS students. Students were divided into five small batches. Each batch contains 30 students who were moderated by a faculty and postgraduate. The number of hours allotted for each NHP was six hours, total there were four NHPs and the total time allotted for all the NHPs was 24 hours. The content of each NHP in the SDL module includes important subtopics under each NHP followed by assessment in the form of multiple-choice questions, short answer questions, fill-in-the-blanks, and case-based or problem-based questions. Following the implementation of the module, debriefing was

also done by discussing answers to the assessment questions asked at the end of each NHP, and the modules were also marked by the facilitators with the areas to be improved and handed over to the students individually after the end of the module assessment.

**Step 3: Feedback:**

Feedback was collected from all the students and facilitators about the implementation of the SDL module. The online feedback was also obtained from the students who appeared in the final Pondicherry University summative examination.

**Step 4: End-of-module assessment:**

Students learning was assessed by,

- Written examination consisting of short answer questions and was evaluated with answer key by the principal investigator.
- Submission of all the completed modules.

**Ethical issues:** The present study was cleared by the Research Committee and the Institutional Ethics Committee (Human Studies) (Ref no: IEC No- EC/91/2021). Permission was also obtained from the Head of the Institution for implementing module-based SDL sessions. Students' marks were not displayed on the noticeboard and were communicated individually to students. Marks were stored separately in HOD's computer.

**Data analysis:** The following analysis was done in the study.

- The free listing data was entered and analyzed using the Visual Anthropac 1.0 software package and the salience value was calculated.
- Manual content analysis was done by the first author for feedback obtained from students, postgraduates, and faculties regarding the SDL session.
- For written assessment frequency was calculated and the Marks were categorized into less than 50%, 50 – 75%, and >75 percentage. The average of marks was also expressed in mean ± SD.

**Table 1: Perceived as difficult topics by students**

Item	Frequency (%)	Average Rank	Salience
Health programmes in India	100	1	1
Communication for health education	100	2.2	0.82
Health planning and management & Health care of the community	70	3	0.484
Medicine and social sciences	70	4	0.376
Preventive Medicine in OBS, Peds, and geriatrics	70	5.14	0.276
Communicable diseases	60	5.33	0.194
Environment and health	50	6	0.143
Concept of health and disease	30	5	0.129
International Health	30	6	0.086
Health information and basic medical statistics	30	7	0.043
Health planning and management	20	3.5	0.129
Epidemiology	20	5	0.086
Health care of the community	10	5	0.043
Demography and family planning	10	5	0.043

**Table 2: Consensus score by Nominal Group Technique**

Topics	Score by each respondent				Total
	1	2	3	4	
Health programs in India	5	4	-	3	12
Environment & health	-	-	4	5	9
MDG to SDG	4	-	-	4	8
Surface infections	-	3	5	-	8
Preventive obstetrics, pediatrics	2	-	3	-	5
Health planning	-	5	-	-	5
Sociology	-	1	1	2	4
Health care of the community	3	-	-	-	3
Concept of health and disease	1	-	-	1	2
Rickettsial infection	-	2	-	-	2
Demography	-	-	2	-	2

**RESULTS**

**Program development**

Out of 158 students, 86 (54.4%) were females and 72 (45.6%) were males.

As shown in Table 1, an Exhaustive list of responses that were obtained during the free listing activity was fed into Visual Anthropac software, and 14 salient items were obtained with a Smith salient score. The topic with the highest Smith salient score was National Health Programmes in India.

The Nominal Group Technique was conducted among facilitators to obtain consensus for the selection of topics for the development of the SDL module. The topic which was obtained the highest consensus was National Health Programme in India. [Table 2]

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**Program evaluation**

*End of module assessment*

At the end of all four modules, there was an end-of-module assessment for 50 marks. Out of 50 marks, 30 marks were given to written assessment consisting of structured short answer questions and 20 marks (five marks for each module) for the assignment submission i.e., submission of four completed modules. The average mark at the end of the module assessment was 64 ± 19 (standard deviation). Out of 158 students 25.4%, 41%, and 33.6% of students scored marks <50%, 50-75%, and >75% respectively. [Table 3]

*Feedback from students, postgraduates, and faculties*

In Table 4, content analysis of students, postgraduates, and faculties feedback was categorized into three themes, the facilitating factors, challenges, and solutions. The categories which were emerged under each theme were the SDL session, session frequency, module development, and assessment. The students felt that the module stressed difficult topics in the curriculum, the simple and easily understandable module, and discussion with peers during activities and assessment was the facilitating factors regarding the SDL session and facilitators felt that students learned new terminologies in NHP. Fewer case scenarios and less space for writing in the module were the few challenges in the module. This was the Kirkpatrick model of level 1, which assesses the immediate reactions of the stakeholders.

