## Innovations by the Faculty in Teaching and Learning

Our department Faculty members have successfully transitioned from the traditional methods of chalk and talk pedagogy and adopted a combination of ICT enabled teaching techniques like laboratory simulations, virtual lab applications, power point and audio visual presentations.

Theory cum laboratory courses

Demonstration method when combined with a well-directed discussion is a successful teaching technique. The Department curriculum is framed in such a way that the courses include both theory and laboratory components. Theory cum laboratory courses ensured that the students comprehended the concepts effectively through theory classes and laboratory sessions.

Eabyas (Sri Vishnu Moodle LMS)

Sri Vishnu Learning Management System (LMS) helps institutes to provide online courses as part of their regular course curriculum and also offer complete online distance learning courses. Faculty can provide course materials, PPTs, video lectures etc. to students. This tool can also be useful for faculty to conduct quizzes, real time quizzes, games, assignments etc.
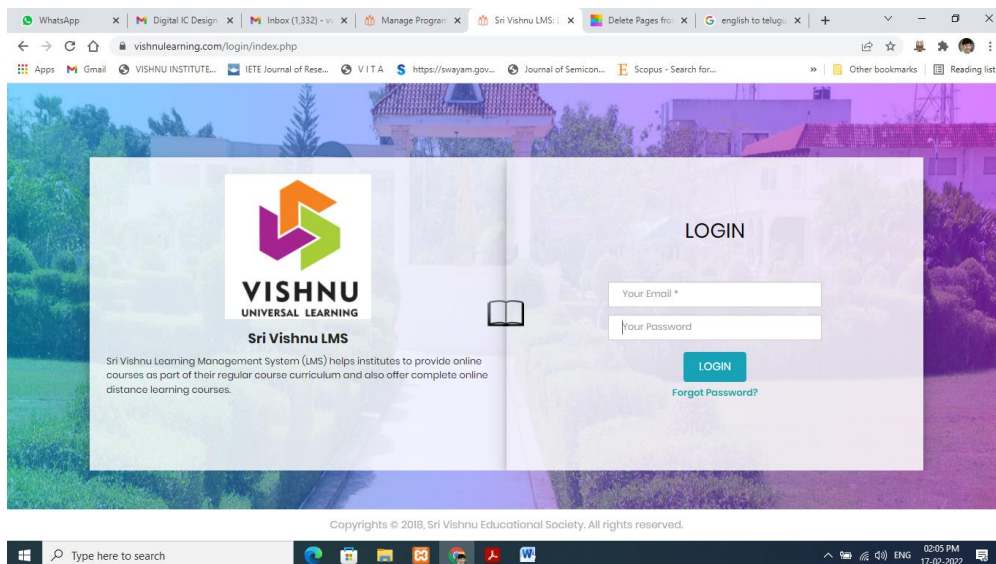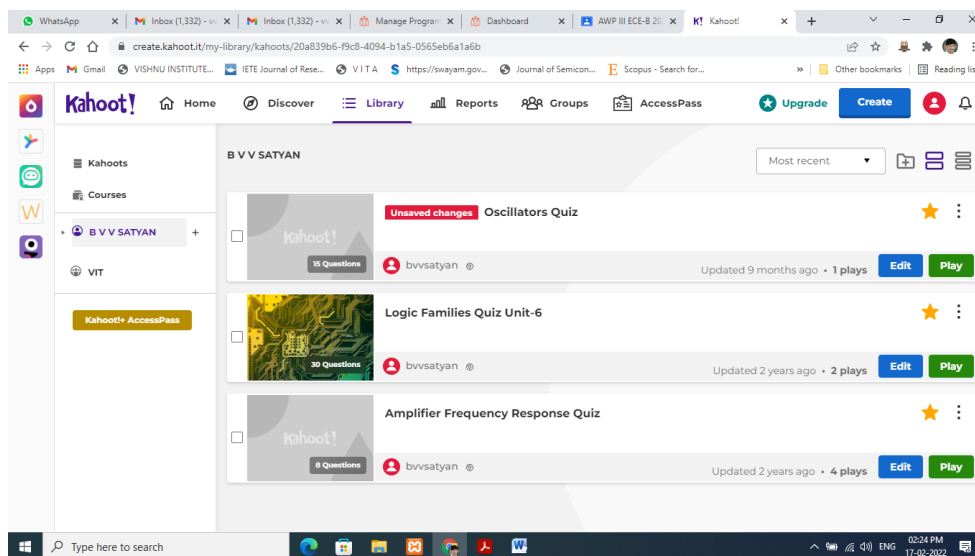

