



Innovation in Pedagogy in Higher Education:

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ABSTRACT:

Education is the only weapon to rule over the world. The determination of Education is not only restricted to the literacy rate of students but also to transform a student into an intelligent cognitive and logical thinker. Innovation in Pedagogy is a need of this cataclysmic and technical world. The main purpose of this paper is to improvise some traditional methods of teaching and to propose some new innovative ideas required for this digital era. Technology is the heart of the 21st century where students can repose information at the tip of their fingers in a fraction of seconds. The innovation methods influence both the education and learner. The usage of various innovation tools also generates enthusiasm for learning and produces a desired result. Through these practices, the willingness of education gives rise to the progress of development which is required for this developing country. Since there is a huge transformation from old teaching methods to virtual classrooms and some other multimedia tools. So, change is necessary in every field.

Keywords: Determination, enthusiasm, cognitive, Innovation, cataclysmic, multimedia.

INTRODUCTION:

Pedagogy is the art or science which is focused on how the content and teaching are represented to the learner and help the learners to gain the knowledge and we know that 21st is a knowledge-based century where we want some innovative ideas in our education system through – 21st century skill-based curriculum, techno-based learning, critical thinking, collaboration and communication among learners, where they evaluate the student's performance by understanding their problems and they help them to learn and enhance their abilities. So, when we are talking about higher education, it is the last stage for students to prepare for their careers. We have to ensure that creative and knowledge-based learning flourishes and focuses mostly on learning-based competence, because in Higher Education, the educators' pedagogical practices focus on the student and on the development of practical skills. Though many inventions have been done by science, progress is needed to enhance more knowledge.

Innovation includes various methods or techniques of solving and looking at a problem. It also improves the overall quality of education because it strengthens the students to think out of the classrooms. The college environment must focus on encouraging teachers to innovate.

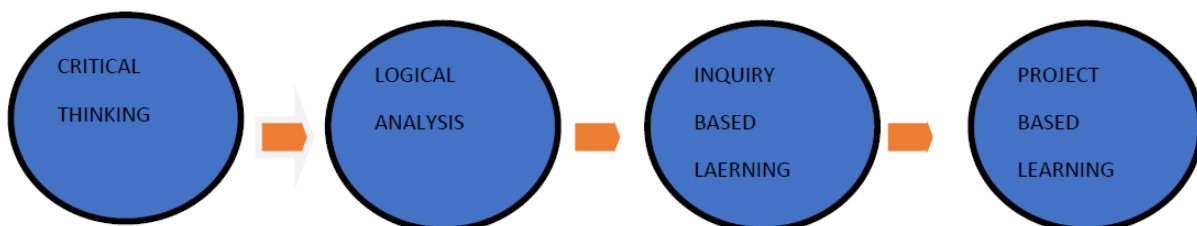
Higher Education is the initializing phase of one's career. Keeping this view in mind, we need to change our learning and teaching techniques to fulfil the needs of this technical era.

STEM APPROACH IN HIGHER EDUCATION:

STEM is an acronym for Science, Technology, Engineering and Mathematics. In the modern era, Science and technology plays a vital role in leading the country's progress. The acronym was initiated in year 2001 by scientific administrators at the U.S (National Science Foundation).

In general, there are not the subjects to be studied limitedly, they are the methodology of learning which are studied in coherence rather than in isolation. In this existing phase of technological revolution across the world, Innovations have become an essential part of human life. Every pupil of 21 century must emphasise on the experimental- based learning, observe the outcomes from those experiments and learn from their past outcomes. This will generate the curiosity to learn new things and act and think independently. The STEM approach is the practice of promoting the importance of Science and Technology worldwide. From 2016 to 19, there is a huge increase of about 44% in STEM Jobs.

The four major factors of the STEM education are:



4 factors of STEM Education.