*Feedback on the performance of questions on NHP in the University Exam (Kirkpatrick level 4)*

Feedback was also collected from the students after the completion of the university theory and practical examination regarding the SDL module on the National Health Programme. Although the program was implemented on 158 students, feedback after the University examination could be obtained only from 50 students. The module helped to recollect relevant points and many abbreviations in NHP to perform better in university theory and practical examination was the feedback received from the students. This was the Kirkpatrick model of level 4, which analyzes the final results. A male student had given feedback that.

*I was able to write two NHPs such as NPCDCS and RMNCH+A well only because of the SDL module, which helped me in last-minute revision and remembering the sub-topics under each program. [Table 5]*

**Table 3: End of module assessment scores of all modules of SDL**

Gender of students	Mark category n (%)		
	< 50%	50-75%	>75%
Female	22 (55)	37 (57)	27 (51)
Male	18 (45)	28 (43)	26 (49)
Total	40	65	53

**DISCUSSION**

We developed, implemented, and evaluated module-based SDL on NHP. The current module-based SDL teaching demonstrated significant knowledge gains in National Health Programme among medical undergraduates. This was very well evident from the results of the end-of-module assessment, 118 (75%) students scored more than 50 percent. Further as informed by the students they could recollect and answer appropriately the questions related to NHP in the recently conducted summative examination by Pondicherry University. The facilitators felt

**Table 4: Feedback from students, postgraduates, and faculties regarding the SDL session**

Students	Postgraduates and Faculties
<b>Facilitating factors</b>	
<ul style="list-style-type: none"> <li>Stressed on difficult topics for UG students</li> <li>Time allotment for each topic was sufficient</li> <li>Student-centered learning</li> <li>Discussion with peers during activities</li> <li>Avoids monotony of regular lecture classes</li> <li>Continuous sessions on SDL</li> <li>Module was simple and clear, easy to understand, simple language, well organized, easy to revise before exams</li> <li>Module has problem-based questions in the assessment</li> <li>Need a similar type of module for communicable diseases</li> <li>Daily tests can be conducted</li> </ul>	<ul style="list-style-type: none"> <li>Students learned new terminologies in NHP</li> <li>Both learning and writing practice was given</li> <li>Marking of module and feedback by the facilitators</li> </ul>
<b>Challenges</b>	
<ul style="list-style-type: none"> <li>Only a few NHPs were included in the module.</li> <li>There was less space for writing in the module and also contains fewer case scenarios</li> </ul>	<ul style="list-style-type: none"> <li>Students lost enthusiasm because of continuous SDL sessions</li> </ul>
<b>Solutions</b>	
<ul style="list-style-type: none"> <li>All topics in NHP can be included</li> <li>Need more space to write after each question</li> <li>Instruction page at the beginning of the module</li> <li>Discuss how to present each question in the examination</li> </ul>	<ul style="list-style-type: none"> <li>SDL sessions can be scheduled once or twice a week.</li> <li>Consensus can be developed for the selection of questions in the module</li> <li>Questions in the module can be simplified.</li> <li>Binding of the module can be done</li> <li>Applied type of questions should be included more</li> <li>Credits in the form of bonus marks for successful submission of the completed module to motivate the students</li> <li>Post-test at the end of each day can be included.</li> </ul>

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that the module was simple, well-organized, and easy for the students to understand. Further, the problem-based questions in the module exercise were easy to understand and avoided the monotony of the lecture class.

According to NMC, the number of hours allotted for SDL in Community Medicine in second and third-year MBBS was 20 and 5 hours respectively and it has been made compulsory in the curriculum.