Google Classroom

Google Classroom is an application designed to enhance the learning experience which is incorporated in our teaching learning process. It helps to interact with students 24 X 7, by posting technical contents, notes, and assignments and also facilitates to conduct and evaluate online quizzes. The tools offer opportunities for collaboration in real time and the ability to work remotely. A sample of Google classroom used in the class is given the figure.
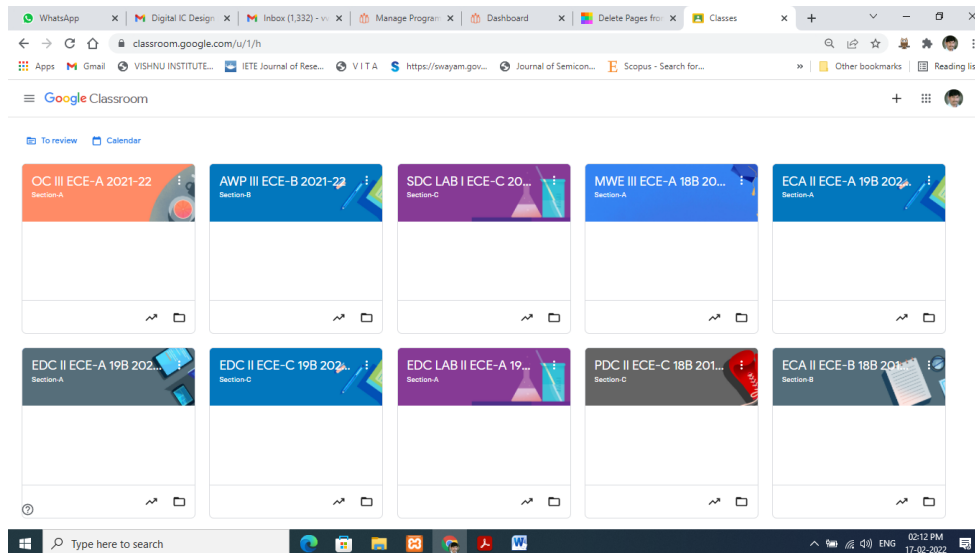
Kahoot

Kahoot is a free student-response tool for conducting quizzes, facilitating discussions, and collecting survey data. It is a game-based classroom response system played in real time. Questions are projected on a shared screen, while players answer the questions with their smartphone, tablet or computer, creating a social, fun and game-like environment. Kahoot allowed us to design multiple-choice quizzes as well as polls and surveys that our faculty could populate on-the-spot data. Some of the photographs taken during the activity are shown in figure.

Google Forms

Google Classroom is a free web-based learning platform, where teachers can run a class online, create curriculums, and share assignments with students in a paperless way. The platform simplifies teacher student collaboration by leveraging the various G-Suite services like Google Forms, Docs, Sheets, and Slides. Teachers can create assignments using learning material like YouTube videos, Google Form surveys or PDFs from the drive. The screen shots of usage of Google forms in the class is shown in figure

