



Stay Safe from
C OVID - 19
and Learn Online



Live interaction on

Digital Initiatives in Education at National Level -
Spoken Tutorials in Local Languages as
Teaching/Learning Resources for Science Education



10th Oct 2022



4:00 pm to 5:00 pm



Speaker #1

Dr. Kannan M. Moudgalya
Erach and Meheroo Mehta Advanced
Education Technology Chair
Professor, Indian Institute of
Technology Bombay

Presentation by
IIT Bombay

In case you have missed
the previous
digital initiatives milestones,
tune in to



<https://www.youtube.com/playlist?list=PLcsl1xdr0tH4H442UEYL-IEI2gjeV-ehj>



Speaker #2

Dr. Snehalatha Kaliappan
Senior Project Research Scientist,
FOSSEE Project, Indian Institute of
Technology Bombay

Watch Live Session on NCERT Official
YouTube Channel



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Kannan M. Moudgalya

Spoken Tutorials: Science Ed. in local lang.

Outline of the Presentation

- ▶ **Motivation of Spoken Tutorials**
- ▶ **Design and creation**
- ▶ **Training**
- ▶ **Effectiveness**
- ▶ **Demo of scientific software for schools by Dr. Snehalatha Kaliappan**



Spoken Tutorials are Designed for

- ▶ **Objective: Large scale training**



Spoken Tutorials are Designed for

- ▶ **Objective: Large scale training**
- ▶ **Constraints:**



Spoken Tutorials are Designed for

- ▶ **Objective: Large scale training**
- ▶ **Constraints:**
 1. **Don't have teachers**



Spoken Tutorials are Designed for

- ▶ **Objective: Large scale training**
- ▶ **Constraints:**
 1. Don't have teachers
 2. **Not fluent in English**



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- ▶ **Objective: Large scale training**
- ▶ **Constraints:**
 1. Don't have teachers
 2. Not fluent in English
 3. **No good Internet access**



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 4. **No money for commercial software**



Spoken Tutorials are Designed for

- ▶ **Objective: Large scale training**
- ▶ **Constraints:**
 1. Don't have teachers
 2. Not fluent in English
 3. No good Internet access
 4. No money for commercial software
- ▶ **Requirements turned out to be useful during the pandemic**



- ▶ **Spoken Tutorial is a 10 minute long audio-video tutorial**
- ▶ **For IT/software literacy and employment**
- ▶ **Focus on scientific software in this talk**



1. Don't have teachers



1. Don't have teachers

- ▶ **Can we train our students on IT topics through self learning?**
- ▶ **Important, as many students don't have good teachers**



Solution: Novice check of the script



The script not approved by a beginner is returned for improvement!



After passing the novice check, the script is used to create a Spoken Tutorial



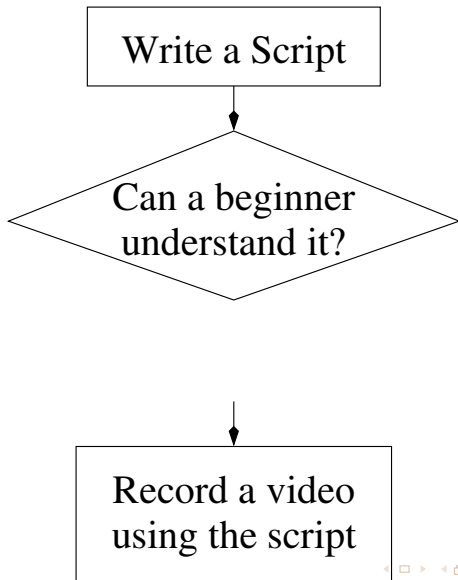
Design for Self Learning Video Tutorials

Write a Script

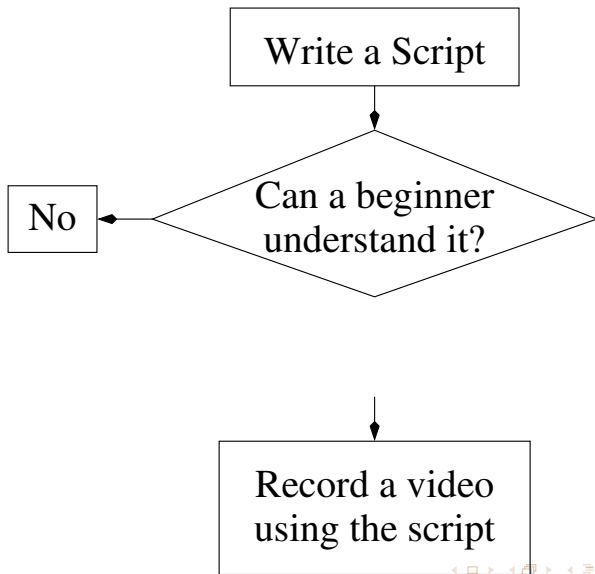
```
graph TD; A[Write a Script] --> B[Record a video using the script]
```