Similar SDL sessions were happening in the Department of Community Medicine in the Medical College of Delhi and CMC Vellore well before the new NMC curriculum.<sup>[6,7]</sup>

Patra S *et al.*<sup>[6]</sup> in Delhi found that students were satisfied and motivated to study the allotted topic further and they also felt that facilitators could have been more active in imparting knowledge and skills. Previous studies showed that the SDL willingness between batches of students was declining, hence the current curriculum should promote SDL by increasing teaching-learning activities. Factors such as curriculum, assessments, and culture do impact SDL readiness.<sup>[8]</sup>

Teaching students regarding SDL usually takes place in the experiential or co-curricular setting, the skills necessary for SDL should be introduced and developed in the didactic portion of the curriculum, which allows students to develop scaffolding. Flipped classrooms have the potential to move students toward self-directed learning and it is one of the strategies to develop self-directed learners.<sup>[9]</sup> A study showed that e-learning or blended learning requires SDL and may benefit students to know the goals of learning that may impact their engagement. In our study, we developed a module to facilitate SDL.<sup>[7]</sup>

Kohan *et al.*<sup>[10]</sup> stated that higher levels of self-direction are essential for successful online learning in higher education institutes. The factors such as information overload, mind wandering, role ambiguity, inadequate coping skills, heavy workload, and inadequate writing skills were the barriers to self-directed learning.

However, the study also identified facilitating factors, challenges, and solutions regarding SDL sessions. Some of

the facilitating factors were a simple and clear module, which is easy to understand, simple language, well organized, easy to revise before exams and problem-based questions in the assessment. They also suggested the need for a similar type of module for communicable diseases. In the present study, the students felt that SDL sessions were effective which helped them to answer the questions on National Health Programme in the University examination. Facilitators felt that students learned new terminologies in NHP, they were given both learning and writing practice, and marking of modules and feedback by the facilitators was the facilitating factors. They also suggested developing consensus for the selection of questions in the module, simplifying questions in the module, binding the module, and including more applied types of questions. A study done in Delhi also reported positive feedback that sixty-seven percent of students were satisfied and 66% also reported as motivated to study the allotted topic further.<sup>[6]</sup>

The gap between learners' cognitive development and scientific reasoning must be bridged as a way forward toward a more accurate and integrated understanding of self-directed learning.<sup>[11]</sup>

Our educational project helped students to find the answers to the learning objectives decided by them by thinking, searching, and group discussion. We have used a qualitative design and involved the students and faculties in finalizing the topic for SDL. The problem-solving activities planned during SDL sessions made learners utilize available resources, read, discuss, and come up with solutions, which they might not have done otherwise following lectures or small group teaching. Assessing SDL, which was also included in the module, which usually not done in the didactic teaching-learning process. Each group of students with allotted facilitators identified their objectives, resources, and teaching-learning activities, which might have created experiences that were not uniform for all the students. However, each student was a unique learner with their learning preferences. The SDL sessions can be further improved based on feedback from students, postgraduates, and faculties.

Our study found that students enjoyed and were satisfied with the SDL sessions and the assessment methods. Factors such as simple and easily understandable modules, discussion with peers during activities, and assessment were the facilitating factors regarding SDL sessions. As recommended by the students, postgraduates, and faculties scheduling SDL sessions once or twice a week and a few changes in the module suggested were the prioritized action points to improve the SDL session further.

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**Table 5: Feedback on the performance of questions on NHP in the University Exam (Kirkpatrick level 4) (n=50)**

- Module helped to recollect relevant points to perform better in university theory and practical examination. (18)
- Module helped in last minute revision of NHP and remember the subtopics in each programme in exam. (16)
- Two NHP such as NPCDCS and RMNCH + A were directly from the SDL module. (13)
- With the help of the Module on NHP we were not new to many abbreviations in NHP in examination. (11)
- Module helped to realize the importance of NHP at the level of UG. (10)
- Without SDL module it would have not been possible to write about NHP in paper 2 Community Medicine theory examination. (8)

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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Letter to the Editor

## Tips for conducting effective and interactive e-lectures in medical education

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### Introduction

Medical educators face a dual challenge of curbing the spread of the COVID-19 pandemic on the one hand and resuming academic activities on the other. The prospect of the second wave of virus transmission has rendered “E-Learning” as an essential component in medical education. Medical education in India is currently experiencing a major transformation from “traditional learning” to “blended learning,” with e-learning playing an imminent role.<sup>1</sup>

The implementation of the “Competency-Based Medical Education” (CBME) in the undergraduate medical curriculum in India has added to the existing responsibilities of medical facilitators. The COVID-19 pandemic has brought an explosive growth of e-learning, aided by the advancement in technologies.<sup>2</sup> Considering the faculty shortage, addressing large groups, particularly online, is a challenging task for medical instructors. This short communication is aimed at giving simple tips to make interactive e-lectures while addressing a large group of students.