Mind Maps

Mind mapping is a highly effective way of getting information in and out of the brain. Mind mapping is a creative and logical means of note-taking and note-making that literally "maps out" your ideas. A Mind Map is a diagram for representing tasks, words, concepts, or items linked to and arranged around a central concept or subject using a non-linear graphical layout that allows the user to build an intuitive framework around a central concept. It can turn a long list of monotonous information into a colourful, memorable and highly organized diagram that works in line with your brains natural way of doing things. A Mind Map is an easy way to brainstorm thoughts organically without worrying about order and structure. It allows you to visually structure your ideas to help with analysis and recall. The Mind Map used for the Pulse and Digital Circuits class is shown in figure.
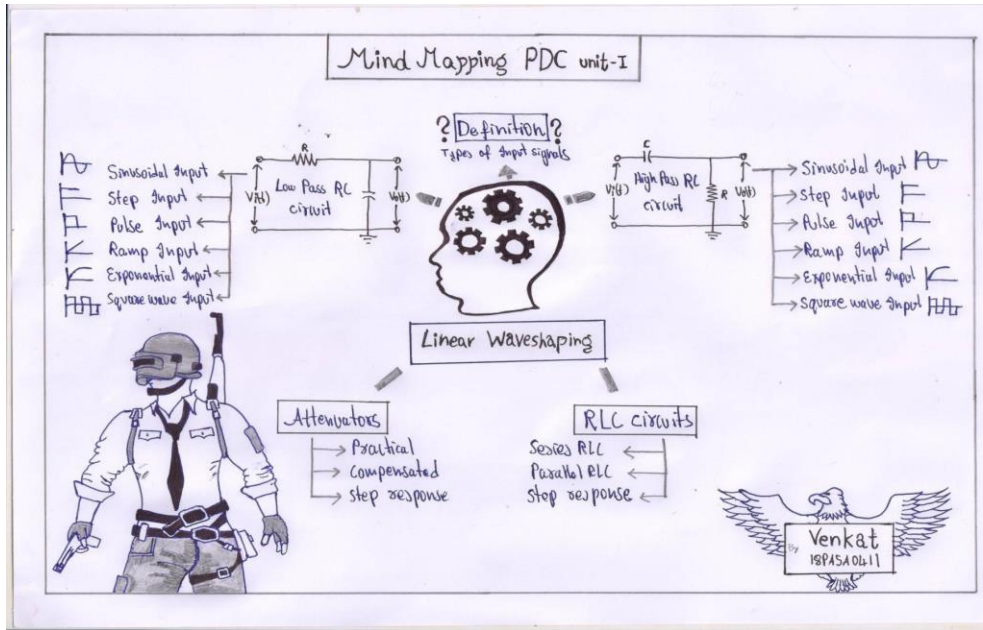
Plickers

Plickers is an assessment tool made by a teacher who was looking for a quick and simple way to check student understanding. This assessment tool allows teachers to collect on-the-spot formative assessment data without the need to have students use devices or paper and pencil. It is a free card class activity for student assessment. Students will not use any device. Instead, they will use coded cards which can be scanned by the activity organizing member. When a question is asked by the faculty, students will raise the card for the answer of his choice. Organizing member will scan all the cards. Plickers will count the responded cards for each answer and will display. Later correct answer will also be displayed. Students will enjoy the activity. It is a quick and simple way of assessing the student understanding of the topic taught in class. Plickers photographs are shown in figure.

Zig-Zag Puzzles

Zig-Zag puzzle is an interesting group activity to check the understanding levels of students in a typical topic. In this activity, slips of different circuits and related input output waveforms are given in jumbled format. The students are asked the match the waveforms to the corresponding circuit in the stipulated time period.
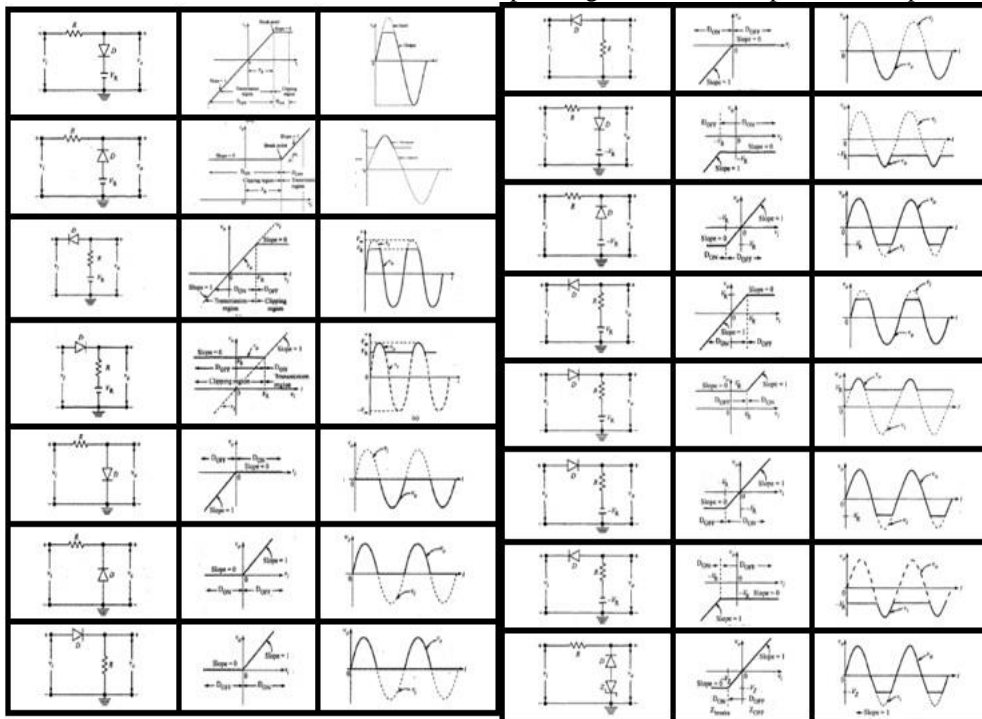
Hands on Experience with ADK (Analog Discovery Kit)