Record a video
using the script

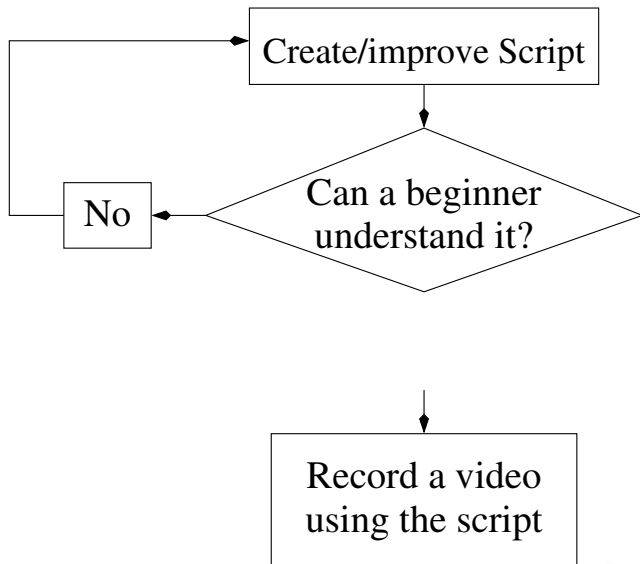
Design for Self Learning Video Tutorials



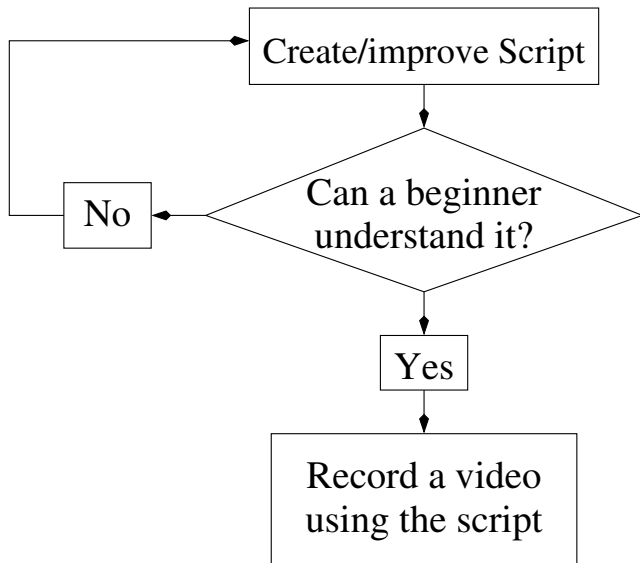
Design for Self Learning Video Tutorials



Design for Self Learning Video Tutorials



Design for Self Learning Video Tutorials



Spoken Tutorials

- ▶ **Videos created as explained in the previous page**



A Sample Spoken Tutorial



Spoken Tutorials are designed for self learning - through novice check of underlying script



2. Not fluent in English



2. Not fluent in English

- ▶ **What if learners are not fluent in English?**



2. Not fluent in English

- ▶ **What if learners are not fluent in English?**
- ▶ **Make available in our languages**



2. Not fluent in English

- ▶ What if learners are not fluent in English?
- ▶ Make available in our languages
- ▶ **Dub only the audio into all 22 Indian languages**



Dubbing Continued

- ▶ **Only the audio is dubbed**



Dubbing Continued

- ▶ **Only the audio is dubbed**
- ▶ **Video remains in English**



Dubbing Continued

- ▶ **Only the audio is dubbed**
- ▶ **Video remains in English**
- ▶ **Students can use normal computer, normal keyboard, normal software, etc.**



Dubbing Continued

- ▶ **Only the audio is dubbed**
- ▶ **Video remains in English**
- ▶ **Students can use normal computer, normal keyboard, normal software, etc.**
- ▶ **Helps retain employment opportunities**



Hindi Dubbed Spoken Tutorial



Bengali Dubbed Spoken Tutorial



Marathi Dubbed Spoken Tutorial



Tamil Dubbed Spoken Tutorial



Telugu Dubbed Spoken Tutorial



Sanskrit Dubbed Spoken Tutorial



- ▶ **Dubbed audio helps people not fluent in English**



- ▶ **Dubbed audio helps people not fluent in English**
- ▶ **Video in English helps retain employment opportunities**



Helpful to people in neighbouring countries: we have common languages



Sample dubbing in many international languages also



3. No good Internet access

3. No good Internet access

- ▶ **If 50 people have to stream different videos, there may not be enough bandwidth in schools**
- ▶ **If all have to see an identical video stream, personalised learning is hindered**
- ▶ **Made it usable offline - can download an entire series**
- ▶ **Usage increased more than 100 fold**
- ▶ **Spoken Tutorials would not have been successful without the offline version**

- ▶ **Made an offline application**
- ▶ **Can download an entire series as a zip file**
- ▶ **Unzip, copy into all PCs and use offline**



Spoken Tutorial access went up by 100 times!