### Readiness to accept the challenge

“Change” is constant in medical education. The current scenario demands rapid adaptability of both educators and students to the online mode of learning. Technology has been

intertwined with every component of the medical profession. This challenge should be considered like any other advancement in the field of medical practice. Readiness in the mind opens the doors for innovations that may inculcate interactivity in the planning of lectures.<sup>3</sup>

### Planning the session and its content

Knowledge about the audience guides the planning of content delivery. It is essential to decide and share the objectives of the session. Internet bandwidth and connectivity settings should be verified well before the session. The settings in the selected platform need to be carefully viewed for security issues. Supportive staff should be given adequate instructions to manage the technical issues during the e-lecture. It is advisable to anticipate technical issues and decide on an alternate plan well in advance. In case of connectivity issues, pre-recorded lectures may be posted as an alternative.

### Choosing the right platform for the delivery of content and advanced preparation

Teaching online is always associated with challenges. Medical educators should understand the difference between face to face interaction and online learning. Adequate preparation well in advance is the key to successful delivery of content. The time duration of the lecture, the number of participants, and cost-effectiveness are some of the factors that decide the choice of the platform.<sup>4</sup> Becoming sensitized to the platform planned for delivery of e-lectures will help in the effective delivery of the content. Institutions should also develop training programs for the faculty to acquire technical skills and provide necessary tools for improvising e-learning. Beginners may plan a practice session with colleagues in the department to understand and anticipate the probable technological issues.

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*Ensuring security issues*

Care must be taken by installing anti-virus software. Periodic updates of the software also enhance security.<sup>4</sup> The students may be given official mail IDs by the institute for authentic enrolment and thereby allow only invited participants to join.

*Effective communication*

Appropriate communication plays an important role in the success of e-learning.<sup>5</sup> Communicating the instructions before the session may increase student engagement. It is advisable to ensure the following tips to aid the flow of teaching:

- a) Scheduling the lectures with appropriate communication with the students. Most virtual platforms send reminders to students regarding the scheduled classes. This will increase the preparedness of the students.
- b) Proper interdepartmental communication to prevent overlap of the lectures.
- c) Communication of the required technological setup to the supporting staff well in advance.

*Making the lecture interactive*

- Software, such as Prezi, may be used for preparing interactive PowerPoint presentations.
- Virtual platforms like Nearpod allow collaborative learning in the synchronous mode, which helps to make the lecture interactive.
- Multiple-choice questions may be projected before the session to assess students' baseline knowledge. Tools like Pear deck, Nearpod, and many other platforms help to enhance interaction between the students and the instructor. Audience response systems like clickers may also be used to assess the students.
- It is wise to arouse interest among the students by projecting a relevant clinical scenario at the beginning of the session.
- The content may be divided into small segments and activity may be introduced every 15 min to maintain student engagement. Polls, quizzes (e.g., Kahoot and Socrative Quiz), and games may be planned through virtual platforms.
- Chat boxes may be effectively utilized in most virtual platforms. Students can be asked to post their responses in the chat.
- Students can be divided into small groups and allowed to interact in the chat rooms/breakout rooms offered by the virtual platforms. Even with the shortage of faculty, the break-out rooms may be visited intermittently by a single faculty to monitor the students.
- Teachers who prefer board teaching may make effective use of interactive whiteboards, where both the students and the teachers may interact simultaneously.

*Enhancing student engagement*

- Share the objectives of the session with the students.
- Pre-reading materials may be posted well in advance on platforms such as Google Classrooms.
- Maintaining the appropriate pace during the presentation will enhance student engagement.
- Though we may lack visual cues from the students during online learning, our eye contact builds a strong relationship with the student. Hence, it is wise to look at the camera during the presentation.
- Visual images can be incorporated in the presentation in place of text
- Students' names may be called randomly to check their presence during the session.
- Instant acknowledgement and appreciation of the student's response to queries will enhance student engagement. Active learners may be identified and may be awarded "Digital Badges" as a token of appreciation.
- Students may be asked to summarise at the end of the session

*Planning formative assessments*

The CBME curriculum demands more of "Assessment for Learning."<sup>10</sup> Thus, more formative assessments may be easily planned using virtual platforms; for example, asking the students to post the muddiest point, posting assignments, and MCQs through Google forms with appropriate feedback. These activities may boost their active learning process.