ADK is LAB in pocket which can be used to perform various small scale analog experiments with 5V. Students can perform the experiments without using external power supply, function generator and CRO.

NPTEL

NPTEL provides E-learning through online Web and Video courses in various streams. Faculty of ECE department is certified in various electronics & communication and other inter and multidiscipline courses in NPTEL and Swayam. It also provides Faculty Development Programs certifications for specified courses. The students are also motivated to complete the online courses through Swayam. Some faculty are acted as mentors for certain courses to assist students for effective learning. The figure below shows the course completion certificate by one of the faculty.

Mr. K Ramesh Chandra and Dr. G Prasanna Kumar completed Domain Certification of Swayam-NPTEL in Communication and Signal Processing. The following figure shows the Domain certificate of one faculty.

The following faculty members are identified as NPTEL stars in Swayam for their continuous and effective E-learning in various courses.

Name of the Faculty	NPTEL Star	Link
Mr. K Ramesh Chandra	Domain Scholar	https://nptel.ac.in/LocalChapter/statistics/2397/
	NPTEL Motivated Learners	
	NPTEL Believers	
	NPTEL Discipline Stars	
Mr. B V V Satyanarayana	NPTEL Motivated Learners	
	NPTEL Believers	
	NPTEL Discipline Stars	
Dr. G Prasanna Kumar	Domain Scholar	
	NPTEL Believers	

The figure below shows the NPTEL star certificate of one faculty.
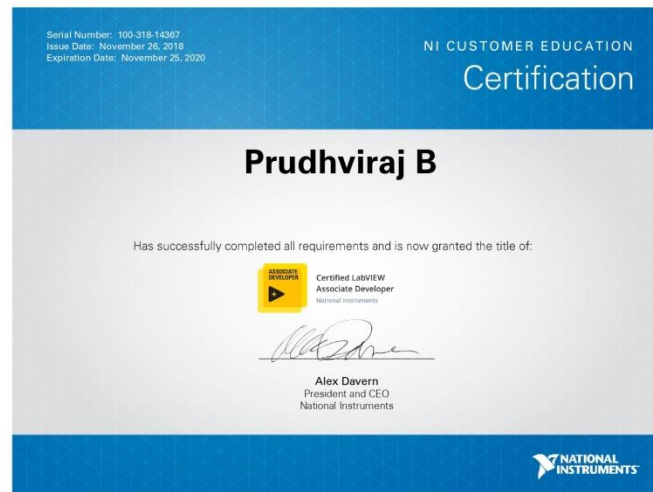

CLAD Certifications

The following table represents the faculty members certified in CLAD by National Instruments