THE NEED OF STEM IN 21 CENTURY:

In the revolutionary era of technological advancement, where every development is in the hands of the youth of the country. The student must be aware of the innovations happening across the world. The subsets of skills which are necessary for the innovators in the current phase are:

a) ENTREPRENEURIAL SPIRIT:

Following are the skills required for the entrepreneurship:

i) Leadership: It is the ability of leading/influencing an organization, individual, or a group of people to motivating/influencing others. The leadership quality of a person makes a responsible and independent human being which is essential to build according to today's needs.

ii) Management: To achieve a particular goal in our lives, the proper connection and co-relation of things/works in a co-relative way in a stipulated time is necessary.

iii) Willpower: It is said that "when there is a will, there is a way" means that one should be curious about their work. Only curiosity brings the change in human lives. It is the only key to attaining advanced knowledge in a particular field.

iv) Flexibility: Independence is necessary in every stage of life. Flexible learning is a technique through which a student is given freedom to study how, what and why they learn.

b) RESEARCH & INFORMATION:

Following are the skill set required for the research and information gathering:

i) Self-knowledge: It is important for the personal growth, decision-making of an individual. It emphasizes on the representational properties of mental states and their role in shaping behaviour.

ii) Innovations: The innovating ideas being put in the right direction, give birth to innovations or an invention. To bring up a new invention has become the central part of human lives.

iii) Predictive Modelling iv) Experimental Approach: "Experience is the good teacher" means that experiments lead our confidence and help to learn new things based on our past outcomes. We should focus on the experimental based learning instead of theoretical concepts

c) Digital Literacy:

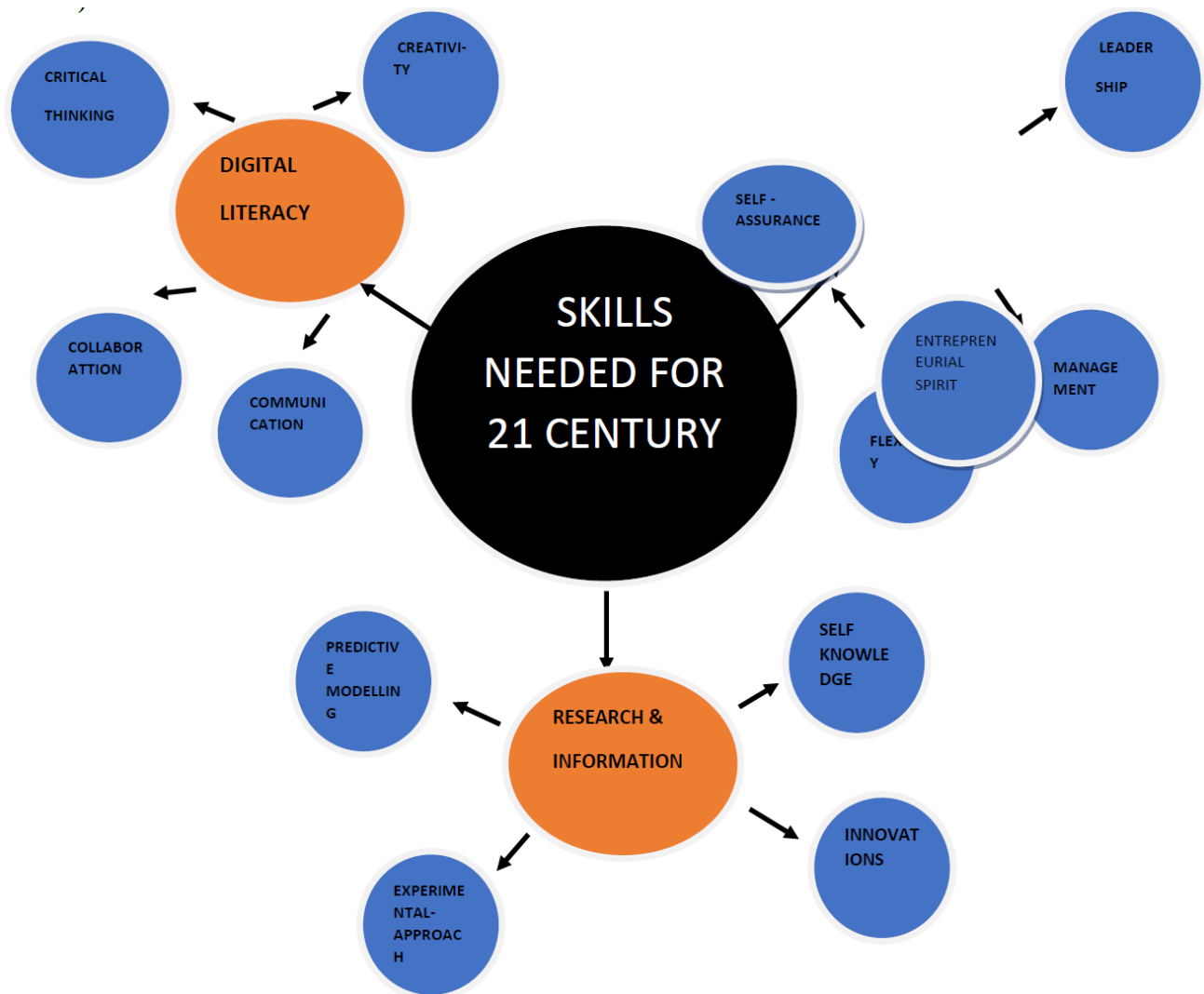
following are the skills required for the digital literacy:

i) Critical Thinking

ii) Creativity

iii) Collaboration

iv) Communication



SUBSET OF SKILLS

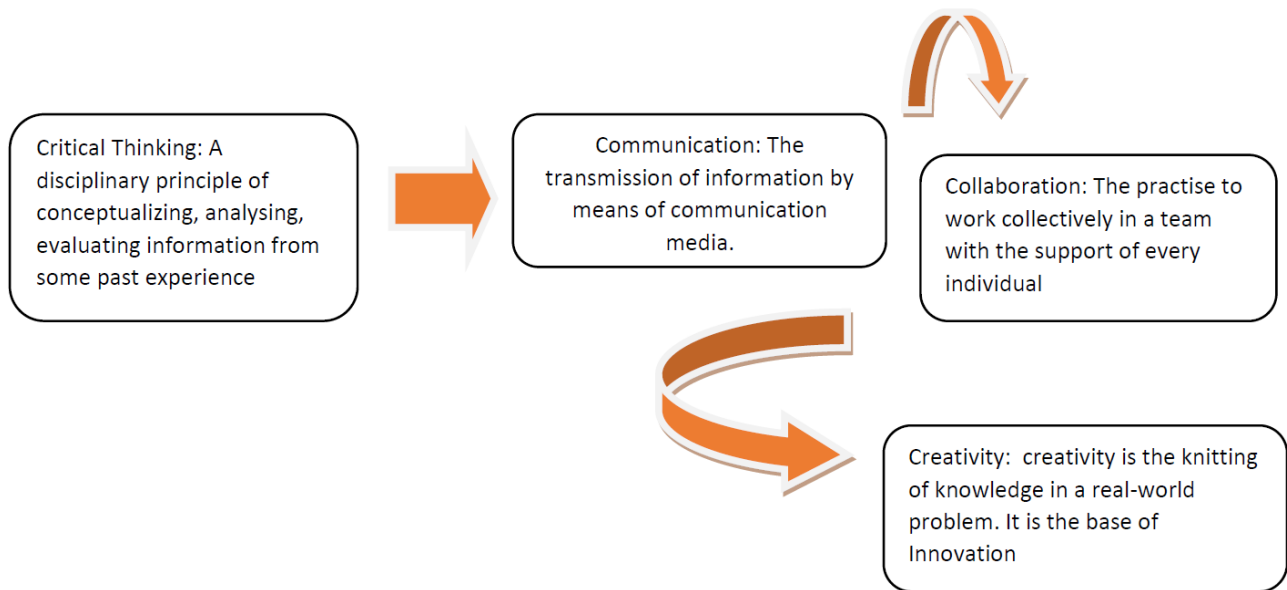
Why is STEM education important?

The main aim of STEM Education is to make not only a skill-oriented student but cognitively smart too. With the advancement of multimedia and various ICT tools, the concepts of various fields are easier to understand and easy to capture information. These are some points which illustrates the importance of STEM education

- The STEM education emphasises on the Innovations which boasts the economy of the nation.
- The STEM approach of education encourages the innovators to take global decisions.
- STEM education enhances the mind of students to think uniquely.
- Project-Based Learning & Logical Analysis will help the student to grow their innovative minds.
- The experiential learning methods provide solution to real world complex problems
- The investigation of a particular failure outcome led to the new invention.
- STEM education generates the awareness of job opportunities in various sectors like –Software developments (32%), Computer system Analysts (22%),in field of Mathematics(16%) ,Biomedical engineers.(62%) ,Medical Scientists(36%) and overall occupations of STEM is approx.(14%)