*Obtaining feedback*

Getting feedback from the students always provides opportunities for the faculty to refine their teaching process.<sup>6</sup> Padlet is a tool that may be used for obtaining feedback from the students. Feedback may also be collected using Google forms. Analysis of the feedback and implementation in practice will help in making effective e-lectures.

*Review and self-appraisal*

The lectures may be video recorded, which may serve as an effective tool to review oneself. A critical review of oneself by the students, peers, and self-appraisal provide ample opportunities for the teachers to refine themselves.

**Conclusion**

The COVID-19 pandemic has caused unpredictable changes in medical education. High levels of readiness are essential among the instructors and the students to adapt themselves to the health care needs as well as the technological needs, as the pandemic has laid a strong foundation for "blended learning", incorporating a mixture of face-to-face and online learning. Measure to be taken to

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level of institutions to improve digital literacy among health care workers.

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#### Conflict of interest

The authors have no conflict of interest to declare.

#### Ethical approval

The authors confirm that this letter has been conducted in accordance with COPE rules and regulations. Given the nature of the letter, the IRB review was not required.

#### Authors' contributions

KS and DV conceived and designed the idea and wrote the initial and final drafts of the article. Both authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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Anatomy

Participants

Badges

Competencies

Grades

General

Embryology

Histology

Genetics

- Abdomen
- Flipped classroom - General Embryology
- Flipped classroom - General anatomy
- Flipped Classroom - General Embryology
- Flipped Classroom - General Embryology
- Flipped classroom - General Embryology
- University questions
- Quiz 2021-22
- Video lecture - Pharyngeal apparatus by DR.N.A Priyadharshini
- Voice - Over lecture-Cavernous sinus - Dr.Deepa Somanath

Gradebook setup

> Badges

Backup

Restore

Import

Copy course

Reset

> Question bank

Recycle bin

> Site administration

Calendar


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## Teaching Learning Method

Department of Orthopaedics

<b>Topic</b>	Splinting technique
<b>Name of the method</b>	<i>Flipped class room</i>
<b>Competencies</b>	OR 13.1 / 13.2
<b>Objectives</b>	At the end of the session, the students should be able to understand the basic principles of splinting, types of splints & knows how to apply splints.
<b>Short description</b>	Voiceover powerpoint on splinting techniques was uploaded in 3 parts in LMS a week before the class and informed to the students. Videos regarding the class, describing was uploaded. Two days before the class online quiz was attended by 71. On the day of class students were divided into 4 groups. Students volunteered from each group and presented on the topic. Orthotic devices were described by the students and they demonstrated on the application of the splints to their fellow students. Post session students feedback obtained.
<b>Any kind of assessment done with the use of the method (Eg. Pre-test/Post-test)</b>	Pre test online quiz was conducted using LMS
<b>Feedback obtained from the students and faculty regarding the method</b>	Post class feedback obtained using LMS
<b>Geo tag photo</b>	 <p>The Geo tag photo section contains four images of a classroom. Each image is a photograph of a classroom with a projector screen and students. The images are arranged in a 2x2 grid. Each image has a Google Maps overlay with location data. The location data for each image is as follows:</p> <ul style="list-style-type: none"> <li>Top-left: MVIT, Puducherry, India. WJCG+V7J, MVIT, Puducherry 605108, India. Lat 11.922301° Long 79.625941°. 14/11/22 09:17 AM GMT +05:30.</li> <li>Top-right: Madagadipet, Puducherry, India. WJFH+357, Madagadipet, Puducherry 605107, India. Lat 11.922744° Long 79.628261°. 14/11/22 09:22 AM GMT +05:30.</li> <li>Bottom-left: Madagadipet, Puducherry, India. WJFH+357, Madagadipet, Puducherry 605107, India. Lat 11.922909° Long 79.628345°. 14/11/22 09:04 AM GMT +05:30.</li> <li>Bottom-right: Madagadipet, Puducherry, India. WJFH+357, Madagadipet, Puducherry 605107, India. Lat 11.922725° Long 79.628258°. 14/11/22 09:29 AM GMT +05:30.</li> </ul>

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