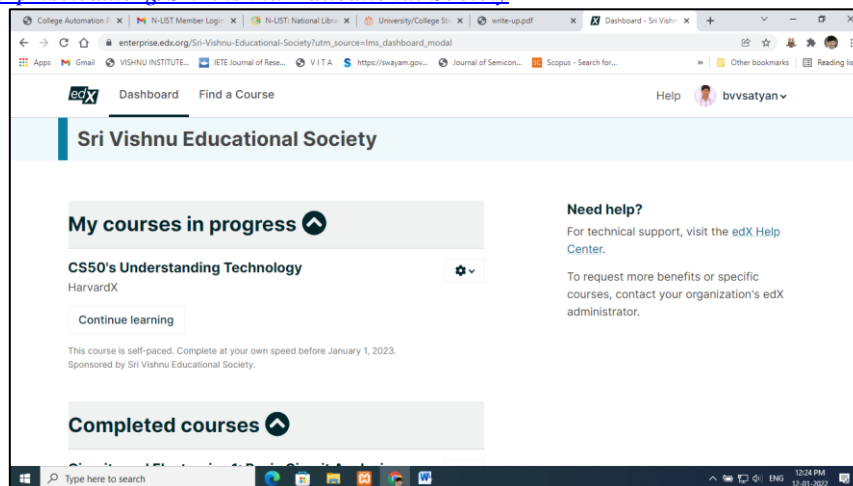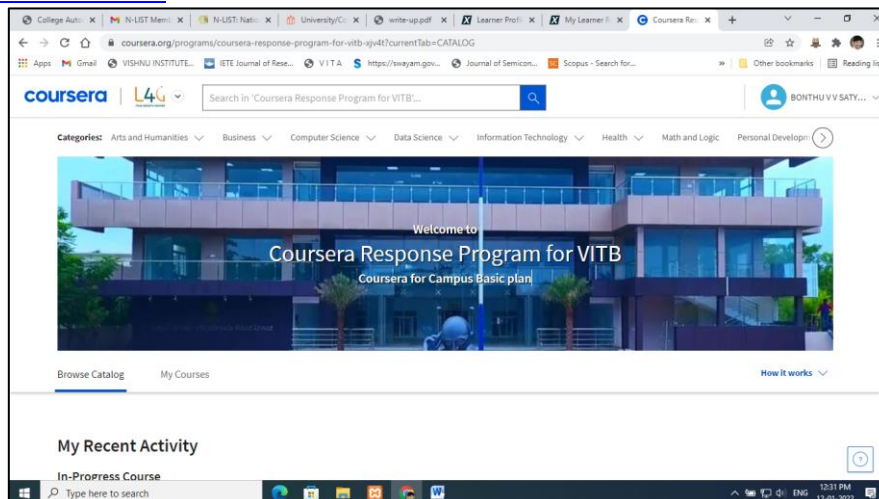| S.No.	Name of the Faculty Certified in CLAD
1	Dr. G Prasanna Kumar
2	Mr. Ch V V Srinivas
3	Mr. K Ramesh Chandra
4	Mr. B Prudhvi Raj
5	Mr. D Durga Prasad

CLAD certificate

Other Online Certifications

Faculty are motivated in completing the certifications in various online platforms such as ATAL, edX, Coursera, Spoken Tutorials, APSSDC etc. as a part of E-learning in teaching.

edx: https://enterprise.edx.org/Sri-Vishnu-Educational-Society

Coursera: https://www.coursera.org/programs/coursera-response-program-for-vitb-xjv4t?currentTab=CATALOG
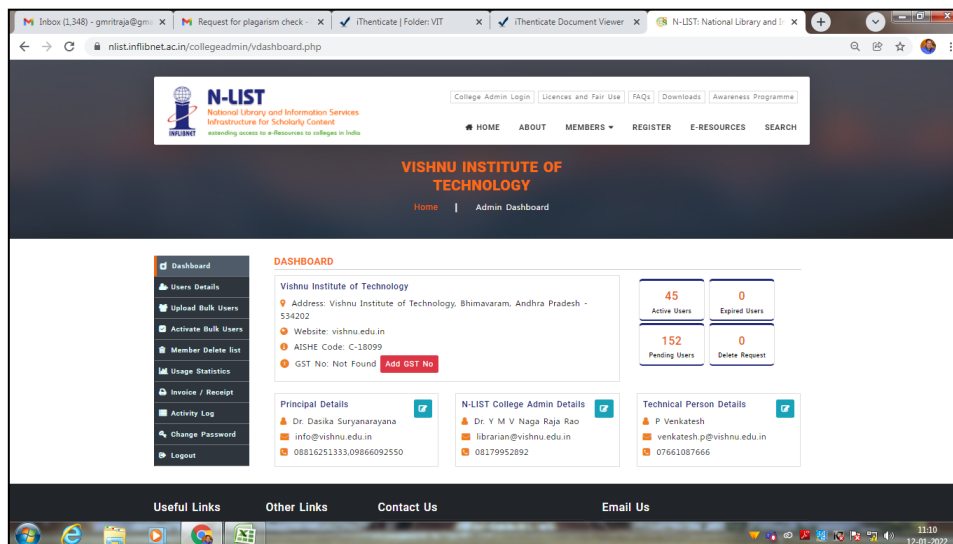
The following table represents the no. of online certification completed by the faculty in the Assessment period