INNOVATING PEDAGOGY IN HIGHER EDUCATION:

According to the National Education Association, the 4^C plays a central role in Innovations of 21 Century:



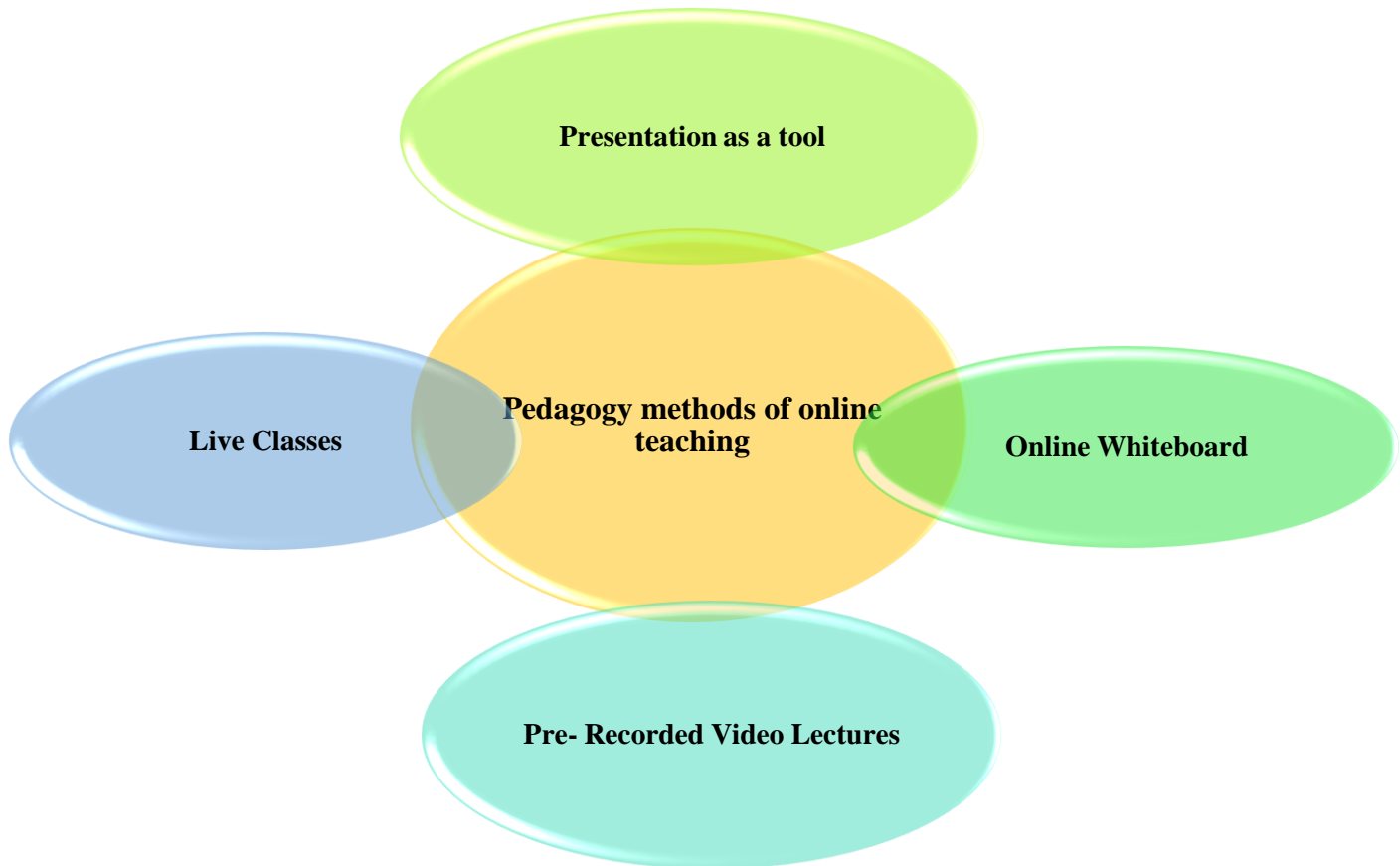
For every revolution to begin, there should be powerful weapons to rule .In this technological revolution ,youths have proved to be the most powerful weapon .In every field ,youth has cultivated many achievements since decades and they represent the strength of country .So, pedagogy in higher education is so important as the higher education is the base of career of every child. Lot of developments are needed to improvise the condition of learning by using various pedagogical approaches.