- ▶ **Workshop for 250+ people with offline version of Spoken Tutorials**



- ▶ **Workshop for 250+ people with offline version of Spoken Tutorials**
- ▶ **Can conduct such trainings for 1,000 in one go**



- ▶ Myanmar workshop with no Internet, no electricity
- ▶ Photograph taken when electricity returned

4. No money for commercial software

- ▶ **Cover only open source software**



4. No money for commercial software

- ▶ **Cover only open source software**
- ▶ **Suitable for nationwide education**



4. No money for commercial software

- ▶ **Cover only open source software**
- ▶ **Suitable for nationwide education**
- ▶ **Suitable for manpower rich, capital poor, countries**



- ▶ **More than 1,500 tutorials in English**
- ▶ **15,000 dubbed tutorials into 22+ languages**



Spoken Tutorial MOOCs Framework

First
Language
Script

2nd
Language
Script

3rd
Language
Script

Videos
Assignments
Additional Learning
Exams
Discussions
User examples
Reviews, ratings
Automated emails

(n-2)nd
Language
Script

(n-1)st
Language
Script

nth
Language
Script



A Spoken Tutorial Course

Outline, brochures, workshops, etc.

Tutorial 1



Videos
Assignments
Additional Learning
Exams
Discussions
User examples
Reviews, ratings
Automated emails



Tutorial 2



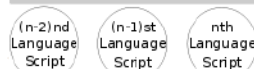
Videos
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Automated emails



Tutorial m



Videos
Assignments
Additional Learning
Exams
Discussions
User examples
Reviews, ratings
Automated emails



The Spoken Tutorial approach helps different types of audience



Introductory Topics

- ▶ **Introduction to computers**
- ▶ **Firefox**
- ▶ **gmail**
- ▶ **typing**



- ▶ **Documents**
- ▶ **Spreadsheets**
- ▶ **Presentations**
- ▶ **Through LibreOffice, alternative to MS Office**



Programming

- ▶ **C**
- ▶ **Java**
- ▶ **Python**
- ▶ **Linux**



For Advanced Programmers

- ▶ **Drupal**
- ▶ **Django**
- ▶ **Perl**
- ▶ **Ruby**



For Simulation Users

- ▶ **Scilab**
- ▶ **OpenFOAM**
- ▶ **OpenModelica**
- ▶ **DWSIM**



For Graphic Artists

- ▶ **Blender**
- ▶ **Synfig**
- ▶ **Inkscape**
- ▶ **GIMP**



Testimonial by Prof. Uma Kanjilal on Blender

By the end of four days, the participants were very happy and confident in developing 3D animation.

Earlier they were using licensed products which did not actually fulfill our requirements of 3D animation.

Added to that they were also introduced to interactive game development using Blender.



For Chemistry

- ▶ **Jmol**
- ▶ **ChemCollective Virtual Labs**
- ▶ **PhET Simulation for Chemistry**
- ▶ **Avogadro**
- ▶ **GChemPaint**



For Biology

- ▶ **Cell designer**
- ▶ **Biopython**
- ▶ **UCSF Chimera**



For Physics

- ▶ **ExpEYES**
- ▶ **Apps on Physics**
- ▶ **PhET Simulation for Physics**



For Maths

- ▶ **GeoGebra**
- ▶ **Grace**
- ▶ **Gnuplot**
- ▶ **PhET Simulation for Maths**



For Accounting

Front Accounting



Spoken Tutorials are available at
<https://spoken-tutorial.in>



Testimonials



President's Award to our Promoter

I am glad to inform you that I have received the prestigious NATIONAL ICT AWARD 2015 from the Honble President of India at Vigyan Bhawan New Delhi on 5th Sept 2016 (Teachers' Day). The award was bestowed due to my work in the field of "ICT in Education using FOSS" in association with CIET, NCERT, New Delhi and Spoken Tutorial Project, IIT Bombay.

Mr. Amit Kumar, Computer Teacher, Navodaya, Theog, Shimla

शिक्षक
-2015



NATIONAL AWARD
TO TEACHERS - 2015

सं. 2016

5 September 2016

उच्च शिक्षा मंत्रालय
और साक्षरता विभाग
भारत सरकार

Ministry of Human Resource Development
Department of School Education
Government of India



(HE)



Fulbright Award



President's Award 2022



Charu, Ramjas School, RK Puram, Delhi



Vijeyata, GD Goyanka School, Noida



Sargam Teacher, DPS, Bhopal



Is this method effective?



Spoken Tutorial Trained Animation



Testimonial of Sanvi, 4th Grader



Animation Created by Sanvi

Sanvi's video



- ▶ **70,00,000 students trained in 7-8 years**
- ▶ **2,00,000 teachers trained**



- ▶ **Direct web pages learners is additional!**



- ▶ **Direct web pages learners is additional!**
- ▶ **No registration - login is required**



Spoken Tutorial Institutional Subscription

Spoken Tutorial Institutional Subscription

- ▶ **Funding agency (MOE) recommended us to raise funds by ourselves**
- ▶ **Came up with an institutional subscription mechanism**
- ▶ **A small fee for an entire school/college**
- ▶ **All teachers can be trained, and then students**
- ▶ **Any number of teachers/students can learn, get certificates**

School Subscription Funding by WHEELS

- ▶ **To provide Spoken Tutorial based IT education to 100 schools for 3 years**
- ▶ **To Navodaya Schools**
- ▶ **\$100 per school per year**
- ▶ **Donation by WHEELS Global, a Washington, DC, based nonprofit org.**

Thank you

Dr. Snehalatha Kaliappan will present next