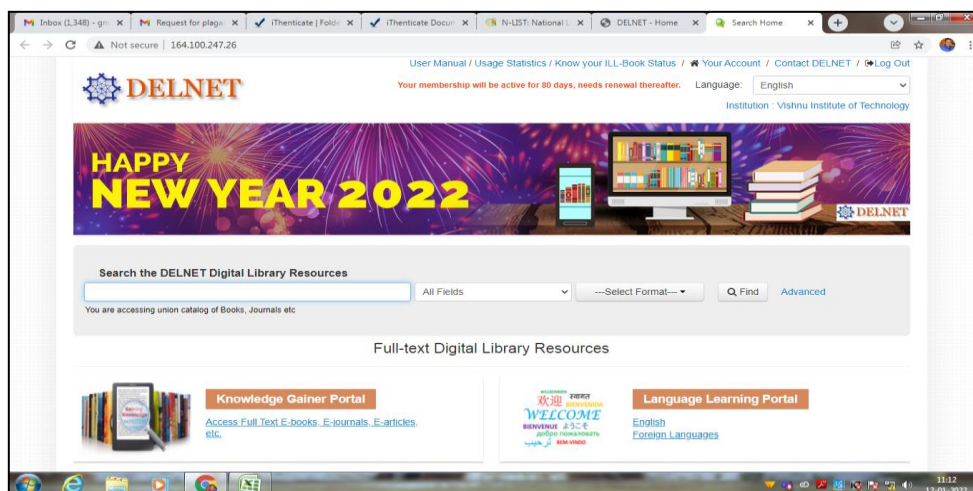| S.No.	Certification	No. of Faculty Certified
1	NPTEL	40
2	Coursera	113
3	edX	31
4	Others	115
	Total	291

The following are some of the e-sources available in digital library to access various reputed journals and books for teaching and learning.

S. No.	Name of the Online E-Source Package
1	N-List Programme : http://nlist.inflibnet.ac.in
2	DELNET: www.delnet.in
3	National Digital Library of India : https://ndl.iitkgp.ac.in/
4	The Teaching Professor: https://www.teachingprofessor.com/category/topics/teaching-strategies/teaching-with-technology/

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2. DELNET: www.delnet.in (http://www.delnet.in/)

3. National Digital Library of India: https://ndl.iitkgp.ac.in/ (https://ndl.iitkgp.ac.in/)

4. The Teaching Professor: ([https://www.teachingprofessor.com/category/topics/teaching-strategies/teaching-withtechnology/](https://www.teachingprofessor.com/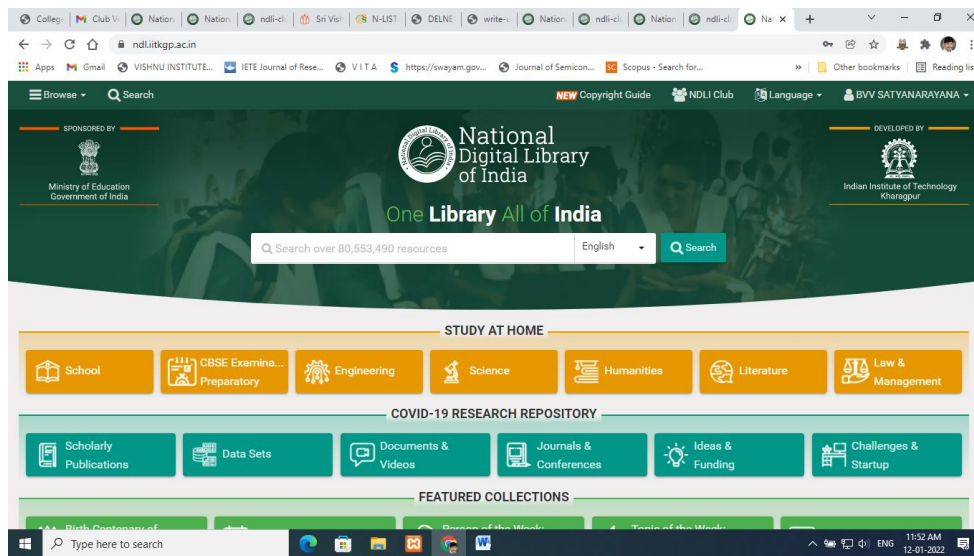category/topics/teaching-strategies/teaching-withtechnology/))