1) NURTURING THE CLASSROOM IN HIGHER EDUCATION:

- a) A paradigm shift is required from traditional methods of teaching to modern usage of learning methods in every institute to make classrooms interactive.
- b) Giving complex problems to students in order to think independently and uniquely.
- c) Providing opportunities to students to participate in various sports, educational games in order to attain self –confidence.
- d) A good interaction should be held between the educator and learner so that they might not be fear of asking doubts.
- e) Motivate the students from time to time.
- f) Students must not be given stress to study only for the sake of marks but for the sake of knowledge.
- g) The educator should encourage the experimental approach of learning in classrooms
- h) Connecting the problems to real world examples will generate the curiosity among students to gain more knowledge.

VIRTUAL LEARNING AND TEACHING:

Nowadays we see our educational system are getting advanced with the use of technology. Education sector upgraded their traditional method of teaching by the use of technical tools which raise the understanding process more clearly. Teachers use different pedagogy techniques to help the students to understand the concept easily and clearly on the online platforms. And as we know pandemic has resulted in schools and colleges being closed all across the world as a result education has changed dramatically with the distinctive rise of e- learning whereby learning is undertaken remotely and on digital platforms. The way educators teach needs to reflect and meet the changing requirements of contemporary items. Digital technology has taken the centre stage so teachers can effectively and easily teach their students from home. It makes the educational system more flexible, accessible and comfortable. Moreover, from learning in class to learning online is quite challenging for both educator and learner because many of the teachers are not are not familiar or comfortable with gadgets or to teach them online. Some of the students also face limited data packages and internet connectivity issues. In Online learning it is important to motivate students because they are away from teachers as in offline classes teachers could notice their students whether they concentrate or not but as everything is going online some of the students are also getting lazy and not properly focused on their studies.

PEDAGOGY METHODS OF ONLINE TEACHING:**1. Using Presentation as a tool:**

- Presentations should be created properly where the delivered content plays an important role in understanding the concepts.
- Teachers need to present the important notes and key points of the book content in the presentation form.
- In higher education it is very difficult for the students also to go through the whole book most of the students skip the topics because they are given in brief and it makes them boring so it's a responsibility of the teachers to make the topic easy and understandable, they can make short and summaries presentation to make learning process easy.

2. Live Classes:

- Live classes make interaction with the students more dynamic and interesting where students can raise their doubts just like offline classes.
- Using different tools and strategies educators make any topic easy and interesting where students also participate in class by raising doubts.
- Educators should make sure to not deliver the entire topic in one go rather than this they can break down the topic into smaller chunks.

3. Online Whiteboard:

- In virtual or in online mode whiteboard works the same as black board in offline class but it digitizes what teachers teach where students can connect them with teachers.
- There are many pre-made diagrams, graphs, charts, and videos which make the learning process easier to understand.
- These digital whiteboards allow screen sharing features which make class more interactive where teachers or students both can share their screen in the class.

4. Pre-Recorded Video Lectures:

- This feature helps students who miss live lectures so they can learn it from these recorded videos.
- Students can also use these recorded videos for their revision purpose; they can also watch these videos at any time.

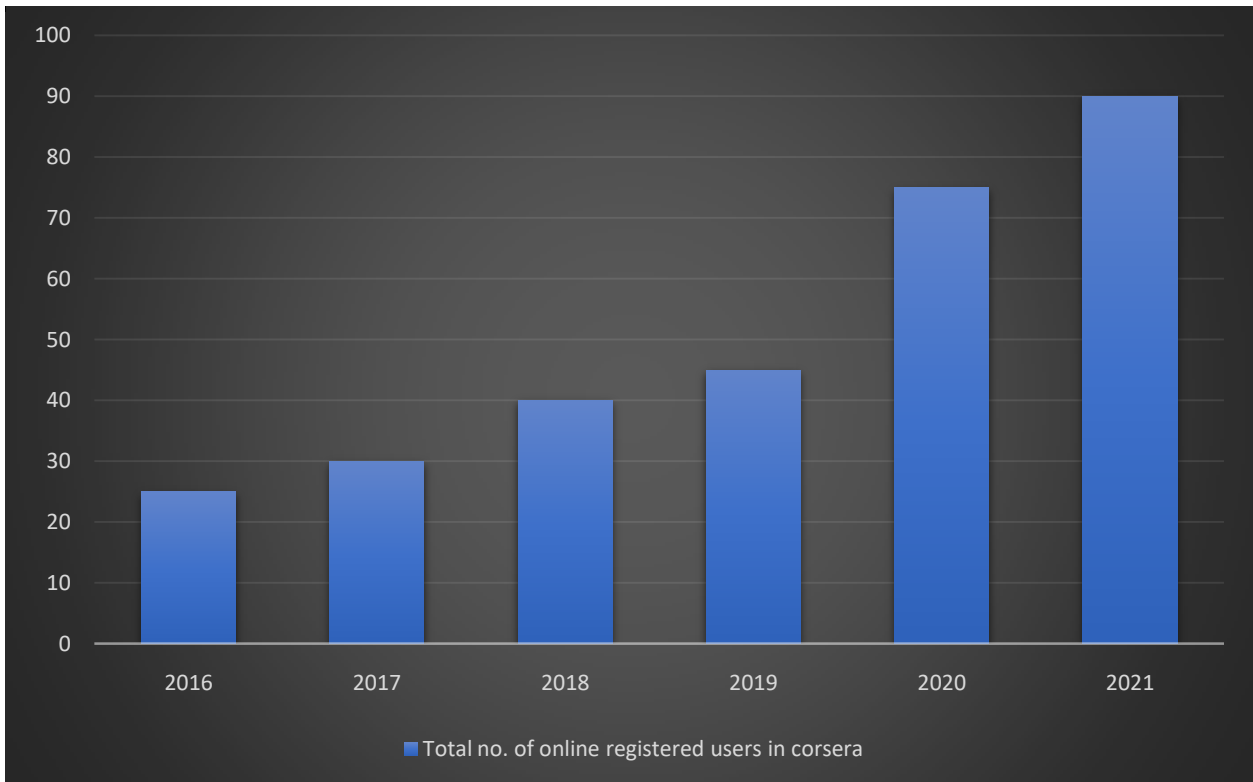
- Teachers also do not suffer from connectivity or internet problems like in live sessions.

REMOTE LEARNING:

As we see today's condition of the world we can say now many higher education, universities and institutes can offer their courses online with the degree where students can study or learn from their home and all the sessions or lectures, they can attend online. Many universities in abroad are offering their online learning courses like- the University of Toronto offered their first completely online course in 1984 and the Open University in UK was one of the first University in the world to begin online distance learning. So, this approach helps many students from different countries to find their opportunities from their home.

- Remote learning utilizes the loss of time that takes place to reach school and colleges and the lectures also arrange in slots where students can manage their time and also attend their classes from anywhere.
- Due to covid 19 the use of virtual classrooms rapidly grows as a tool of teaching where students and teachers interact with video conferencing mode.
- Remote learning overcomes the problems which are faced by the students which is distance of place or time.
- Main motive of the distance or remote learning is to break the barrier of distance or place and learners can learn from anywhere whether they live in rural or isolated areas, this system helps them to educate them without going anywhere.

It is a very important step taken by the government of every country to preserve the education system and distance would not become barrier in that pandemic situation educator will help students to develop their skills and seek new opportunities for growth and development.



Graph showing number of users registered in Coursera

Coursera is an online learning platform which helps students to learn and upgrade their skills by enrolling in different courses. It has released its 2021 Impact Report, where more than 20 million new learners registered for courses in the year - equivalent to total growth in the three years pre-pandemic. But the switch to remote learning as the pandemic hit triggered a three-fold increase in new registrations and enrolment.

Conclusion:

Since development is the necessary phase of our lives, it should be brought in each and every phase. The students of today are very familiar with today's technology, only the practice is needed to bring them in the limelight of knowledge. To attain this approach, we need to improvise the educational system policy of a developed nation. The Education policy must be improved in order to generate awareness of the importance of practical learning among Students and Teachers. Creating connectivity among the topics, moving across the topics, extending out of classrooms and extending out of classrooms and attaining a new and meaningful outcome will help in developing a band of innovations. This quote from scientist Albert Einstein is a

fitting parallel for the role of innovations in education “Education is not the learning or fact, but the training of the mind to think”

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